



#### This 3DAdvisors Report Covers:

- ✓ **Insider Trading:** Insider Trading Behavior
- ✓ **Accounting:** Quality of Earnings Issues
- Governance:** Corporate Governance Issues

## Competitors Race to Add Capacity, CEO Dumps Stock MEMC Electronic Materials Inc. (NYSE:WFR) Update

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### Business Description

MEMC Electronic Materials, Inc. produces wafers for the semiconductor industry worldwide. The Company's product categories include polished wafers, such as OPTIA and annealed products; epitaxial wafer that contains AEGIS product; and test/monitor wafers. These wafers are used for the manufacture of various types of semiconductor devices, including microprocessor, memory, logic, and power devices ranging from 100 millimeters to 300 millimeters in diameter. The Company's semiconductor devices are used in computers, cellular phones and other mobile electronic devices, automobiles, and other consumer and industrial products. Its customers include semiconductor device manufacturers, including the memory, microprocessor, and applications specific integrated circuit manufacturers, as well as foundries in North America, Europe, Japan, and the Asia Pacific. MEMC Electronic Materials was founded in 1984 and is based in St. Peters, Missouri.

### Summary of 3DAdvisors Findings for WFR

- ▶ **Fundamentals:** Polysilicon capacity plans keep growing; MEMC seems in denial
- ▶ **Fundamentals:** MEMC may be losing its ability to direct silicon to spot market
- ▶ **Insider Trading:** Bullish outlook aside, the CEO and TPG head for exits
- ▶ **Fundamentals:** Competitors invest heavily, but CapEx below historical levels

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### Discussion of 3DAdvisors Findings for WFR

A number of factors are coming into play that may signal a momentum change for MEMC Electronic Materials Inc. (WFR) and its polysilicon-related fortunes sooner than many had expected. As we pointed out in our [full report on WFR on 02/13/07](#), demand for polysilicon, largely driven by the super-frothy solar energy industry, has helped push spot prices to record levels which inure directly to the Company's benefit. But while most analysts are anticipating significant increases in polysilicon capacity in coming years, more recent announcements of capacity expansion plans by MEMC's competitors to produce more polysilicon as well as lower cost alternatives, combined with some specific behavior by CEO **Nabeel Gareeb**, suggest the party may be over sooner rather than later.

## Fundamentals: Polysilicon capacity keeps growing; MEMC seems in denial

Table 1 below was included in our original MEMC report (02/13/07) and shows various industry source estimates, as of mid-2006, for polysilicon capacity to come online through 2010.

**Table 1.** Global Forecast of Polysilicon Capacity.<sup>1</sup> Metric Tons, Annually.

Company	2004	2005	2006E	2007E	2008E	2009E	2010E
Hemlock	7,000	7,400	10,000	10,000	15,000	18,000	18,000
Wacker/ Siltronic	5,000	5,000	5,500	6,500	10,000	14,500	14,500
REC (ASiMI)	2,600	3,000	3,300	3,300	3,300	13,000	13,000
REC (SGS)	2,200	2,400	2,700	3,900	7,400		
Tokuyama	4,800	5,200	5,400	5,400	8,400	8,400	8,400
MEMC (Texas)	2,700	2,700	2,700	4,000	8,000	8,000	8,000
MEMC (Italy)	1,000	1,000	1,000				
Mitsubishi	1,600	1,600	1,600	3,800	3,800	3,800	3,800
Mitsubishi Polysilicon	1,200	1,200	1,200				
Sumitomo Titanium	700	700	1,000	1,500	2,000	2,000	2,000
Elkem (Norway)				2,500	5,000	5,000	10,000
Total China	0	130	300	1,250	3,300	3,300	5,500

Already, this chart needs significant updating: On April 26<sup>th</sup>, REC announced that it would be investing \$485 million in an additional 6,000 metric tons (mt) of silicon and 9,000 mt of Silane Gas. This plant is expected to come online during Q3 of 2008 with six to nine months of ramp-up. This additional capacity was new to CEO Gareeb during the Q1 conference call, which occurred on the same day of the REC

<sup>1</sup> Piper Jaffray Global Capacity of Polysilicon Forecast (metric tons). Table embedded within "2005 Solar Year-end Review & 2006 Solar Industry Forecast", by Jesse W. Pichel and Ming Yang, Research Analysts, Piper Jaffray, January 11, 2006; and Prometheus Institute, "An Assessment of the Global Silicon Production Capacity and Implications for the PV Industry", Hilary Flynn & Travis Bradford, July 12, 2006.

announcement. When asked if he had baked the added capacity into his guidance, the answer was negative. REC is now expected to be producing approximately 29,000 mt of Silane Gas and 19,500 mt of Polysilicon by 2010. In July of 2006, REC's estimated Polysilicon production for 2010 was just 13,000 mt. Expansions have also recently been announced by Hemlock (majority owned by Dow Corning) who, on May 2<sup>nd</sup>, announced it would invest up to \$1 billion in the next 4 years to expand its Hemlock, Michigan facility: "The expansion, which is expected to start coming online in 2010 will increase the Company's total annual output of polycrystalline silicon to 36,000 metric tons, an increase of 90 percent."<sup>2</sup> This represents a huge increase from the 18,000 mt estimated by industry sources just last July.

The above two announcements occurred between April 26<sup>th</sup> and May 2<sup>nd</sup>. It seems that every month, another expansion project is announced. Indeed, the number of entities who are producing polysilicon has increased five-fold from the dozen doing so just one year ago. In addition, there are the new entrants to the market:

- M.Setek: Japanese company M.Setek has started production for polysilicon and expects to achieve its goal of 5,000 metric tons in annual capacity by 2008.<sup>3</sup>
- DC Chemical: The leading Korean chemical company DC Chemical has entered into multi-year polysilicon supply agreements with Trina Solar from China and Evergreen Solar (ESLR).<sup>4</sup> The total polysilicon capacity of DC Chemical has not been disclosed.
- Chinese Companies as a Group: China is planning as many as eleven projects aimed at developing an independent supply of (polysilicon) by 2011. By year-end 2006, China's domestic polysilicon production reached just 230 metric tons. The ultimate goal is for China to have polysilicon independence by 2011, with domestic production capacity of 12,660 metric tons.<sup>5</sup> Some of the manufacturers are Baoding Yingli Solar, Luoyang Zhonggui, Emei Semiconductor and Sichuan Xinguang Silicon Industry. In addition, others anticipate that the major solar producers will integrate down the supply chain and produce their own polysilicon – such as Shunda is doing. Shunda Holdings is a Chinese mon-crystalline silicon ingot and wafer maker and has raised US\$82 million from private equity investors to build a new polysilicon manufacturing facility. Capacity estimated at 1,500 mt.<sup>6</sup> Interestingly, Shunda is a supplier to Suntech Power Holdings and WFR also has a key supply agreement with Suntech.

We increasingly have the feeling that China could become the Korea of the polysilicon market. Just as Korea's widely assumed government driven initiative to ramp

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<sup>2</sup> "Hemlock Semiconductor to Expand Michigan Polysilicon Operations", May 2, 2007.  
[http://www.dowcorning.com/content/news/hemlock\\_expansion.asp?DCWS=&DCWSS=](http://www.dowcorning.com/content/news/hemlock_expansion.asp?DCWS=&DCWSS=)

<sup>3</sup> DigiTimes.com "E-Ton upbeat about polysilicon supply as M.Setek ramps up capacity", Nuying Huang, Taipei; Rodney Chan, DIGITIMES, May 14, 2007.

<sup>4</sup> Yahoo Finance. Press Release "Evergreen Solar and DC Chemical Announce Major Polysilicon Supply Agreement and Investment", April 17, 2007. And Solarbuzz.com, "Changzhou, China: Trina Solar Signs Long-Term Polysilicon Supply Agreement", February 2, 2007.

<sup>5</sup> Globe-Net.com "Polysilicon production for solar energy in China", April 2, 2007.

<sup>6</sup> Semiconductor International.com from South China Morning Post "Shunda raises US\$82m for poly-silicon production plant", May 10, 2007.

up production in order to claim its peace of the pie caused havoc on DRAM prices, we suspect a similar phenomenon looming in China with polysilicon.

The debate continues as to when the current polysilicon shortage reverses itself to become a glut. MEMC CEO Gareeb remains consistent in his argument that most of these new entrants are "second-tier" suppliers and will have a more difficult time than they currently anticipate in getting up to speed. What is also consistent is that Gareeb ignores the fact that any delays in these polysilicon plans represent only delays, not failures and that eventual equilibrium will come to the market. Some are predicting that it will take huge expansion in solar wafer orders downstream to sop up this oncoming supply. Without such expansion, the prices for polysilicon could be ripe for collapse.

Also potentially pressuring polysilicon prices are efforts by companies such as REC to move towards metallurgical grade silicon for the production of solar wafers. Since solar wafers can be produced with less stringent methods than those utilized for semiconductors, REC has been, for ten years, developing its expertise in this area, claiming that it can slash costs of production for solar wafers. When asked about this in the Q1 2007 conference call, Gareeb again seemed to be in denial:

**Analyst:** So what is it that gives REC to claim that they could drastically reduce the cost by maybe a factor of 5 to 10?

**Nabeel Gareeb:** I mean, their reducing their cost doesn't necessarily mean that our cost was that high to begin with. So I think that's probably part of the disconnect. And then the other thing is on things like metallurgical grade silicon, etc, that people are talking about. I mean, to us that's an important development to keep an eye on. That development has been going on for a decade or more. We've seen the results, we've seen the purity levels and all the different facets of it.

When you talk about metallurgical grade, I typically encourage people to ask two questions. Which is basically what's the problem it's trying to solve? Is it trying to solve a cost problem or is it trying to solve an availability problem? And if it's trying to solve an availability problem, a metallurgical grade isn't scheduled to come up to 100,000 metric tons next year, which is when the availability problem is. It's scheduled to come on in pieces over the next couple of years and in the subsequent four years probably 10,000 over the next four to five years. So it doesn't really solve "the availability problem".

And then if you look at it in terms of cost for the metallurgical grade after refining and everything are still in the ballpark of what REC might be quoting, for example, for their FBR. So you know, those are important developments. We need to make sure we keep our eye on it and if it becomes a viable capability then we can also get into it.

In this exchange, Gareeb implies that the use of metallurgical grade silicon in the production of solar wafers may very well be for real. However, in typical Gareeb fashion, he goes on to say that this will not affect next year but later. So there's no problem? We also note that Gareeb implies that REC's costs may have been higher than their own to begin with. This may have prompted a separate question regarding whether MEMC has made any strides in reducing its poly production costs:

**Analyst:** And then secondly, just on the new entrants into the polysilicon market. Can you just talk about how your costs for polysilicon production have evolved, maybe not since 1959, but over the last three to five years, how you've been able to squeeze cost out and maybe some of the challenges and hurdles that some of these new entrants would face?

**Nabeel Gareeb:** It's a chemical process. Some of the Siemens process is obviously well known, so it has certain inputs and outputs and you can balance it and then you can de-bottleneck it and you can do all kinds of interesting things with it. So that certainly has its learning curve and we've gone down that learning curve quite a bit.

The FBR process that we've been using, certainly that had more opportunity because it was unique to us as well as wasn't as optimized, if you will, so that's given us certain opportunities to improve that, both from a cost as well as capability and predictability standpoint, because it is a hard process to run.

I think we've come down a learning curve and there's still certainly more opportunity to come down that learning curve on both processes even further.

Again, as in so many of Gareeb's responses, his evasiveness says more than the response itself. For sure, had MEMC made any significant strides in cost reduction, this would have been the ideal opportunity to disclose them. It would seem that the looming REC competitive threat may be a real one.

#### Fundamentals: MEMC may be losing its ability to direct silicon to spot market

With polysilicon contract prices in the \$100 per kilogram area and spot prices being in the \$300 per kilogram area, it is not hard to imagine how MEMC has been able to juice its earnings in recent quarters by re-directing poly from its traditional semiconductor wafer business and into the much more lucrative spot market for polysilicon. Gareeb maintains that market conditions caused MEMC to delay capacity expansion in the 300mm wafer area in 2006. In partial answer to this move, Gareeb explained that what excess polysilicon MEMC had that was not being sold in the spot market was being directed into 200mm upgrades. MEMC has refused to disclose, though asked many times, how much it is selling into the spot market for any given period. Given the increasing spreads between contract and spot prices, however, it is not hard to imagine MEMC's motives in foregoing 300mm development in order to divert poly to high priced spot sales.

As we mentioned in our report in February, this move may have cost MEMC market share in the 300mm area as Samsung, who has a joint venture in place with the Company to produce 300mm wafers, announced in January that it was entering into a similar JV with Wacker to produce them in significant volume as the facility in question is expected to produce 300,000 raw wafers/month by 2010. Though Samsung dismissed concerns that this new facility conflicts with its already-existing deal with MEMC, one must wonder what prompted its decision to seek such a large alternative supplier. Unless, that is, Samsung was concerned that the MEMC venture may not be able to meet Samsung's downstream needs. Then, within a week of the Samsung announcement, Japanese wafer maker SUMCO announced its plans to build a \$2.9 billion plant to triple its output capacity for 300mm wafers.

Now, in Q1 of 2007, it is evident that MEMC has re-thought its strategy and has “re-accelerated” its efforts in 300mm wafers. From the Q107 conference call:

**Analyst:** Okay. And then I guess just to follow-up on that, Nabeel, what is your outlook for semiconductor wafer starts for the second half of the year? And if you do see an improving trend, what can we expect in terms of refocusing more on the 300-millimeter semiconductor wafer market?

**Nabeel Gareeb:** Let me take that backwards a little bit, Stephen. 300-millimeter actually in Q1 was stronger than 200. We basically in late Q4-early Q1 started reaccelerating our 300-millimeter expansions, because we are capable of playing with that a little bit, depending on market conditions. And we had slowed that down a little bit last year in the summer and then we reaccelerated that in Q4 to kind of bring that back up, given our potential view on the potential strength of that market.

From this, however, came further questions which indirectly reveal MEMC’s ability to sell into the polysilicon spot market:

**Analyst:** Okay. I guess I'm just kind of wondering, you know, this has been a beat and raise story here for a long time and it seems that maybe we've kind of stalled out here a little bit in terms of where the expectations are relative to what you're actually performing to. And I'm wondering if maybe this persists until you can get that next big slug of poly online?

**Nabeel Gareeb:** One, I don't know that you should or should not assume that. But second, if you look at the fundamentals of the industry rather than anything else, a lot of customers did a bunch of preannouncements in Q1 on the semiconductor side and in spite of that, we were able to show about a 5% revenue growth.

And those same customers are now talking about, obviously, the Q2 growth on a base of a much weaker Q1. And if you average the two, comparing it to Q4, which basically averages out to almost zero. And if you compare us on that same basis, we're still talking about close to double-digit growth compared to a Q4. So I don't know what company typically in a mixed environment would be able to achieve those sorts of results.

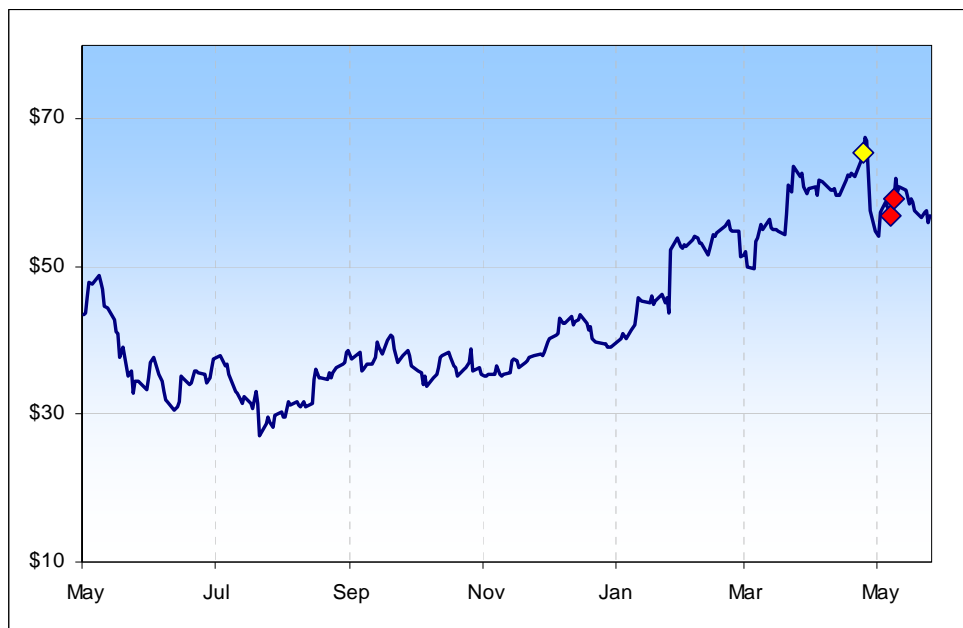
In the above exchange, Gareeb specifically avoids any reference to polysilicon, instead, speaks around the question. To this, we suspect that there is a high probability that MEMC, having now “reaccelerated” its focus on 300mm wafers, will not have enough polysilicon to sell to the spot market in any significant fashion for the foreseeable future. In other words, it looks as if the days of MEMC’s ability to utilize spot silicon sales in order to hit earnings numbers have come to an end.

#### Insider Trading: Bullish outlook aside, the CEO and TPG head for exits

Notwithstanding Gareeb’s proclivity towards giving a bullish outlook and associated hockey-stick projections, he has become one of the most predictable CEO’s that we have encountered over our 25 years of analyzing insider behavior: The more bullish his outlook has become, the more aggressively he has unloaded nearly all options and shares at his disposal.

Rarely do we see such contrary action by a key insider when there are looming and unanswered concerns that may be developing, such as the sustainability of MEMC's strategic position with regards to polysilicon. Those thinking that MEMC's Q1 earnings release on April 24<sup>th</sup> and subsequent battering of the shares were only short term events creating a buying opportunity might be well advised to pay attention to Gareeb's actions in the immediate aftermath of the release. With the shares down over 22% after the release, Gareeb waited for the first small rebound to sell just about everything he could, first dropping 436,500 shares, on May 7<sup>th</sup>, in the \$57 range, then another 513,500 shares the next day at the same level. In all, he exercised every option at his disposal, clearing out four separate option series, none of which would expire until at least 2012 to 2015. This activity brought his year-to-date holdings reductions (common shares and all vested, in-the-money derivatives) to 93%. This is hardly the type of reaction one would expect from a key executive that expects a rebound in his shares and who offers such a rosy projection for the long-term future of the Company.

**Figure 1.** WFR Daily Closing Price, 05/01/06 through 05/29/07. Yellow diamond is the date of the Q1 earnings release; Red diamonds are the two days where Nabeel Gareeb sold 950,000 shares. Source: Reuters and WFR SEC Filings.



To this, the Company would argue that Gareeb's sales were executed under a 10b5-1 plan, announced on January 31<sup>st</sup> where he had "no discretion over the shares traded under the plan, although the executive may later amend or terminate the plan". The Company disclosure regarding the plan, however, goes on to say [bolding is ours for emphasis]: **"The broker administering the plan is authorized to trade company shares in volumes and at times determined independently by the broker, subject to the limitations set forth in the plan."**<sup>7</sup> Thus, within the wording of the disclosure of

<sup>7</sup> WFR SEC Form 8-K, "MEMC CEO Files 10b5-1 Trading Plan", January 31, 2007.

this plan is hedged wording to indicate that the broker will only “at times” determine independently when to pull the trigger. Clearly, we would be surprised if the broker would have jumped to sell **after** a 20% drop in WFR shares **without** consulting with Gareeb first. Of course, the press release disclosing the plan goes on to give itself enough rope to hang itself: ***“Using these plans, insiders can gradually diversify their investment portfolios, can spread stock trades out over an extended period of time to reduce any market impact and can avoid concerns about whether they had material, non-public information when they sold their stock.”***

For the record: Gareeb sold 450,000 shares on the day of that announcement. Combined with his May sales he has unloaded 93% of his actionable holdings, all under the guise of his 10b5-1 plan. We consider behavior such as Gareeb’s, where he has unloaded the vast majority of his holdings under a 10b5-1 plan soon after adoption, to be behavior that would most likely call into question any safe harbor protection afforded him under the rule. Equally so, we would advise that any assumption that the sales were executed by a broker without prior consultation with Gareeb to be a reckless assumption. To learn more about how we evaluate abusive trading under 10b5-1 plans, see our [Special Report: Analysis of Abusive 10b5-1 Trading Plan Behavior](#).

Gareeb’s total actionable position at the present time has been reduced to 100,000 shares of common, although it is true that he holds 3,112,500 unvested options, with 250,000 of these vesting in October and 575,000 vesting in Q208 (see Appendix A). Notwithstanding the partial replenishment of his holdings that will take place downstream from additional vesting, we still believe his recent moves to dramatically reduce his *current* exposure to the stock to be significant, especially given the fact that he has done so aggressively under a thinly disclosed 10b5-1 trading plan. Also, it is important to remember that he is not acting alone: the SVP of Sales and Marketing, SVP of Research and Development, SVP of Manufacturing and the General Counsel have all sold in excess of 90% of their respective actionable holdings (see the full report on [02/13/07](#) for details). To see key operating executives such as these acting in unison to aggressively reduce their exposure to this extent is exceptionally rare under almost any circumstance.

And finally, in addition to Gareeb’s sales, we must also note that, three days after his move, former majority holder, TPG, sold 11.97 million shares in the \$60 range and no longer is required to file either under Section 16 (read: Form 4, “Change in Beneficial Ownership”) or the Williams Act (Schedule 13-D). After the sale, TPG was down to 4.6 million shares. In almost classic head-fake action, MEMC announced the following week that its board of directors had authorized a share repurchase program for up to \$500 million of the Company’s shares.

#### Fundamentals: Competitors invest heavily, but CapEx below historical levels

As we highlighted in our 02/13/07 report, the industry continues to expand capacity, not only in polysilicon but also 300mm wafer production:

- Shin-Etsu announced late last year that its newly-expanded facility in Fukushima Prefecture, Japan, would be expanded again, this time from 500,000 wafers/month to 1,000,000 wafers/month by the end of 2007. Its new plans were pushed by “the continuation of robust demand”. The project will cost it 120 billion yen (\$1 billion



U.S). Shin-Etsu's 300mm expansion plans did not stop there, however, as it also announced, last September, that it planned to spend a total \$400 billion yen (\$3.2 billion U.S.) for 300mm expansion.

- ➡ On February 27, 2007, Sumco Corp. of Japan announced that it "has decided to increase the production capacity of 300mm silicon wafers, for which demand is surging, to 1.4 million wafers/month by the end of 2009". It had already decided to increase its production capacity to 760,000 wafers/month by July of 2008. The new project will cost US\$2.9 billion.
- ➡ In late January, Samsung announced that it was entering into a J/V with Wacker to produce 300mm wafers at the pace of 300,000/month. As mentioned above, we found this particularly interesting in that MEMC already had a J/V in place with Samsung to produce 300mm wafers, so why this move, instead of expanding what it already had in place with MEMC?

We could go on but the point is that in the midst of MEMC's decision to pull back on 300mm production expansion, others have continued to invest heavily in new plant and equipment. Now, even in the wake of MEMC's "reacceleration" (or should we say, "Catch up"? ) in the 300mm area, its CapEx continues to lag historical levels. MEMC's CapEx was at 10.9% of sales as of Q107. Though better than the 8.5% levels of the past few quarters, the Company's level of CapEx spending remains well-below its historical 14.5% range which existed in 2004 and 2005.

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## Appendix A

Option and Restricted Stock Vesting Schedules for Selected MEMC Electronic Materials Inc. Insiders

Grant Date	Equity Type	Options/Shares	Strike Price (Options)	First Vesting Date	Expiration Date (Options)	Remaining Options/Shares in Series	Unvested Options/Shares in Series	Vesting Dates of Remaining Restricted Shares/Options
<b>Nabeel Gareeb, President, CEO, Director. Common stock holdings: 100,000 shares</b>								
04/27/04	Options	150,000	\$8.45	04/27/05	04/27/14	37,500	37,500	04/27/08
05/02/05	Options	150,000	\$11.93	05/02/06	05/02/15	75,000	75,000	05/02/08, 05/02/09
05/02/05	Options	500,000	\$11.93	05/02/08	05/02/15	500,000	500,000	05/02/08
05/02/05	Options	500,000	\$11.93	05/02/10	05/02/15	500,000	500,000	02/02/10
10/25/06	Options	1,000,000	\$37.01	10/25/07 <sup>1</sup>	10/25/16	1,000,000	1,000,000	10/25/07, 10/25/08, 10/25/09, 10/25/10
10/25/06	Options	1,000,000	\$37.01		10/25/16	1,000,000	1,000,000	<sup>1</sup>
<b>Ken Hannah, Senior V.P., CFO. Common stock holdings: 6,562 shares</b>								
04/26/06	Options	350,000	\$41.57	04/26/07	04/26/16	350,000	306,250	04/26/08, 04/26/09, 04/26/10
04/26/06	R. Stock	52,500	N/A	04/26/07	04/26/10	45,938	45,938	<sup>2</sup>
01/24/07	R. Stock	10,000	N/A	01/24/08	01/24/11	10,000	10,000	01/24/08, 01/24/09, 01/24/10, 01/24/11
04/25/07	Options	50,000	\$67.43	04/25/08	04/25/17	50,000	50,000	04/25/08, 04/25/09, 04/25/10, 04/25/11
<b>Sean Hunkler, Senior V.P.-Manufacturing. Common stock holdings: 0 shares</b>								
08/15/05	Options	200,000	\$18.05	08/15/06	08/15/15	150,000	150,000	08/15/07, 08/15/08, 08/15/09
08/15/05	Options	100,000	\$18.05	08/15/09	08/15/15	100,000	100,000	08/15/09
07/25/06	Options	13,800	\$29.73	07/25/07	07/25/16	13,800	13,800	07/25/07, 07/25/08, 07/25/09, 07/25/10
01/24/07	Options	20,000	\$45.70	01/24/08	01/24/17	20,000	20,000	01/24/08, 01/24/09, 01/24/10, 01/24/11
01/24/07	R. Stock	20,000	N/A	01/24/08	01/24/11	20,000	20,000	01/24/08, 01/24/09, 01/24/10, 01/24/11
<b>John Kauffmann, Senior V.P.-Sales and Marketing. Common stock holdings: 5,500 shares</b>								
01/24/03	Options	30,000	\$7.90	01/24/04	01/24/13	7,500	0	Fully Vested
07/25/03	Options	30,000	\$11.74	07/25/04	07/25/13	7,500	7,500	07/25/07
09/01/03	Options	70,000	\$12.98	09/01/07	09/01/13	70,000	70,000	09/01/07
01/26/04	Options	30,000	\$10.85	01/26/05	01/26/14	15,000	7,500	01/26/08
07/26/04	Options	6,200	\$8.09	07/26/05	07/26/14	3,100	3,100	07/26/07, 07/26/08
10/27/04	Options	150,000	\$9.43	10/27/05	10/27/14	75,000	75,000	10/25/07, 10/25/08
02/16/05	Options	10,000	\$11.63	02/16/06	02/16/15	7,500	5,000	02/16/08, 02/16/09
07/26/05	Options	20,000	\$17.65	07/26/06	07/26/15	15,000	15,000	07/26/07, 07/26/08, 07/26/09
01/25/06	Options	18,300	\$25.66	01/25/07	01/25/16	18,300	13,725	01/25/08, 01/25/09, 01/25/10
07/25/06	Options	11,900	\$29.73	07/25/07	07/25/16	11,900	11,900	07/25/07, 07/25/08, 07/25/09, 07/25/10
01/24/07	Options	20,000	\$45.70	01/24/08	01/24/17	20,000	20,000	01/24/08, 01/24/09, 01/24/10, 01/24/11



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01/24/07	R. Stock	15,000	N/A	01/24/08	01/24/11	15,000	15,000	01/24/08, 01/24/09, 01/24/10, 01/24/11
<b>Bradley Kohn, V.P., General Counsel, Secretary. Common stock holdings: 0 shares</b>								
09/18/05	Options	100,000	\$19.88	09/18/06	09/18/15	75,000	75,000	09/18/07, 09/18/08, 09/18/09
09/18/05	Options	100,000	\$19.88	09/18/09	09/18/15	100,000	100,000	09/18/09
07/25/06	Options	5,900	\$29.73	07/25/07	07/25/16	5,900	5,900	07/25/07, 07/25/08, 07/25/09, 07/25/10
01/24/07	R. Stock	15,000	N/A	01/24/08	01/24/11	15,000	15,000	01/24/08, 01/24/09, 01/24/10, 01/24/11
01/24/07	Options	12,000	\$45.70	01/24/08	01/24/17	12,000	12,000	01/24/08, 01/24/09, 01/24/10, 01/24/11
01/24/07	R. Stock	6,000	N/A	01/24/08	01/24/11	6,000	6,000	01/24/08, 01/24/09, 01/24/10, 01/24/11
<b>Shaker Sadasivam, Senior V.P., Research and Development. Common stock holdings: 0 shares</b>								
01/24/03	Options	50,000	\$7.90	01/24/04	01/24/13	12,500	0	Fully Vested
07/25/03	Options	16,000	\$11.74	07/25/04	07/25/13	4,000	4,000	07/25/07
01/26/04	Options	15,000	\$10.85	01/26/05	01/26/14	7,500	3,750	01/26/08
07/26/04	Options	12,100	\$8.09	07/26/05	07/26/14	6,050	6,050	07/26/07, 07/26/08
10/27/04	Options	25,000	\$9.43	10/27/05	10/27/14	18,750	12,500	10/27/07, 10/27/08
02/16/05	Options	25,000	\$11.63	02/16/06	02/16/15	18,750	12,500	02/16/08, 02/16/09
07/26/05	Options	40,000	\$17.65	07/26/06	07/26/15	30,000	30,000	07/26/07, 07/26/08, 07/26/09
01/25/06	Options	18,300	\$25.66	01/25/07	01/25/16	18,300	13,725	01/25/08, 01/25/09, 01/25/10
07/25/06	Options	12,400	\$29.73	07/25/07	07/25/16	12,400	12,400	07/25/07, 07/25/08, 07/25/09, 07/25/10
01/24/07	Options	20,000	\$45.70	01/24/08	01/24/17	20,000	20,000	01/24/08, 01/24/09, 01/24/10, 01/24/11
01/24/07	R. Stock	15,000	N/A	01/24/08	01/24/11	15,000	15,000	01/24/08, 01/24/09, 01/24/10, 01/24/11

<sup>1</sup> Options are performance based that will vest at the end of four years if certain performance criteria are met; it may vest with respect to 400,000 of the 1,000,000 shares at the end of three years if certain performance criteria are met.

<sup>2</sup> 26,250 restricted stock units vest in 25% increments on April 26, 2007, April 26, 2008, April 26, 2009 and April 26, 2010, respectively. The remaining 26,250 restricted stock units become exercisable on April 26, 2011.