Off Wall Street

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New Rec: Veeco Instruments (VECO: $32.76) January 25, 2004

Position: **Target: $18** **Timing: 2 (1=aggressive; 5=cautious)**

$000	Q4 03e	Q1 04e	Q2 04e	Q3 04e	2003e	2004e	2005e
Revs	75,500	92,500	98,000	102,000	277,872	397,500	445,400
EPS$*	0.02	0.06	0.10	0.15	0.10	0.51	0.73
Y/Y Gr	n/a	120%	254%	431%	n/a	397%	44%
PE	n/a	n/a	n/a	n/a	327.6	64.2	44.9
PSR	n/a	n/a	n/a	n/a	3.4	2.4	2.2
Consens	0.02	0.08	0.15	0.20	0.10	0.69	1.35

* Pro forma (excludes amortization and restructuring charges)

Shares Out: 29M **Market Cap: 959M** **FYE: Dec**

Summary: Veeco Instruments is a supplier of scientific instruments. The company sells process equipment tools mainly to the data storage industry and metrology tools mainly to the semiconductor and scientific research sectors. VECO's process equipment tools mainly deposit or remove (etch) materials used in making thin film heads for data storage. The capacity of disk drives is largely determined by the capability of the heads that read and write to the drives. The metrology business sells tools used to provide important surface measurements on thin film heads and semi-conductors. VECO's metrology tools are used mainly for process development and characterization.

The process equipment business is highly competitive and cyclical, mirroring its primary customer segment. This segment represents about 44% of last nine months revenue, and was 49% of VECO's revenues in 2002 and 62% in 2001. Recent gross margins have been about 40%. VECO's primary competitors in this business include Anelva (of Japan) and Unaxis (of Switzerland). New business is mainly driven by technology advances in the storage industry; specifically, by transitions to higher capacity platters. This business segment lost money in 2002.

The metrology business carries higher gross margins, about 55%, but is very dependent on scientific research levels, which do not tend to vary greatly. In 2002 the metrology business accounted for 51% of sales and contributed all of VECO's profits. It is interesting to note that for the first nine months of 2003, 41% of Veeco's sales were to scientific research and industrial customers, 31% to data storage customers, 13% to telecommunications/wireless, and 15% to semiconductor customers. This demonstrates that the metrology business is largely a scientific and research business and does not depend much on semiconductor production.

VECO shares currently sell at over 300X 2003 "street" EPS estimates and at 48X 2004 "street" estimates and at 24X 2005 "street" estimates. In the opinion of bulls in VECO, the transition to 100 GB and 120 GB drives will drive sales of process equipment to data storage manufacturers, and this technology cycle is the main driver of the dramatic expected improvement in EPS.

One problem that the bulls have, in our opinion, is that it does not appear that the transition to 100/120 GB drives will happen any time soon. The reason is that demand for larger capacity storage devices is not growing as fast as they hope, and 80 GB platter technology appears to be adequate for the near future. The 40 GB disk drive continues to be the market sweet spot, accounting for 60% of drives shipped in Q4 03, according to Maxtor. Using 80 GB platter technology, a 40 GB disk drive can be made using one side of the platter and one head, while an 80 GB platter can be made using both platter sides and two heads. In recent conference calls, both Seagate and Maxtor noted that there was substantial inventory in the channel and remarked that they were hoping for lower levels of production to lower inventories. Seagate was a 13% customer for VECO in 2002, which means it accounted for a far greater percentage of VECO's process equipment sales. We think the 80 GB life cycle will persist for some time, a notion that Western Digital management endorsed on the company's call last week. The 80 GB platter technology was introduced in volume in the middle of 2003, and we think it will last more than two years, thus delaying the bullish argument for a transition to 100/120 GB technology by at least one year.

A second leg to the bull story is that VECO's metrology equipment business will pick up due to the increasing use of Atomic Force Microscopes (AFMs) in semi-conductor manufacturing. Automated AFMs cost about \$1M-\$1.5M, and are used to detect problems in the manufacturing process. Bulls hope that more of these instruments will be sold for in line applications in manufacturing facilities. Management has been encouraging such hopes by claiming that the potential penetration rate, which was 1-2 AFMs per fab in 2002, could be as much as 7-10 in a few years. By Q3 03, VECO had sold historically only a total 120 of these instrument to be used in line, and just 20 in the first nine months of 2003. Most AFMs are sold into scientific and research applications at \$100K-\$300K apiece, not for semiconductor production. Our sources tell us that sales of in line AFMs to fabs is not happening at anywhere near the rate that VECO management and the bulls hope. The reason is the slow throughput of these tools when used in production lines.

VECO has also attempted to enter the LED production market by purchasing TurboDisc, a vendor of Metalorganic Chemical Vapor Deposition (MOCVD) systems, which are used for LED production. The acquisition is not really as complementary as management claims since the Molecular Beam Epitaxy (MBE) business that VECO was already in is for the telecommunications and wireless applications (with customers such as RF Micro Devices and Skyworks), and the MOCVD customers (such as Lumileds and United Epitaxy) are making LEDs. Secondly, VECO faces stiff competition from Aixtron, which is the market leader and has a higher capacity MOCVD tool. Finally, gross margins for TurboDisc have been well below the rest of VECO's business, and to the extent that this business grows faster than the others margins would suffer.

VECO has a weak balance sheet. At the end of Q3 2003 it had \$228M in cash and investments, versus \$230M in debt. Since then, net debt has grown by \$120M due to the company's cash acquisitions of TurboDisc and Advanced Imaging. DSO was about 90. VECO's scientific and research clients appear to be slow payers, and international sales being 62% of total sales doesn't help with prompt collections. Inventory at the end of Q3 was 2.6X Q3 cost of goods sold. Moreover, inventory is on a FIFO basis.

VECO has been a truly mediocre financial performer in the last five years. Total reported EPS for the last five years is a negative $1.70. 1999 was VECO's best year when it reported $1.17. However, even in 1999 free cash flow was negative. Indeed, VECO has generated free cash flow only once in the last five years, in 2001 when it generated a whopping $2.5M in free cash. We attribute this poor cash flow performance to steep receivable and inventory increases in boom years, and to cash restructuring and lower deferred profits in lean years. VECO appears to have overpaid for acquisitions, taking a goodwill impairment charge of $94M in 2002.

Retained earnings have gone from a positive $52M in 1998 to a negative $55M at the end of 2002. The company's net debt position has grown to $122M from almost no net debt position before the recent acquisitions. VECO has only $5 of tangible book value. The company has missed on orders expectations two quarters in a row, and on revenue in the last quarter.

VECO bulls expect organic revenue to grow from $270M in 2003 to $332M in 2004, and overall revenue to grow from $277M in 2003 to $422M in 2004, and to $478M in 2005. We think the company will be shy of the bulls' 2004 estimate by about $25M, and by $33M in 2005 (using assumptions favorable to VECO). On EPS, the bulls are expecting pro forma EPS of $0.69 in 2004. We estimate $0.51.

How, then, to value VECO shares? As we explain in the valuation section, we estimated VECO's share value using three approaches. Valuation based on our 2005 free cash flow estimate, incorporating assumptions generous to the company, yields $17. Using a "street" bull's 2005 pro forma EPS multiple approach, we obtain $15. If we give VECO's 2004 pro forma EPS a Nasdaq multiple, a value of $21 results. We'll set a price target of $18, the average of the values we obtained.

We think our VECO story could begin playing out as soon as early February, when the company reports Q4 results. As we have indicated, the disk drive companies have been hesitant to give out guidance because of inventory in the channel. Therefore, disk drive segment orders could be below the bulls' expectations. In any case, the "street" estimates ramp up throughout the year, and we think the potential of a miss increases with each quarterly report. Risks to our story include a faster than expected rise in the telecom spending, which could benefit VECO's MBE and MOCVD businesses, and higher levels of scientific spending that would drive sales of VECO's research AFMs. We think these risks are mitigated by the low margins on sales of MOCVD reactors, and by the lower ASPs for research AFMs.

Background:

Veeco Instruments (VECO) supplies of two kinds of equipment. The company provides inspection (or metrology) tools for the semiconductor, data storage, and scientific research (consisting of materials science, life science, and nanotechnology) sectors. VECO also sells process equipment for the data storage and telecom (primarily, compound semiconductor deposition) areas. In the first nine months of 2003, metrology sales contributed 56% of VECO's revenue, while process equipment sales constituted the remaining 44%. VECO classifies its customer base into four groups: scientific research (41% of nine-month 2003 sales), data storage (31%), semiconductor (15%), and telecom (13%). Seagate Technology accounted for 18%, 7%, and 13% of VECO's revenues in 2000, 2001, and 2002, respectively.

VECO's metrology offerings include Atomic Force Microscopes (AFMs) and Scanning Probe Microscopes (SPMs), which analyze sub-nanometer surfaces and profiles in semiconductor, data storage and other technological and scientific applications. Research versions of AFMs sell for $100K-$300K, while automated versions used in semiconductor production fabs cost $1M-$1.8M.

In process equipment, VECO's product line includes Ion Beam Deposition (IBD) and Ion Beam Etch (IBE) systems used in disk drive production. An IBD unit sells for $3.5M-$4M, while the price of an IBE unit is $1.5M-$2M. VECO also sells Molecular Beam Epitaxy (MBE) and Metalorganic Chemical Vapor Deposition (MOCVD) systems used for making compound semiconductor chips for telecom and wireless applications. An MBE system sells for $750K-$2M, while MOCVD reactors sell for $2M-$2.5M apiece.

VECO has attempted to grow both internally and through acquisitions, and has been an active acquirer of other companies and businesses in recent years. Table 1 lists, in reverse chronological order, recent VECO acquisitions.

Table 1: VECO's acquisitions since 1997 in reverse chronological order

Date	Company name and business	Acquisition cost ($MM) & currency	LTM revenue prior to acquisition ($MM)
November 2003	Advanced Imaging Inc. (Bar lapping for data storage heads)	$60 + $9 Potential Earnout, cash	$33
November 2003	TurboDisc MOCVD business of Emcore Corp. (Reactors for LED production)	$60 + $20 Potential Earnout, cash	$51
June 2003	AFM business of NanoDevices, Inc.	n/a, cash	n/a
September 2001	Applied Epi Inc. (MBE equipment for compound semiconductors)	$153 (stock, cash)	$33 (est.)
July 2001	ThermoMicroscopes Corp. (AFM, SPM)	n/a, cash	$14
May 2000	CVC Inc. (Cluster tools for data storage and specialty semiconductor applications)	$325, stock	$83

Source: Company reports

VECO's competitors include Seiko, and a number of smaller AFM/SPM suppliers on the metrology side, and Unaxis, Anelva, Riber, Aixtron, and Thermo VG Semicon on the process equipment side. Competition in process equipment is more intense than it is in metrology. Consequently, metrology sales have been more profitable for VECO. The company has indicated that recent gross margins on metrology sales were 55%, compared to 40% in process equipment. The operating profitability of the two segments for the last three years is shown in Table 2. The table indicates that the metrology business, aimed mainly at the scientific and research community is a slow or no grow business that has high margins, while the process equipment business is cyclical, and low margin. Overall, the metrology business is more important than the process business.

Table 2: VECO operating segment profitability: 2000-2002

	2000	2001	2002
Process equipment revenue	216,283	277,249	146,691
Process Equipment EBITA	20,742	37,781	(17,603)
Process Equipment EBITA margin	9.6%	13.6%	-12.0%
Metrology revenue	159,830	172,002	152,194
Metrology EBITA	31,096	27,427	25,902
Metrology EBITA margin	19.5%	15.9%	17.0%

Source: Company reports

Discussion:

1. VECO shares have risen sharply since hitting a low of $9.14 in October 2002. The 258% increase in the price of VECO shares since that time far exceeds the Nasdaq's gain of 92% and the SOX index's gain of 152% in the corresponding period, despite the company's bookings misses in the last two quarters and a revenue miss in the last quarter. Bulls argue that the company's revenues and earnings could rise sharply in 2004 as a result of increased sales of both process equipment to disk drive producers AFMs/SPMs to semiconductor manufacturers. Moreover, they contend that the recent TurboDisc and AII acquisitions will enable management to leverage VECO's existing sales force to sell more efficiently, and thus cut costs. Finally, management has emphasized that the recent acquisitions have increased the company's market diversification and reduced business volatility, presumably implying that more favorable valuations should result.

In our opinion, the bullish arguments are optimistic and reflect an analytical lack of understanding how VECO's products are used in the company's customer segments, as we explain in detail below. As a result, we think that the company will be unable to meet the bulls' estimates of sales and EPS in 2004 and 2005. Since the shares trade today at 24X "street" EPS estimate for 2005, which we consider unachievable, and 6X tangible book, there exists, in our view, an attractive opportunity to sell shares.

2. Bulls contend that a major disk drive investment cycle should begin in 2004 and continue in 2005 as a result of the industry's move to 100 GB and 120 GB drives, which require higher areal density per platter. This, according to the bulls, should drive purchases of VECO's deposition and etch tools. However, in our view an analysis of historical segment data and recent comments from Seagate, Maxtor, and Western Digital do not support this argument.

As Table 3 shows, VECO's data storage revenues fell steeply in the second half of 2002. Both revenues and bookings have been sluggish since, despite the introduction of 80GB drives in the second half of 2002 and their increased production throughout 2003.

Table 3: VECO's data storage revenues for the past six quarters

All amounts in $000	Q1 02	Q2 02	Q3 02	Q4 02	Q1 03	Q2 03	Q3 03
Data storage revenue	28,900	30,100	16,200	21,300	19,100	24,400	19,300
Data storage bookings	24,000	24,200	19,900	17,800	29,700	19,400	21,200

Source: Company reports

According to bullish "street" analysts, disk drive makers will start transitioning to 100 GB and 120 GB drives starting in 2004. These drives will require higher areal density per platter than the current 80 GB/platter, which the bulls claim should resuscitate data storage revenues. However, comments from both Seagate and Maxtor on their respective recent conference calls persuade us that this transition will occur later than the bulls anticipate.

Both companies noted that there is currently a significant amount of 40 GB and 80 GB drive inventory in the channel, and hoped that industry players (Seagate, Maxtor, Western Digital and Hitachi) would act rationally and reduce production. Should this happen, the extra capacity in the industry would obviate the need for any transition to more advanced technologies.

Even if the industry did not cut production, the ensuing lower prices could lead to a longer than expected life cycle for these products, especially the 40 GB capacity, which was the "most popular capacity, by far" in Q4 03, according to Western Digital. Maxtor estimated that 40 GB accounted for 60% of drives shipped in Q4 03. Western Digital's CEO also said that "he would wonder and doubt that 80 GB would surpass 40 GB" in shipments in Q1 04. He added that "customers are buying existing capacity points much longer than they ever did, which would indicate to us that when 80 does become the largest capacity selling, it's going to be a product of great interest for quite some time."

These company management comments appear to validate the contention of an investment bank's report on the disk drive sector, which claims that the life cycle of the current 80 GB/platter would be longer than those of previous technologies because 80 GB/platter technology can be used to create 40 GB drives (with one head) or 80 GB drives (with two heads). The 40 GB/platter technology held the desktop "sweet spot" for about eight quarters, according to the report's author, and he expects the 80 GB/platter technology to hold the "sweet spot" for longer than that.

Therefore, given that the 80GB/platter technology entered volume production in mid-2003 and that the current "sweet spot" of the market is 40 GB, which utilizes only one side of an 80 GB platter, the transition to 100 GB/platter technology could happen as much as a year later than the bulls' expectations. Since VECO's process equipment orders pick up primarily when there is a transition to newer technology, we estimate that data storage revenue in 2004 could be well below what is anticipated by the "street".

3. Bulls are also excited by the prospect of semiconductor manufacturers employing multiple AFMs inside fabrication facilities for 90 nm production monitoring. Our research indicates that utilization of AFMs for manufacturing analysis is very unlikely in the foreseeable future.

In recent conference calls, VECO management has indicated that semiconductor manufacturers could up their AFM usage from 1-2 per fab to as many as 7-10 per fab, especially for 90 nm production monitoring. Obviously, if this were to happen, it would significantly boost VECO's AFM revenues. Many of the "street" bulls have taken management's words at face value, and cite the potential AFM penetration scenario as one of the reasons to invest in VECO shares.

Based on our understanding of the use of AFMs in the fab as well as conversations with industry sources, we think that the kind of AFM penetration projected by VECO management is unlikely to occur anytime soon. First, the throughput of AFMs is very slow, which may be tolerable for process characterization but is unsuitable for volume production. Second, we spoke with TSMC, which is planning to ramp up 90 nm production in the second half of 2004 in Fab 12, and learned that all planned capital expenditures were for production tools, with the exception of inline analysis tools from KLA-Tencor. Moreover, an AFM vendor source told us that Intel, which entered volume 90 nm production late in 2003 in three fabs, does not have a single in-fab automated AFM. Therefore, it appears to us that the level of AFM penetration predicted by VECO management, if it ever happens, would be well into the future.

We also examined VECO's AFM revenues and bookings since the beginning of 2002. Most chipmakers started their 90 nm process characterization work in 2002 and 2003. As Table 4 indicates, there appears to be little correlation between these efforts and VECO's AFM revenues and orders.

Table 4: VECO's AFM revenue and bookings

All amounts in $000	Q1 02	Q2 02	Q3 02	Q4 02	Q1 03	Q2 03	Q3 03
AFM revenue	28,700	28,700	32,800	27,000	28,000	27,900	25,200
AFM bookings	20,000	33,000	31,400	32,900	22,000	24,900	27,300

Source: Company reports

Interestingly, management and the "street" bulls are now positioning the AFM/SPM business as a capacity play. However, in July 2002, during VECO's Q2 02 conference call, in response to a question about the immunity of VECO's AFM business to economic downturns, the company's CEO said, "… I would say we're a technology company. We do not sell a lot of capacity equipment …"

Finally, we note that while VECO and Seiko may have had the semiconductor AFM/SPM market to themselves for the last few years, competition from Asia is emerging. SPIA, a Korean company founded by a scientist who worked in the original AFM development group at Stanford, is planning to introduce SPMs with 200 mm and 300 mm wafer holders at prices 20%-30% lower than VECO's. SPIA already supplies AFMs to LCD makers such as Samsung and LG.

4. Some bulls posit that the acquisition of Emcore's TurboDisc business positions VECO well to participate in the fast-growing LED sector. These proponents appear to forget that TurboDisc has a competitor with a much larger market share, and that the MOCVD business's margins are much inferior to those of VECO's other products.

On November 3, VECO announced that it had acquired Emcore's TurboDisc MOCVD business for $60M in cash, plus a potential $20M cash earnout over two years. The TurboDisc division's primary product is the Ganzilla, a high-throughput LED production reactor that can process as many as 21 2" wafers at a time. Some "street" bulls claim that this acquisition is complementary since VECO already sells MBE equipment for compound semiconductor manufacturing. We think the bulls are expecting too much for the following reasons.

First, MBE systems are used in production of precise heterostructure chips for high-performance applications in telecom and wireless applications. Makers of such chips include Nortel, Lucent, Skyworks, RF Micro Devices, Raytheon, Alcatel, Infineon and Agere. None of these manufacturers make LEDs.

Second, even from an R&D pooling standpoint, which management has claimed as a benefit of the acquisition, we think synergies will be few. Because of the precision of the atom-by-atom or molecule-by-molecule deposition process employed in MBE systems, the techniques used to create good MBE production tools are different from the principles that underlie the manufacture of high volume LED reactors.

Third, while management claimed on the acquisition conference call that TurboDisc has a 51%-52% market share of the market, the latest VLSI market study from VLSI Research (released in May 2003) shows that TurboDisc had only a 25% share in 2002, compared to competitor Aixtron's 67% share. While TurboDisc's share has picked up some in 2003 due to the volume introduction of Ganzillas, our sources tell us that Aixtron's share is still twice that of TurboDisc. Aixtron's high volume LED reactor, the AIX2600 G3 Planetary reactor can process up to 35 2" wafers at a time.

Finally, TurboDisc's gross margins are well below those of VECO's other businesses. In the latest quarter, TurboDisc's gross margin was 20%, compared to VECO's gross margin of 48%. Table 5a shows TurboDisc's quarterly results for the past fiscal year (ended September 30, 2003), while Table 5b shows annual results for the past four fiscal years.

Table 5a: TurboDisc's FY 03 operating performance

All amounts in $000, except units shipped	FQ1 03	FQ2 03	FQ3 03	FQ4 03
Revenue	13,842	10,777	15,145	12,917
MOCVD production systems shipped	7	5	6	9
COGS	8,986	7,186	10,028	10,345
Gross margin	35%	33%	34%	20%
R&D	1,332	1,359	1,340	1,742
SG&A	2,359	2,519	2,350	2,248
Operating Expenses	12,677	11,064	13,718	14,335
Operating Profit	1,165	(287)	1,427	(1,418)

Source: Emcore Corp. filings

Table 5b: TurboDisc's annual operating performance: FY 00 to FY 03

All amounts in $000, except units shipped	F2000	F2001	F2002	F2003
Revenue	65,788	131,141	35,878	52,681
MOCVD production systems shipped	47	89	17	27
ASP ($M)	n/a	1.2	1.4	1.4
COGS	37,775	72,725	25,650	36,545
Gross Profit	28,013	58,416	10,228	16,136
Inventory charge	-	-	4,200	-
Gross margin (excluding charge)	43%	45%	40%	31%
R&D	n/a	11,821	12,878	5,773
SG&A	n/a	15,748	15,534	9,476
Impairment & Restructuring	n/a	-	5,085	-
Operating Expenses	n/a	100,294	59,147	51,794
Operating Profit	n/a	30,847	(23,269)	887

Source: Emcore Corp. filings

5. VECO's market diversification strategy may have reduced the impact of individual sector volatility on the company's results. However, it has also resulted in decreasing or stagnant revenues for eight consecutive quarters.

VECO's management has claimed that the recent acquisitions will enable the company to better weather downturns since not all of the company's customer base is likely to get hit at the same time. According to management, this should reduce the volatility of VECO's financial results. While it was not explicitly stated, we think management is making a pitch to the investment community for a higher valuation that is associated with more stable revenue and profit trends.

Unfortunately for management, the diversity of its business has also prevented VECO from growing at all during the weakness of 2001 and 2002 as well as during the recovery in 2003. In Table 6a, we show VECO's quarterly revenues since 2001. Unlike other semiconductor and data storage market players, the company's revenues have seen no recovery, and are well below year ago levels.

Table 6a: VECO quarterly revenues: Q1 01 to Q3 03

$000	Q1 01	Q2 01	Q3 01	Q4 01	Q1 02	Q2 02	Q3 02	Q4 02	Q1 03	Q2 03	Q3 03
Sales	125,386	112,095	114,276	97,494	80,149	77,339	72,753	68,644	65,779	73,449	63,144

Source: Company reports

In Table 6b, we show VECO's revenue breakdown by customer segment since the beginning of 2002. We note that while semiconductor revenue has improved somewhat in 2003, the increases have not been sufficient enough to make up for the sharp decreases in data storage and telecom revenues since the beginning of 2002. We are therefore skeptical that VECO could turn into a growth machine, as the bulls expect, while avoiding the volatility associated with its technology businesses.

Table 6b: VECO quarterly revenues by customer segment: Q1 02 to Q3 03

All amounts in $000	Q1 02	Q2 02	Q3 02	Q4 02	Q1 03	Q2 03	Q3 03
Semiconductor revenue	6,200	9,300	13,000	10,300	11,200	10,800	8,700
Data storage revenue	28,900	30,100	16,200	21,300	19,100	24,400	19,300
Telecom wireless revenue	17,100	10,800	9,400	6,900	6,600	12,300	7,700
Scientific research revenue	28,000	27,100	34,100	30,200	28,900	26,000	27,400

Source: Company reports

6. Recent Results and Financial Condition.

VECO missed on both revenue and bookings in Q3 03. Revenue was $63.1M, compared to the "street" estimate of $68M, while orders were $64M, $4M below "street" expectations. Management attributed the misses to customer push outs in data storage and telecom and the company's inability to fill late data storage orders quickly. VECO missed the "street's" bookings estimates for the second quarter in a row.

VECO reported a loss of 7 cents on a GAAP basis. The company, however, chooses to highlight pro forma numbers, which exclude amortization and restructuring charges. On that basis, the company earned 3 cents. DSO rose by 5 days sequentially to 90 days, while inventory turns fell sequentially from 2X to 1.5X.

At September 30, 2003, VECO had $228M in cash and long-term investments, and $230M in debt. Of the debt, $220M is in the form of 4.125% subordinated convertible notes issued by the company in December 2001, due in December 2008, with a conversion price of $38.51.

In November 2003, the company completed two acquisitions for $120M in cash, leaving VECO with $122M in net debt. Based on management's comments that net tangible assets from the acquisitions totaled $45M, we estimate tangible book after the acquisitions to be $150M, or $5 per share.

7. Financial Assumptions.

a. Revenues.

Estimating VECO segment revenues on a quarterly basis is difficult because of the lumpiness of the business, which in turn is caused by the high price of the products VECO sells relative to quarterly revenues. Thus, while we do show quarterly segment revenue estimates below in Table 8a, we note that quarterly revenues could vary significantly (as much as 10%) from our estimates. We think that the annual revenue projections shown in Table 8b present a better picture of our expectations of VECO's performance.

According to a recent Lehman Brothers industry survey, semiconductor capital budgets are expected to grow by 32% Y/Y in 2004. As we mentioned previously, we do not expect VECO's AFM business to participate to the same extent in a semiconductor recovery since theAFMs are slow throughput diagnostic tools. We assume that the growth rate for VECO's semiconductor segment will be in the 25%-30% range, and choose the midpoint as the growth rate. In 2005, we assume that the business with grow an additional 15%.

In data storage, we assume a slight recovery in revenues in the second half as some 100 GB development work commences. We do not anticipate volume 100 GB production until late 2005, due to the expected long life of the 80 GB/platter technology, and project 9% and 10% increases in 2004 and 2005, respectively.

In telecom, we assume a modest 7% growth in 2004, based on recent orders (Table 7) and the Telecommunications Industry Association market forecast, followed by 25% growth in 2005. In scientific research, we project 9% growth in 2004, again based on recent order trends, and 10% in 2005.

For TurboDisc, LTM sales ending September 30, 2003 were $53M. Since a large number of Ganzillas were ordered in Emcore's FY 03 (ending September 30, 2003) which will qualified in the coming months, we project little change in 2004 revenues and 10% growth in 2005.

Finally, for AII, LTM revenue for the period ending September 30, 2003 was $33M, with Seagate accounting for 90% of sales. On the AII acquisition call, VECO management noted that it expects 2004 sales for AII to be $45M. Our estimate for 2004 is the same, and we assume 10% growth in 2005.

We note that the "street" does not provide revenue breakdown by segment. However, one bullish report did provide estimates for TurboDisc and AII revenues in 2004 and 2005. The author of this report projects TurboDisc and AII revenues of $48M and $42M, respectively, in 2004, and $55M and $52M in 2005. Our estimates are more favorable to VECO.

Table 7: VECO quarterly bookings by segment in 2003

	Q1 03	Q2 03	Q3 03
Semiconductor booking	11,800	7,300	9,400
Data storage booking	29,700	19,400	21,200
Telecom wireless booking	10,500	9,700	6,900
Scientific research booking	20,700	27,600	26,500

Source: Company reports

Table 8a: Quarterly revenue projections

All amounts in $000	Q4 03E	Q1 04E	Q2 04E	Q3 04E	Q4 04E
Semiconductor revenue	10,000	11,500	13,000	13,500	14,000
Data storage revenue	20,000	21,000	22,000	23,000	24,000
Telecom wireless revenue	8,000	8,500	9,000	9,500	10,000
Scientific research revenue	28,000	29,000	30,000	30,500	31,000
TurboDisc revenue	8,000	12,500	13,000	13,500	14,000
AII revenue	1,500	10,000	11,000	12,000	12,000
Total revenue	75,500	92,500	98,000	102,000	105,000

Source: OWS estimates

Table 8b: Annual revenue projections

All amounts in $000	2002	2003E	2004E	2005E
Semiconductor revenue	38,800	40,700	52,000	59,800
Data storage revenue	96,500	82,800	90,000	99,000
Telecom wireless revenue	44,200	34,600	37,000	46,250
Scientific research revenue	119,400	110,300	120,500	132,550
TurboDisc revenue	-	8,000	53,000	58,300
AII revenue	-	1,500	45,000	49,500
Total revenue	298,900	277,900	397,500	445,400

Source: OWS estimates

By way of comparison with our estimates in 8b, total "street" consensus revenue projections are $423M for 2004 and $478M for 2005.

b. Gross Margin

VECO's Q3 03 gross margin was 48%, due to a stronger mix of high margin metrology tools. For Q4 03, the company suggested that margins would be about 46% due to a higher proportion of lower margin process equipment in sales. Since issuing that guidance, the company has made two acquisitions where the sales have even lower gross margins. Therefore, we estimate Q4 03 gross margin to be 45%, and project that gross margin would rise to 47% by the end of 2004, as a result of cost cutting, and remain at that level in 2005. However, as Table 9 shows, past gross margin performance has been erratic. We note that the "street" gross margin estimates are in line with ours.

Table 9: VECO historical gross margins

	Q1 02	Q2 02	Q3 02	Q4 02	Q1 03	Q2 03	Q3 03
Gross margin	42.1%	45.5%	47.2%	18.3%	47.4%	44.6%	48.0%

Source: Company reports

c. Operating expenses.

On the AII acquisition call, VECO management said that its R&D target was 13% of sales. In Q3 03, VECO spent 17.4% on sales. Therefore, we anticipate that the company would continue to reduce R&D as a fraction of sales to the desired level. SG&A was 25.1% of sales in Q3 03, down 100 basis points Y/Y. We estimate that the company will continue to drive down SG&A expenses as a fraction of revenue, and that these expenses would be 23.5% of revenue by the end of 2004.

The two new acquisitions have associated operating expenses of $27M. Management indicated that it could take out about $5M from those costs, which implies that long term operating expenses should increase by about $22M from the Q3 03 level of $27M. In our projections, we have been very generous to the company and have increased operating expenses by only $10M.

d. Other expenses.

VECO has said that it would take a $6M-$11M R&D write-off in Q4 03. We estimate $8M. The company also said that amortization expenses would rise by $5M-$7M per year. We estimate that net interest expense, which was $2.05M in Q3 03, would rise to $2.1M from Q4 03 onwards due to lower interest income. We assume a tax rate of 35%, in accordance with management guidance.

8. Valuation.

Based on the above assumptions, we obtain our estimates for revenue and pro forma EPS (which excludes amortization and restructuring expenses), which are listed in Table 10. Also shown are the corresponding "street" estimates.

Table 10: "Street" vs. OWS estimates for VECO

All amounts in $MM, except for EPS	"Street" estimate	OWS estimate
2003 revenue	275.9	277.9
2004 revenue	422.6	397.5
2005 revenue	478.3	445.4
2003 pro forma EPS	0.10	0.10
2004 pro forma EPS	0.69	0.51
2005 pro forma EPS	1.35	0.73

Sources: "Street" reports, OWS estimates

The primary reason for the large differences in our EPS estimates versus those of the "street", in addition to revenue differences, is that the "street" assumes extremely aggressive cost reductions. According to the "street", SG&A as a fraction of sales should drop to 18%-20% by the end of 2004 from 25.1% in Q3 03. But VECO's recent performance does not bear this out. The company took restructuring charges through most 2002 and 2003, and the impact on operating expenses hasn't been anywhere as dramatic as that expected by the bulls, as shown in Table 11.

Table 11: VECO restructuring actions and impact on operating expenses

Amounts in $000	Q1 02	Q2 02	Q3 02	Q4 02	Q1 03	Q2 03	Q3 03
Restructuring charges	837	1,050	83	9,278	668	789	1,804
Employees laid off	60	30	40	180	20	50	50
Job functions	Mgmt, Mfg	Mgmt, Mfg	Mgmt, Mfg	Prod, Purch, Eng, Svc, Sales & Mktg	Mgmt, Mfg	Mgmt, Adm, Mfg	Mgmt, Adm, Mfg
R&D as % of sales	16.6%	18.0%	19.1%	18.5%	17.5%	15.0%	17.4%
SG&A as % of sales	23.8%	25.0%	26.2%	26.9%	26.7%	25.3%	25.1%

Source: Company reports

Valuing VECO on free cash flow is difficult since the company hasn't generated any free cash in four of the last five calendar years, as shown in Table 12. However, we attempted to value VECO using our estimate of 2005 free cash flow. Our pro forma EPS estimate for 2005 is $0.73, which translates to a pro forma net income of $22M. Assuming depreciation of $12M, slightly below the $14M in 2002 due to lower capital expenditures in the last two years, and adding back after tax interest expense, we estimate 2005 enterprise cash flow before capex to be $40M. We estimate that 2005 capex will be $10M, compared to $9M in 2003, due to the recent acquisitions. Thus, we estimate free cash flow of $30M to the enterprise. If we give VECO a 20X enterprise value multiple, assume that net debt in 2005 would be reduced to $100M, and subtract this figure from the enterprise value, we obtain an equity value of $500M or a per share value of $17.

Table 12: VECO free cash flow: 1998-Q3 03

	1998	1999	2000	2001	2002	9 mo 2003
Net Income	13,637	21,981	(17,880)	10,309	(123,730)	(4,947)
Depreciation & Amortization	7,179	9,881	15,473	22,654	27,929	17,169
Non-Cash Merger	3,544	-	19,044	16,965	114,664	-
Deferred Taxes	(1,335)	(2,726)	(22,036)	(13,406)	(22,643)	(6,941)
Benefit Stock Option	3,189	1,911	28,988	6,195	1,173	152
Discontinued Operations	-	1,734	-	2,123	346	-
Write Off Purchased Technology	-	2,474	-	8,200	-	-
Accounting Change	-	-	18,382	-	-	-
Other Adjustments	-	(664)	(47)	481	613	-
Accounts Receivable	3,577	(29,550)	(26,219)	18,748	24,990	8,001
Inventories	(8,343)	(12,583)	(24,952)	(8,399)	3,553	2,619
Accounts Payable	(8,529)	3,192	7,439	(14,972)	(6,960)	989
Accrued Expenses, Deferred Profit & Other Current Liabilities	(9,711)	2,924	9,785	(21,224)	(28,081)	(10,313)
Other Working Capital Items	308	10,492	2,328	(5,931)	5,989	135
Cash from Operating Activities	3,516	9,066	10,305	21,743	(2,157)	6,864
Capital Expenditures	(13,127)	(12,187)	(17,803)	(19,180)	(8,644)	(6,464)
Free Cash Flow	(9,611)	(3,121)	(7,498)	2,563	(10,801)	400

Source: Company reports

In their valuation of the shares, the "street" bulls take varying approaches. Table 13 shows some of those techniques. We find it interesting that only one of the three "street" bulls uses an EPS multiple approach, and even then the analyst employs pro forma EPS numbers. If we use this analyst's approach, our fair value for VECO shares would be $15, which is also 3X tangible book. Another way to value the shares could be to apply the Nasdaq estimated P/E multiple of 42X to our estimate of VECO's 2004 pro forma EPS of $0.51 yields a share value of $21.

Table 13: "Street" valuations of VECO shares

Target price	Technique
$35	21X 2005 pro forma EPS of $1.35
$41	3X FY 04 sales
$33	2.5X FY 04 sales

Source: "Street" reports

We'll set a price target of $18, which is the average our three valuations. We think this is quite favorable to the company, since an LBO investor might consider the company to be worth less. To illustrate, we expect VECO's 2004 revenue to be about $400M, with a 50-50 split between process equipment and metrology (because of the TurboDisc and AII acquisitions, both of which are process equipment related). In the past three years, the highest EBITA margins have been 14% for process equipment and 20% for metrology (Table 2). If we apply these margins to our revenue assumptions for the segments, we end up with EBITA of $28M for process equipment and $40M for metrology. If we apply a 7X multiple (the average LBO multiple in 1H 03) to the cyclical process equipment side and a 10X multiple to the stable cash flow generating metrology business, we obtain an enterprise value for the company of $596M. Subtracting net debt of $122M gives us an equity value of $474, or $16 per share.

9. Financial Projections.

a. Quarterly Projections

	Q1 03	Q2 03	Q3 03	Q4 03E	Q1 04E	Q2 04E	Q3 04E	Q4 04E
Total Revenue	65,779	73,449	63,144	75,500	92,500	98,000	102,000	105,000
Cost of Sales	34,573	40,655	32,845	41,525	50,413	52,920	54,570	55,650
SG&A	17,585	18,568	15,874	18,498	22,431	23,520	24,225	24,675
R&D	11,488	11,039	10,970	12,609	14,800	14,700	14,280	13,650
Amortization	3,142	3,159	3,262	4,000	4,500	4,500	4,500	4,500
Other, Net	(873)	(22)	146	-	-	-	-	-
Merger/Restructure	668	789	1,804	-	-	-	-	-
R&D Write-off	-	-	-	8,000	-	-	-	-
Total Operating Expense	66,583	74,188	64,901	84,631	92,144	95,640	97,575	98,475
Operating Income	(804)	(739)	(1,757)	(9,131)	356	2,360	4,425	6,525
Interest, Net	(1,767)	(1,886)	(2,050)	(2,100)	(2,100)	(2,100)	(2,100)	(2,100)
Income Before Taxes	(2,571)	(2,625)	(3,807)	(11,231)	(1,744)	260	2,325	4,425
Income Taxes	(874)	(1,490)	(1,692)	(3,931)	(610)	91	814	1,549
Income After Taxes	(1,697)	(1,135)	(2,115)	(7,300)	(1,133)	169	1,511	2,876
Diluted Shares	29,224	29,247	29,262	29,300	29,600	29,750	29,900	30,000
Diluted EPS	(0.06)	(0.04)	(0.07)	(0.25)	(0.04)	0.01	0.05	0.10
Pro forma EPS	0.03	0.03	0.03	0.02	0.06	0.10	0.15	0.19

Y/Y change

	Q1 03	Q2 03	Q3 03	Q4 03E	Q1 04E	Q2 04E	Q3 04E	Q4 04E
Total Revenue	-18%	-5%	-13%	10%	41%	33%	62%	39%
Cost of Sales	-26%	-4%	-14%	-26%	46%	30%	66%	34%
SG&A	-8%	-4%	-17%	0%	28%	27%	53%	33%
R&D	-14%	-21%	-21%	-1%	29%	33%	30%	8%
Amortization	-16%	0%	2%	25%	43%	42%	38%	13%
Other, Net	n/a	-92%	-19%	-100%	-100%	-100%	-100%	n/a
Merger/Restructure	-20%	-25%	2073%	-100%	-100%	-100%	-100%	n/a
R&D Write-off	n/a	n/a	n/a	n/a	n/a	n/a	n/a	-100%
Total Operating Expense	-20%	-6%	-13%	-15%	38%	29%	50%	16%
Operating Income	-75%	-63%	-15%	-70%	n/a	n/a	n/a	n/a
Interest, Net	19%	28%	48%	27%	19%	11%	2%	0%
Income Before Taxes	-46%	-24%	10%	-66%	-32%	n/a	n/a	n/a
Income Taxes	-45%	-20%	24%	-75%	-30%	n/a	n/a	n/a
Income After Taxes	-46%	-30%	2%	-57%	-33%	n/a	n/a	n/a
Diluted Shares	1%	1%	0%	1%	1%	2%	2%	2%
Diluted EPS	-47%	-30%	1%	-57%	-34%	n/a	n/a	n/a
Pro forma EPS	n/a	76%	n/a	n/a	120%	254%	431%	1034%

As % of sales

	Q1 03	Q2 03	Q3 03	Q4 03E	Q1 04E	Q2 04E	Q3 04E	Q4 04E
Total Revenue	100%	100%	100%	100%	100%	100%	100%	100%
Cost of Sales	53%	55%	52%	55%	55%	54%	54%	53%
SG&A	27%	25%	25%	25%	24%	24%	24%	24%
R&D	17%	15%	17%	17%	16%	15%	14%	13%
Amortization	5%	4%	5%	5%	5%	5%	4%	4%
Other, Net	-1%	0%	0%	0%	0%	0%	0%	0%
Merger/Restructure	1%	1%	3%	0%	0%	0%	0%	0%
R&D Write-off	0%	0%	0%	11%	0%	0%	0%	0%
Total Operating Expense	101%	101%	103%	112%	100%	98%	96%	94%
Operating Income	-1%	-1%	-3%	-12%	0%	2%	4%	6%
Interest, Net	-3%	-3%	-3%	-3%	-2%	-2%	-2%	-2%
Income Before Taxes	-4%	-4%	-6%	-15%	-2%	0%	2%	4%
Income Taxes	-1%	-2%	-3%	-5%	-1%	0%	1%	1%
Income After Taxes	-3%	-2%	-3%	-10%	-1%	0%	1%	3%

b. Annual Projections.

	2002	2003E	2004E	2005E
Total Revenue	298,885	277,872	397,500	445,400
Cost of Sales	183,042	149,598	213,553	236,062
SG&A	75,899	70,525	94,851	104,669
R&D	53,889	46,106	57,430	62,356
Amortization	13,323	13,563	18,000	18,000
Other, Net	(284)	(749)	-	-
Merger/Restructuring	11,248	3,261	-	-
R&D Write-off	-	8,000	-	-
Asset Impairment	99,663	-	-	-
Total Operating Expense	436,780	290,303	383,834	421,087
Operating Income	(137,895)	(12,431)	13,666	24,313
Interest, Net	(6,002)	(7,803)	(8,400)	(8,500)
Income Before Taxes	(143,897)	(20,234)	5,266	15,813
Income Taxes	(20,513)	(7,987)	1,843	5,535
Income After Taxes	(123,384)	(12,247)	3,423	10,278
Disposal	(346)	-	-	-
Diluted Shares	29,096	29,258	29,813	30,000
Diluted EPS	(4.24)	(0.42)	0.11	0.34
Pro forma EPS	(0.44)	0.10	0.51	0.73

Y/Y change

	2002	2003E	2004E	2005E
Total Revenue		-7%	43%	12%
Cost of Sales		-18%	43%	11%
SG&A		-7%	34%	10%
R&D		-14%	25%	9%
Amortization		2%	33%	0%
Other, Net		164%	-100%	n/a
Merger/Restructuring		-71%	-100%	n/a
R&D Write-off		n/a	-100%	n/a
Asset Impairment		-100%	n/a	n/a
Total Operating Expense		-34%	32%	10%
Operating Income		-91%	n/a	78%
Interest, Net		30%	8%	1%
Income Before Taxes		-86%	n/a	200%
Income Taxes		-61%	n/a	200%
Income After Taxes		-90%	n/a	200%
Disposal		-100%	n/a	n/a
Diluted Shares		1%	2%	1%
Diluted EPS		-90%	n/a	198%
Pro forma EPS		n/a	397%	44%

As % of sales

	2002	2003E	2004E	2005E
Total Revenue	100%	100%	100%	100%
Cost of Sales	61%	54%	54%	53%
SG&A	25%	25%	24%	24%
R&D	18%	17%	14%	14%
Amortization	4%	5%	5%	4%
Other, Net	0%	0%	0%	0%
Merger/Restructuring	4%	1%	0%	0%
R&D Write-off	0%	3%	0%	0%
Asset Impairment	33%	0%	0%	0%
Total Operating Expense	146%	104%	97%	95%
Operating Income	-46%	-4%	3%	5%
Interest, Net	-2%	-3%	-2%	-2%
Income Before Taxes	-48%	-7%	1%	4%
Income Taxes	-7%	-3%	0%	1%
Income After Taxes	-41%	-4%	1%	2%
Disposal	0%	0%	0%	0%