UNITED STATES SECURITIES AND EXCHANGE COMMISSION

WASHINGTON, DC 20549

FORM 8-K

CURRENT REPORT

PURSUANT TO SECTION 13 OR 15(d) OF THE **SECURITIES EXCHANGE ACT OF 1934**

Date of report (Date of earliest event reported): August 10, 2010

Mercury Computer Systems, Inc. (Exact Name of Registrant as Specified in Charter)

Massachusetts (State or Other Jurisdiction of Incorporation)

000-23599 (Commission File Number)

04-2741391 (IRS Employer Identification No.)

201 Riverneck Road, Chelmsford, Massachusetts 01824 (Address of Principal Executive Offices) (Zip Code)

Registrant's telephone number, including area code: (978) 256-1300

Not Applicable (Former Name or Former Address, if Changed Since Last Report)

Check the appropriate box below if the Form 8-K filing is intended to simultaneously satisfy the filing obligation of the registrant under any of the following provisions (see General Instruction A.2.
Written communications pursuant to Rule 425 under the Securities Act (17 CFR 230.425)
Soliciting material pursuant to Rule 14a-12 under the Exchange Act (17 CFR 240.14a-12)
Pre-commencement communications pursuant to Rule 14d-2(b) under the Exchange Act (17 CFR 240.14d-2(b))
Pre-commencement communications pursuant to Rule 13e-4(c) under the Exchange Act (17 CFR 240.13e-4(c))

Item 7.01 Regulation FD Disclosure.

The management of Mercury Computer Systems, Inc. ("Mercury") will present an overview of Mercury's business on August 10, 2010, at the Jefferies 6th Annual Global Industrial and A&D Conference in New York, New York. Attached as Exhibit 99.1 to this Current Report on Form 8-K (the "Report") is a copy of the slide presentation to be made by Mercury at the conference.

This information is being furnished pursuant to Item 7.01 of this Report and shall not be deemed to be "filed" for the purposes of Section 18 of the Securities Exchange Act of 1934, as amended, or otherwise subject to the liabilities of that section and will not be incorporated by reference into any registration statement filed by Mercury under the Securities Act of 1933, as amended, unless specifically identified as being incorporated therein by reference. This Report will not be deemed an admission as to the materiality of any information in this Report that is being disclosed pursuant to Regulation FD.

Please refer to page 1 of Exhibit 99.1 for a discussion of certain forward-looking statements included therein and the risks and uncertainties related thereto, as well as the use of non-GAAP financial measures included therein.

Item 9.01 Financial Statements and Exhibits.

(d) Exhibits

Exhibit No.

Description

99.1 Presentation materials dated August 10, 2010.

SIGNATURES

Pursuant to the requirements of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned thereunto duly authorized.

Dated: August 10, 2010 MERCURY COMPUTER SYSTEMS, INC.

By: /S/ ROBERT E. HULT

Robert E. Hult
Senior Vice President, Chief Financial
Officer, and Treasurer

Exhibit Index

Exhibit No. 99.1

Description

Presentation materials dated August 10, 2010.





Jefferies Annual Global Industrial and A&D Conference

Mark Aslett - President & CEO Bob Hult - SVP, CFO

August 10, 2010

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Forward-Looking Safe Harbor Statement

This presentation contains certain forward-looking statements, as that term is defined in the Private Securities Litigation Reform Act of 1995, including those relating to anticipated fiscal 2010 business performance and beyond. You can identify these statements by our use of the words "may," "will," "should," "plans," "expects," "anticipates," "continue," "estimate," "project," "intend," and similar expressions. These forward-looking statements involve risks and uncertainties that could cause actual results to differ materially from those projected or anticipated. Such risks and uncertainties include, but are not limited to, general economic and business conditions, including unforeseen weakness in the Company's markets, effects of continued geopolitical unrest and regional conflicts, competition, changes in technology and methods of marketing, delays in completing engineering and manufacturing programs, changes in customer order patterns, changes in product mix, continued success in technological advances and delivering technological innovations, continued funding of defense programs, the timing of such funding, changes in the U.S. Government's interpretation of federal procurement rules and regulations, market acceptance of the Company's products, shortages in components, production delays due to performance quality issues with outsourced components, the inability to fully realize the expected benefits from acquisitions or delays in realizing such benefits, challenges in integrating acquired business subschieving anticipates lynergies and difficulties retaining eyocustomers These isks and uncertainties also include such additional risk factors as are discussed in the Company's recent filings with the U.S. Securities and Exchang@ommissioincludingsAnnuaReportnForm10-KfortheyearendedJune30,2009TheCompanyautionseaders not to place undue reliance upon any such forward-looking statements, which speak only as of the date made. The Company undertakes no obligation to update any forward-looking statement to reflect events or circumstances after the date on which such statement is made.

Use of Non-GAAP (Generally Accepted Accounting Principles) Financial Measures

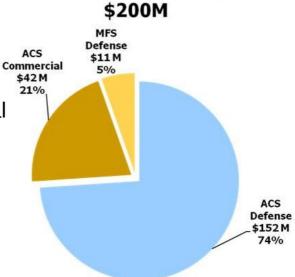
In addition to reporting financial results in accordance with generally accepted accounting principles, or GAAP, the Company provides non-GAAP financial measures adjusted to exclude certain specified charges, which the Company believes are useful to help investors better understand its past financial performance and prospects for the future. However, the presentation of non-GAAP financial measures is not meant to be considered in isolation or as a substitute for financial information provided in accordance with GAAP. Management believes these non-GAAP financial measures assist in providing a more complete understanding of the Company's underlying operational results and trends, and management uses these measures, along with their corresponding GAAP financial measures, to manage the Company's business, to evaluate its performance compared to prior periods and the marketplace, and to establish operational goals. A reconciliation of GAAP to non-GAAP financial measures discussed in this presentation is contained in the Company's most recent earnings release, which can be found on our website at www.mc.com/mediacenter/pressreleaseslist.aspx.

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Mercury is a best-of-breed provider of application ready ISR subsystem solutions

- Founded in 1981
- HQ in Massachusetts;
 R&D in MA, VA, AL
- 523 employees
- Leading provider of commercial high-performance signal, image and sensor processing
- Focused on growing defense ISR market
- FY2010 revenues of \$200M
- NASDAQ: MRCY



FY10 Mercury Revenue

Note: \$200M Total Revenue includes \$5M interco eliminations

Phases of Mercury's transformation

Refocus the Business

- Rebuild the executive team
- Focus and align the business on the economic core
- Develop a long term compelling vision
- Focus on high value growth markets
- Divest non-core assets

Improve Operations

- Refresh product portfolio
- Improve core profitability
- Improve operations and working capital
- De-leverage
- Develop organic growth drivers

Grow the Business

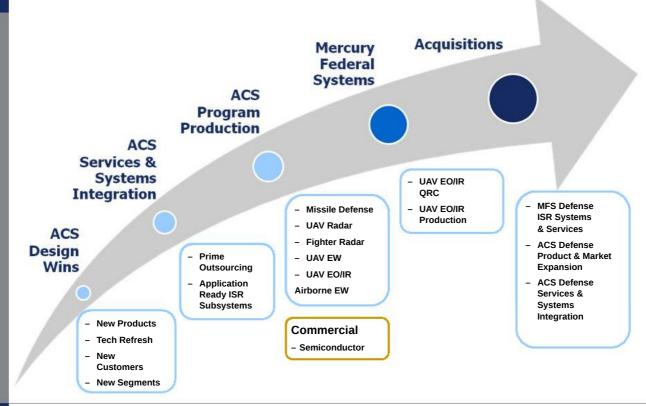
- Increase the number and value of design wins
- Grow Services and Systems Integration
- Grow ISR Federal services business
- Acquire growth oriented ISR companies to scale the core and complete the vision

3 Overlapping Phases - Parallel Execution

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5 defense growth drivers



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Success in semiconductor equipment – position controller for lithography

Application Requirement:

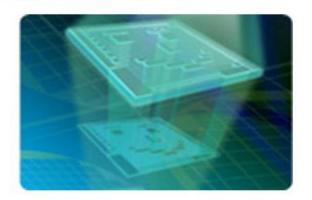
 Low-latency, deterministic processing for precision control in Stepper/Scanners

Initial Deal:

- \$10M pre-production orders booked and partially shipped
- Starting to receive production orders
- Integrated platforms for production (immersion/EUV, new/upgrades)

Advanced processing technology:

· AdvancedTCA utilizing serial RapidIO



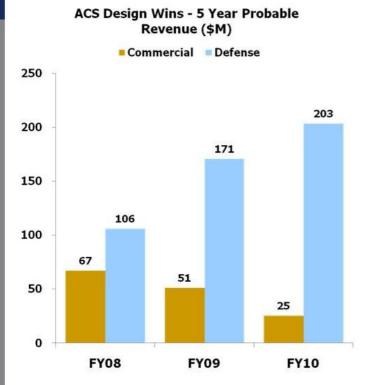
Total Opportunity Potential: ~\$100M over 5 years

Note: Potential is 5 year probable value based on customer-supplied information at time design win awarded. Actual program value may be higher or lower

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ACS 5-year design win value CAGR 15% FY08-10 Defense CAGR 38%



 $\label{Note:Potential} \textbf{Note:} \ \ \textbf{Potential} \ \ \textbf{is 5} \ \ \textbf{year} \ \ \textbf{probable} \ \ \textbf{value} \ \ \textbf{based} \ \ \textbf{on} \ \ \textbf{customer-supplied} \ \ \textbf{information} \ \ \textbf{at time} \ \ \textbf{design} \ \ \textbf{win} \ \ \textbf{awarded}. \ \ \textbf{Actual} \ \ \textbf{program} \ \ \textbf{value} \ \ \textbf{may} \ \ \textbf{be} \ \ \textbf{higher} \ \ \textbf{or} \ \ \textbf{lower}.$

Defense Highlights

- Aegis Naval BMD, C4I
- Patriot Missile Defense
- BAMS –Airborne SIGINT, Radar
- ASIP Airborne SIGINT
- JCREW –Ground SIGINT
- SEWIP Naval SIGINT
- FAB-T Satcomm
- Cobra Ball EO/IR
- SSEE(F) –Naval SIGINT
- · Next Gen Aerial Persistent ISR

Commercial Highlights

- ASML –Semiconductor
- Artiza 4G Test
- · Hughes Satellite Comms
- Rapiscan Baggage Scanning

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AEGIS BMD radar processing

- Selected for BMD Radar
 - Most powerful deployed embedded computer for digital beam-forming
 - Extend to Radar Control System
- Addressable market 60 ships out of 92
 - Plan of Record for ship upgrade:



2011	2012	2013	2014	2015	Total
6	6	6	6-8	6-8	30-34

- Additional 8 ships to be built
- Upside with sales and additional ships in out years

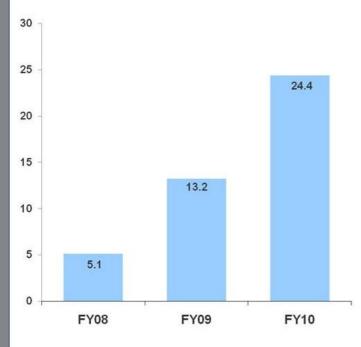
Total 5 year opportunity: \$100M

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Services and Systems Integration delivered 119% revenue CAGR FY08-FY10

ACS Services and Systems Integration Revenue \$M



- 85% revenue growth FY10
 - Beginning FY11 backlog \$5.7M
- Expands addressable market
- Outsourcing partner to Defense Primes given acquisition reform
- Best-of-breed application ready ISR subsystem solutions
- Services led engagement leading to long-term platform production annuity streams
- Get paid to do engineering work previously expensed and leverage output

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Success in Services & System Integration – Radar Digital Processor

Project Requirement:

 Phased Array Radar for Ground Missile Defense (FMS)

Initial Deal:

- \$12M engineering services and system integration
- \$6M production order (1 country)



Advanced processing technology:

OpenVPX™embedded computing

Future Opportunity Potential: \$12M total production for next 2 countries; ~15-20 countries expected to follow

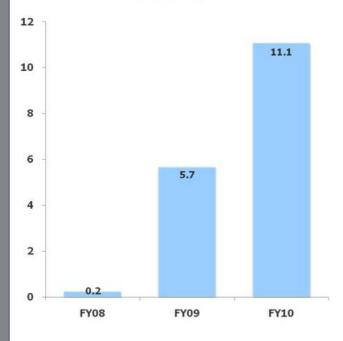
Note: Potential is 5 year probable value based on customer-supplied information at time design win awarded. Actual program value may be higher or lower

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Mercury Federal Systems (MFS) delivered strong revenue growth since FY08 startup

Mercury Federal Systems Revenue \$M



- 95% revenue growth FY10
 - Beginning FY11 backlog \$2.7M
- DCAA auditable Defense services
- Can perform classified work
- Next-generation persistent ISR program driving growth
- Best-of-breed, ISR subsystem architect, developer & integrator (sensing thru exploitation)
- Leverages application ready ISR subsystem solutions from ACS
- Transition ISR related intellectual property from government labs
- Current Headcount 12

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MFS success story - Wide Area Airborne Surveillance

Project Requirement:

 Concurrent near real-time situational awareness for MQ-9 Reaper UAV

Initial Deal:

- \$10M bookings
- 1/2 hardware / software
- 1/2 engineering services





Advanced processing technology:

• Embedded GPUs w/IO

Total Opportunity Potential: ~ \$20M

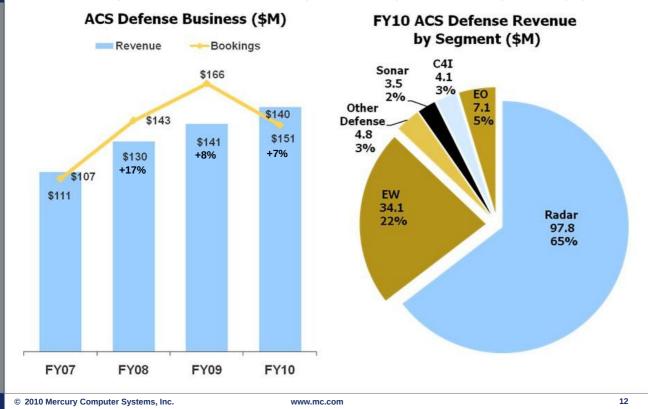
Note: Potential is 5 year probable value based on customer-supplied information at time design win awarded. Actual program value may be higher or lower

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Strength in ACS defense markets

• Radar (32% CAGR FY07-10) and EO (29% CAGR) driving growth



Key defense platforms and programs driving growth

Global Hawk Predator/Reaper Rivet Joint Gorgon Stare F-16 F-35 JSF BAMS MESA P8-MMA MP-RTIP





Aegis

RDP - Ground Missile

Defense Radar

THAAD

Representative Program List

JCREW

Software Defined Jammer





Guardrail

SSEE(F)

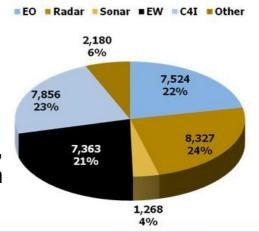
CADF

Deepwater

Military electronics is a market sweet spot

- Retrofit and upgrades remain strong for legacy programs
- Increased need for EW; intelligence, surveillance, reconnaissance assets
- Networked nodal platforms, time to information
- Next-gen onboard processing, exploitation and dissemination architecture critical

World Defense Electronics Funding Available to the US FY10 \$M Total > \$34B



\$90B or 27% of the cumulative military electronics market spend over the next 10 years will be available for new primes

Sources: The Military Electronics Briefing, 2008 Ed., The TEAL Group, Frost & Sullivan, U.S C4ISR Market 2007

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To the warfighter, time to information is critical to address the growing gap between:

What's collected?

100TB per mission





What's actionable?

What's analyzed?

100GB per mission

For decision makers who need timely, actionable, and relevant information









Last 18 hours



Recent minutes



Real-time

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Airborne ISR R&D costs

Signal Processing <i>l</i> Systems Integration		Platform	Sensor	Datalink	Ground Station	Warfighter Terminals	Broadcast Provision
1993	10%	40%	30%	5%	15%	5	
2008	45%	10%	15%	10%	10%	5%	5%



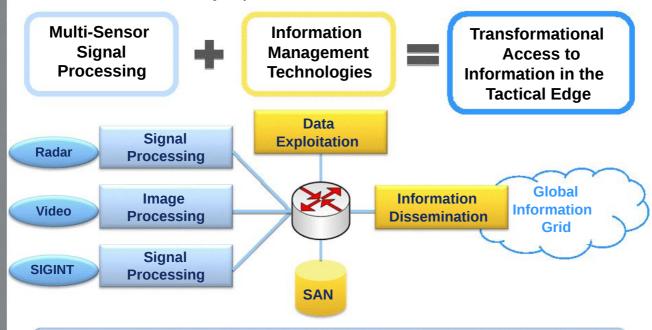
Source: DoD Budget Request FY93 and FY2008

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Mercury's new Converged Sensor Network™ (CSN™) vision for persistent ISR

A revolutionary open architecture that combines



Become the government's trusted partner for next-generation ISR platform signal processing and computing

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Government/DoD frustration leads to defense procurement reform

Today's Model

- Government frustrated with current model
- Platform-centric approach
- Proprietary closed system architectures
- Significant cost overruns
- Significant schedule slips

Emerging Model

- Best-of-breed model emerging
- More commercial items
- Open platform-independent architectures
- QRC –rapid deployment, lower cost and risk
- Likely to occur for signal processing and computing

Budget pressure and significant schedule slippage is leading to Defense procurement reforms that could benefit Mercury

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Positioned for growth

- Focused on growing ISR market segment strong position on important, well funded defense programs
- Outsourcing partner to the primes best-of-breed application ready ISR subsystem solutions provider
- Unique capabilities in commercial high-performance embedded signal, image and sensor processing
- Government amenable business model aligned with expected defense procurement reform
- Delivering strong organic growth in defense with robust target business model
- · Will pursue complementary ISR acquisitions to scale

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Financial Overview

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FY07 - FY10: Restored profitability & growth

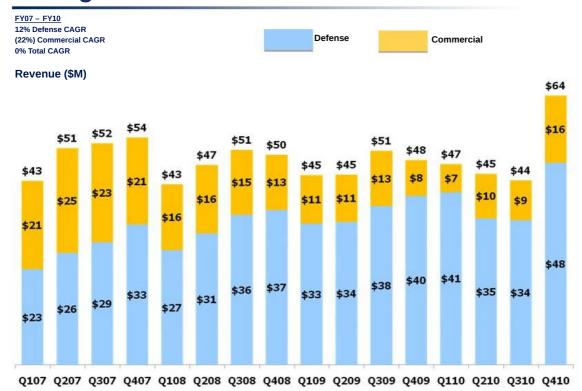
GAAP	FY07	FY08	FY09	FY10
Revenue (\$M)	224	210	189	200
Gross Margin % Revenue	55.6%	60.1%	55.8%	56.3%
Operating Expenses (\$M)	165	164	98	95
Op Income (\$M) % Revenue	(41) (18.1%)	(38) (18.1%)	8 4.1%	17 8.7%
EPS (Continuing)	\$(1.78) (\$1.6		\$0.35	\$1.22
Adj EBITDA (\$M) % Revenue	(2) (1.0%)	13 6.0%	23 12.1%	30 14.9%
Operating Cash Flow (\$M)	\$(10)	\$14	\$11	\$16
# Employees	729	670	517	523

Note: All historical income statement figures are as reported in the Company's earnings press release at the end of the applicable fiscal year and have not been restated for operations that have been discontinued subsequent to that time.

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Strong defense revenue



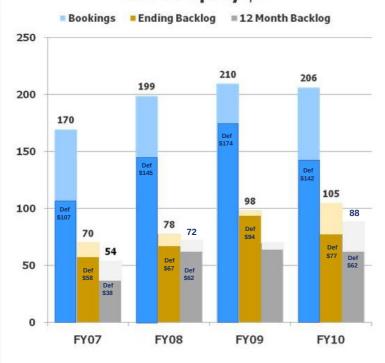
Note: All historical figures adjusted for discontinuedoperations

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Growth in bookings and backlog

Total Company \$M



Note: Historical figures adjusted for discontinued operations

FY07-FY10:

- Total Company
 - 7% Bookings CAGR
 - 14% Backlog CAGR
 - 18% 12-mo CAGR
- Defense
 - 10% Bookings CAGR
 - 10% Backlog CAGR
 - 18% 12-mo CAGR

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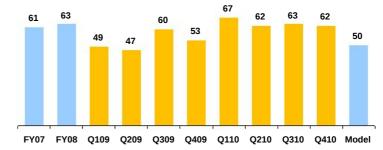
Improved working capital efficiencies

- Supply chain transformation
 - Operational efficiencies
 - Manufacturing lead times
 - Cost of quality
 - Competitive advantage for Mercury and customers
 - Inventory reduced \$11M from Q3 FY08 to Q4 FY10



Inventory

- · Customer satisfaction
 - Blue chip customers
 - End-of-quarter shipment skew

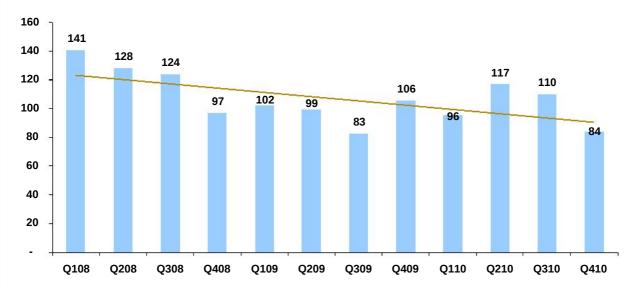


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Much improved cash conversion cycle

Cash Conversion Trend (days)

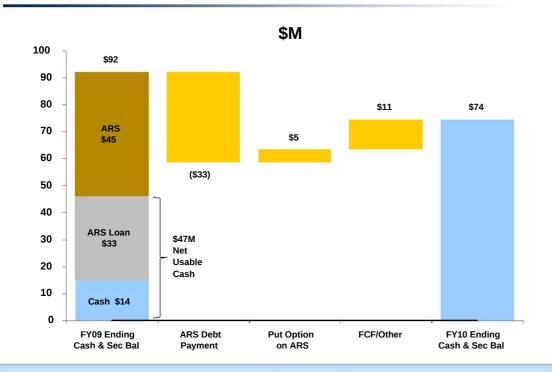


Note: Cash conversion calculation = DSO's + Inventory Days - A/P Days

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Repaid debt, settle ARS's resulting in improved cash balance



Zero short term and long term debt

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Robust target business model

GAAP	MFS Proforma	ACS Proforma	Target Business Model
Revenue	100%	100%	100%
Gross Margin	20%	55%	54+%
SG&A	12%	23%	Low-mid 20's
R&D	0%	19%	High Teens
Income from Operations	~8%	~13%	12-13%
Adj EBITDA	~11%	~18%	17-18%

Notes: Target Business Model assumes organic growth. ACS /MFS approx 90%/10% revenue split Adj EBITDA adjusts for Depreciation 2-3% of revenue and Stock Based Comp 2-3% of revenue

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Last 12 quarter's revenues and EPS exceeded or met the top end of guidance

2008	Q1		Q2		Q3		Q4	
	Reported	Guidance	Reported	Guidance	Reported	Guidance	Reported	Guidance
Revenue (\$M)	49.2	48.0	52.6	51.0	56.5	53.0-55.0	55.2	53.0-56.0
EPS (\$)	0.09	(0.08)	0.04	(0.05)	0.04	(0.04)-0.00	0.01	(0.05)-0.01
2009	Q1		Q2		Q3		Q4	
Revenue (\$M)	49.1	47.0-49.0	50.7	47.0-49.0	50.6	48.0-50.0	48.4	46.0-48.0
EPS (\$)	0.07	(0.07)-(0.03)	0.03	(0.05)-0.00	0.20	0.05-0.09	0.13	0.05-0.08
2010	Q1		Q2		Q3			Q4
Revenue (\$M)	47.4	43.0-45.0	45.2	40.0-42.0	43.6	41.0-43.0	63.6	58.0-60.0
EPS (\$)	0.19	0.03-0.08	0.08	(0.08)-(0.04)	0.16	(0.15)-(0.11)	0.77	0.25-0.28

Note:

Non-GAAF

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Q1'11 Guidance

Quarter Ending September 30, 2010					
	Low	High			
Revenues	\$48	\$50			
GAAP EPS	\$0.03	\$0.06			
Adj EBITDA	\$4.5	\$5.8			
Note - Adj EBITDA Adjustments:					
Net Income	0.6	1.5			
Stock compensation	1.7	1.7			
Taxes	0.4	0.9			
Amortization	0.3	0.3			
Depreciation	1.5	1.5			
Adj EBITDA	4.5	5.8			

Financial summary

- Returned to profitability and top line growth
- 7% bookings and 14% backlog growth (FY07 FY10 CAGR)
- Improved working capital efficiencies
- Healthy cash flows from operations
- Strong balance sheet with zero debt
- Closing on robust target business model 17-18% Adj. EBITDA
- \$100M shelf registration effective

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NASDAQ: MRCY





Appendix

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GAAP to Non-GAAP Reconciliation (\$M)

	Year Ended June 30, 2007 ⁽¹⁾	Year Ended June 30, 2008 ⁽¹⁾	Year Ended June 30, 2009 ⁽²⁾	Year Ended 30-Jun-10
GAAP net income (loss)	(\$37.8)	(\$35.4)	(\$1.3)	\$28.4
Adjustment to exclude stock-based compensation	10.6	10.4	4.6	4.0
Adjustment to exclude inventory write-down	0.0	0.8	0.0	0.0
Adjustment to exclude in-process research and development	3.1	0.0	0.0	0.0
Adjustment to exclude amortization of acquired intangible assets	7.2	7.3	2.4	1.7
Adjustment to exclude impairment of goodwill and long-lived assets	0.1	18.0	0.0	0.2
Adjustment to exclude restructuring	5.5	5.2	1.7	0.2
Adjustment to exclude gain on sale of long-lived assets	0.0	(3.2)	0.0	0.0
Adjustment for tax impact	5.2	0.2	(5.6)	(17.8)
Non-GAAP net income (loss)	(\$6.2)	\$3.3	\$1.8	\$16.7
djustment to exclude taxes and other income (expense)	7.9	2.8	0.2	0.9
Ion-GAAP Income (loss) from operations	(\$14.1)	\$0.5	\$1.6	\$15.8
GAAP net income (loss)	(\$37.8)	(\$35.4)	(\$1.3)	\$28.4
djustment to exclude loss from disco ops, net of income taxes	(8.9)	(30.0)	(20.3)	0.2
djustment to exclude gain (loss) on sale of disco ops	0.0	(1.0)	11.1	0.1
GAAP net income (loss) from continuing operations	(\$28.9)	(\$4.4)	\$7.9	\$28.1
adjustment to exclude GAAP related items (3)			3.1	(11.7)
Non-GAAP net income (loss) from continuing operations		,	\$11.0	\$16.4
Adjustment to exclude taxes and other income (expense)			5.5	7.1
Non-GAAP Income (loss) from continuing operations)	\$16.5	\$23.5
let income (loss) per share - Diluted - GAAP	(\$1.78)	(\$1.64)	(\$0.06)	\$1.23
Net income (loss) per share - Diluted - Non-GAAP	(\$0.29)	\$0.15	\$0.08	\$0.73
let income (loss) per share - continuing operations - Diluted - GAAP	(\$1.36)	(\$0.21)	\$0.35	\$1.22
let income (loss) per share - continuing operations - Diluted - Non-GAAP	8	-	\$0.49	\$0.71
Veighted average shares - Diluted - GAAP	21.2	21.6	22.4	23.0
Veighted average shares - Diluted - Non-GAAP	21.2	22.0	22.4	23.0

Notes:

1)FY07 – FY08 income statement figures are as reported in the Company's earnings press release at the end of the applicable fiscal period 2)FY09 income statement figures are restated for discontinued operations as reported 3)GAAP related items: stock comp, amortization, restructuring and adjustment to taxes