



# **Understanding Industry**

**-- A Unique Perspective --**

**AFLCMC Focus Week**

***-- 24 March 2014 --***

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# Creation of the Military Industrial Complex

"Until the latest of our world conflicts, the United States had no armaments industry. American makers of plowshares could, with time and as required, make swords as well. But we can no longer risk emergency improvisation of national defense. We have been compelled to create a permanent armaments industry of vast proportions.

... In the councils of government, we must guard against the acquisition of unwarranted influence, whether sought or unsought, by the military-industrial complex."

**President Dwight D. Eisenhower's  
Farewell Address to the Nation  
January 17, 1961**



# AF Acquisition Continuous Improvement Plan 2.0

-- 22 June 2012 --

*The Air Force must negotiate better business deals to help control program costs and improve acquisition execution. This can only occur if our makers possess a robust comprehension of business intelligence a solid understanding of our contractors and how they conduct business. The goal is to help Air Force acquisition professionals understand what motivates our industry partners and how to use those motivations to incentivize cost-effective program execution.*

*The Air Force will enhance the business intelligence and business acumen of the acquisition workforce and develop infrastructure, tools and techniques to help them negotiate better business deals.*

  
Michael B. Donley  
Secretary of the Air Force

  
Norton A. Schwartz  
General, USAF  
Chief of Staff



# Some Things to Consider In...

Defense Finances and Wall Street

Sequestration and the Defense Industry

- Cash holding

- Revenue and profits

- Cost cutting

- Supplier base

- Consolidation

The Defense Industry and You

- Costs and rates

- Bidding (from the ground floor perspective)

- Scheduling

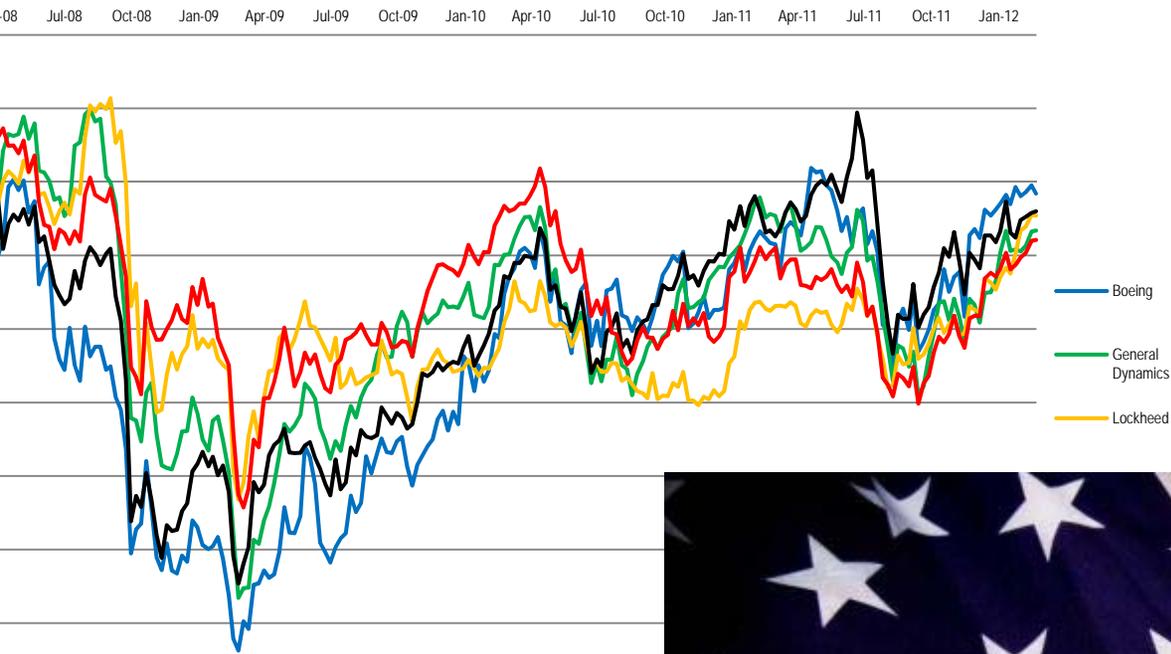
- Continuous Improvement

- Teaming relationships

Thoughts on what you can do



# Defense Finances and Wall Street



Income Statement

ACQ 315:  
Understanding Industry

ROA

Flow



# Sequestration and the Defense Industry



# Cash Holding

## Defense Spending Cuts Shift Industry's Balance

*Investor's Business Daily – Fri, Jun 21, 2013 4:45 PM EDT*

**"The defense companies have been hoarding cash**, cutting their overhead back, and gotten themselves leaner in anticipation of a downturn," Kiley said. **"They are very strong cashwise**, but have held back on research and development. There is sort of an uncertainty regarding sequester.

## Obama's fiscal 'perfect storm' has firms hoarding cash

*Washington Examiner -- April 13, 2012*

"It's a fiscal perfect storm," said Sean O'Keefe, the former Pentagon comptroller and NASA administrator who is now CEO of EADS North America, a major commercial aerospace company that does some Pentagon work. His commendation: **"suspend investment...the only productive course would be to stand back** and see ultimately where the breakage occurs." ... **"Companies are holding off investment decisions** pending the outcome of this perfect storm period when all these fiscal challenges are timed to occur." ... retired Air Force Chief of Staff Gen. Ronald G. Gobleman, now a defense industry executive, said **firms should hoard cash** and make investments "outside of defense."

## "Flush with Cash" Has New Meaning

*CFO.com – May 1, 2012*

Defense firms in particular improved their free cash-margin performance over the year. Free cash margin for the defense industry rose to 10.14% for the 12 months ended December 2011, which is up from 5.53% in September 2011 and 4.20% over the 12 months ended Q4 2010. The increase in defense cash flows comes despite an overall reduction in government spending. The Department of Defense recorded \$528.2 billion for its discretionary base budget for 2011, which is down from \$537.2 billion in 2010. **"The defense contractors are doing a remarkable job generating cash in the face of a**



# Cash Flow



Cash flow is the heartbeat of every business



Cash flow is NOT profitability



Cash flow IS the ability to meet financial obligations

**Did you know?**

The number one cause of business failure is  
**poor cash flow**



# Revenue and Profits

## Defense Spending Cuts Shift Industry's Balance

*Investor's Business Daily – Fri, Jun 21, 2013*

Defense contractors have had a rougher go of it. Northrop Grumman, Lockheed Martin and General Dynamics are producing consistent revenue and profit gains.

## Sequester Sinks In, Extent of Fallout Unknown

*National Defense – August 13, 2013*

"I'm still waiting for the other shoe to drop," said Tom Captain, leader of the aerospace and defense sector at Deloitte. Remarkably, the revenue statements of major U.S. defense firms have not yet reflected the draconian sequester cuts. Because firms have been slashing costs for the past two years, they continue to make profits.

## The Sequester Will Lift, Not Cut, Defense Costs

*National Journal – July 30, 2013*

An Aerospace Industries Association survey released last week, 83 percent of the trade group's members say net cuts in the last two years have reduced their sales and profits; more than 60 percent say their production because contracts were delayed or postponed; and nearly 50 percent report hiring freezes and

## Defense firms weathering budget cuts more easily than expected

*Washington Post – July 23, 2013*

Defense contractors are weathering the federal budget sequester far more easily than they projected, in part because they have gradually eliminated jobs over the past few years in anticipation of spending cuts Lockheed Martin, world's largest defense contractor, reported Tuesday that its profit rose 10 percent, to \$859 million, during the second quarter even as revenue dipped slightly.

## Defense Industry Profits Are Not Impressive

*Forbes – July 24, 2013*

... reporting second-quarter results, industry seems to be performing better than expected ... sales are up, but profits are not. This looks like one of those times when revenues are a leading indicator and returns are a leading indicator. With the whole sector heavily dependent on a part of the federal budget subject to legislatively



# Industry Motivation

Raytheon missed its sales projections in 1999 and stock prices dropped from over \$60 per share to under \$20 in a matter of weeks.

Industry is motivated to meet or exceed its forecasts and avoid surprises to stakeholders. Shareholder value and company equity is at stake every quarter when earnings are reported.



— = % change in DJIA Stock Prices

— = % change in Raytheon Stock Price



# Budgets and Stock





# Cost Cutting

## Defense firms weathering budget cuts more easily than expected

*Washington Post – July 23, 2013*

Health of industry reflects stealth cost-cutting major contractors embarked on over the past several years. In the past five years, **Lockheed has cut its workforce to 116,000 from 146,000, a 20 percent decline**. Northrop's core workforce dropped to about 81,000, a 16 percent drop; that doesn't include thousands of workers who left when the company spun off its defense unit. Raytheon has cut about 5,000 employees in the past five years, putting it at about 68,000 workers. "More than a decade ago, every one of these companies started doing a series of things that are classic contractor adjustments to changes in the procurement market," said Gordon Adams, a professor at American University. "Every contractor has been **thinning its workforce**, it has been **selling off divisions**, it has been **closing production capacity**, it has been **laying off workers**."

## The Sequester Will Lift, Not Cut, Defense Costs

*National Journal – July 30, 2013*

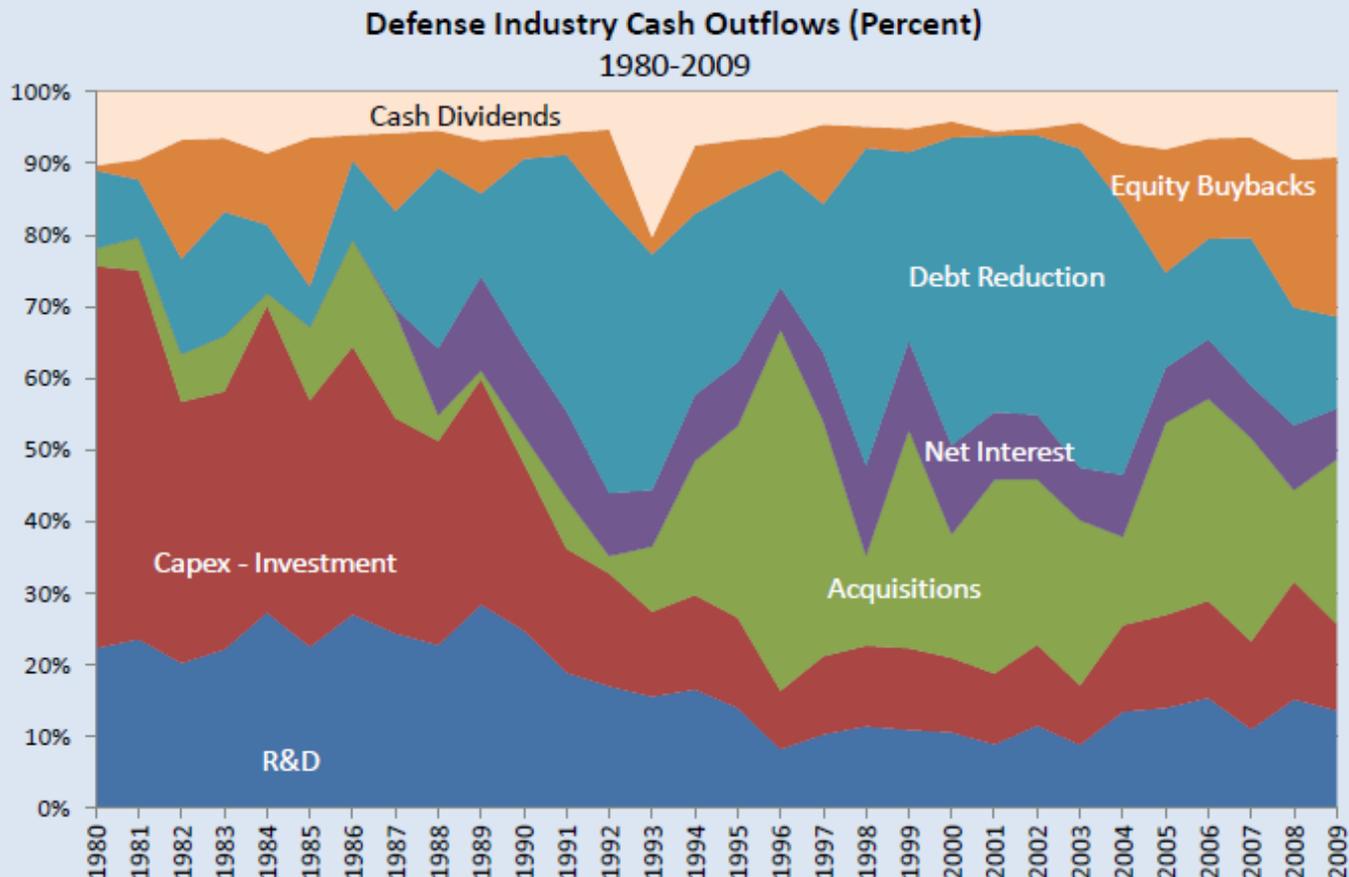
Things have been tough for Pratt's 140 suppliers. They must make up-front investments to buy equipment and test products but don't get paid until their customer buys their goods. And Pratt can no longer guarantee that demand. One company had to build a larger building to help support the engine and other material it sells to Pratt, but, expecting sequester-induced cuts, it had to hire skilled welders and engineers to fill that space for up to a year. Another company **announced the closure of a facility because of the spending cuts**. Roughly one-third of Pratt's small-business suppliers make mostly military equipment. "Obviously, their livelihood is at risk." One subcontractor, New Hampshire Ball Bearings, was counting on the rise of F-35 production just to break even after it lost business from the older fighter jets it served. But NHBB is in a "cautious frame of mind now," says Jim Geary, VP of sales. The company **put off for at least six months the decision to buy grinding equipment it needs**. If business declines, Geary hinted at possible layoffs. "We have to consider whether the workforce is aligned with the needs." If the Pentagon does pare back one-quarter of its F-35 purchase this coming year, Faustson Tool would lose about \$200,000—enough **to preclude buying any more equipment to support the program**. The company has been scaled down. Six years ago, it bought a 17,000-square-foot building to prove it could house the milling machines to meet its needs. The facility sat vacant as Faustson struggled to meet the demand for price reductions from its customer, Ball Aerospace and Technologies, **after the large orders that Ball—and ultimately, Lockheed—had promised never materialized**. Last year, **Faustson put the building up for sale**.

Six years ago, Ball also invested in a new aerospace manufacturing center to support the F-35 and other growing programs. "If the sequester hits all the programs like it's bound to, there's a **probability that facility is going to go underutilized**," Ball's



# Cash Generation and ROIC

Hence the Need To/Focus On Cash Generation To Generate ROIC for Investors (versus just profit)...





# The Supplier Base

## Defense Spending Cuts Shift Industry's Balance

*Investor's Business Daily – Fri, Jun 21, 2013*

**er firms that depend on military spending for their livelihoods might face an especially grim future over the new years.** According to the PwC report, spending cuts will likely **drive some small suppliers out of business.** That in could leave larger companies with "a shortage of critical parts and long lead times to qualify new suppliers." DoD controller Robert Hale voiced similar concerns in recent statements, saying that the \$37 billion in sequestration cuts would **"have a sharp drop" in the number of contractors.**

## Nonchalance About Sequester Causing Frustration in Defense Industry

*National Defense – May 7, 2013*

Small businesses are most definitely feeling the bite, said Tom Lederle, NEST Energy Systems ... "The **majority of businesses being hurt are small.** Big companies slow down hiring or delay research-and-development projects," all businesses don't have the ability to make changes." ... many small business executives were caught unprepared the sudden drop in defense work, and are now **barely hanging on.** Technology firms are especially affected because they are not able to retain skilled workers. "If this goes on much longer, some places will lose their best ... **started redirecting our efforts to commercial buyers.**"

## The Sequester Will Lift, Not Cut, Defense Costs

*National Journal – July 30, 2013*

**sequester will rattle smaller companies** already toughening metals, crafting parts, and writing software for planes that are ready for years. Some of these suppliers, analysts predict, **will leave the defense industry or go out of business.** "With sequestration, what looks like modest cuts at the top of the system, down at the level looks like the difference between life and death," says Loren Thompson, chief operating officer of the Lexington think tank ... "It could be the difference between making and losing money for a small enterprise located far from the Even for those that survive, the cutbacks will likely change the way they build their budgets, **raising costs—at taxpayer expense**

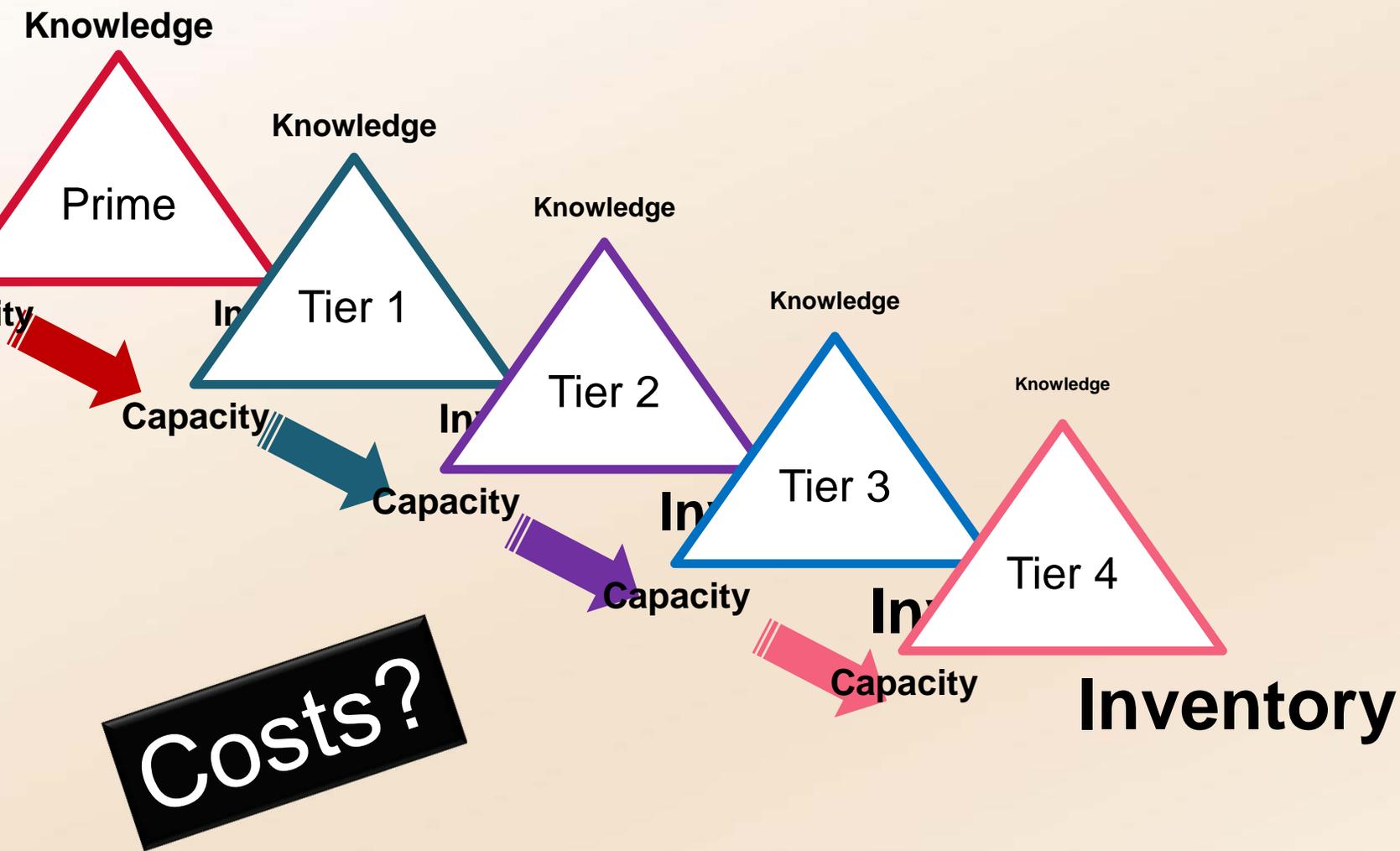
## U.S. Budget Cuts Squeezing Smaller Defense Firms

*Reuters.com – 5 September 2013*

Small companies don't have the same access to capital, they don't have the strong internal financials," Marion Blakey, AIA ... "We've had a couple say that they are going out of business." BAE Systems ... has already stepped in to acquire



# The Lovejoy Model





# Consolidation

## Defense Department Faces 'Hard Choices'

Capital Business – September 2, 2013

sequestration does stay in place, Kendall said, **companies may start to take more serious steps toward consolidation.** Though defense contractors engaged in a flurry of acquisitions and divestitures in the past several years, the year has been far slower. "Industry to some degree is sort of waiting to see," Kendall said. "At some point, people will start to make moves." Still, Kendall showed no indication of loosening the Pentagon's restrictions on consolidation. Top officials have made clear that the **Defense Department would not back further mergers among the largest companies,** as the wave of corporate marriages that occurred in the 1990s. "That doesn't mean there won't be some repositioning of assets," Kendall said last week. **At smaller companies, "I would expect to see more activity."**

## Defense Consolidation: Who Gets Bought First?

Forbes – June 24, 2013

**Largest defense companies** have been planning a long time for this day, **cutting costs and streamlining operations.** Now they are buying back stock and trying to keep dividend yields above 3% so that investors stay engaged. But if interest rates on ultra-safe Treasuries keep rising and sequestration forces the military to carve another \$50 billion out of the budget, **companies may have to do something more strategic. Like merging.**

## Pentagon official sees defense M&A slowed by budget impasse

Reuters – August 28, 2013

Pentagon's top manufacturing official **expects a spate of merger and acquisition activity** - and a doubling of efforts by defense companies to take over U.S. arms makers - **once the uncertain U.S. budget outlook becomes clearer.** Gridlock in Congress on deficit-reduction measures - and the prospect of \$500 billion in additional cuts in military spending, on top of \$487 billion in cuts already planned - have slowed a long-expected consolidation in the defense sector.

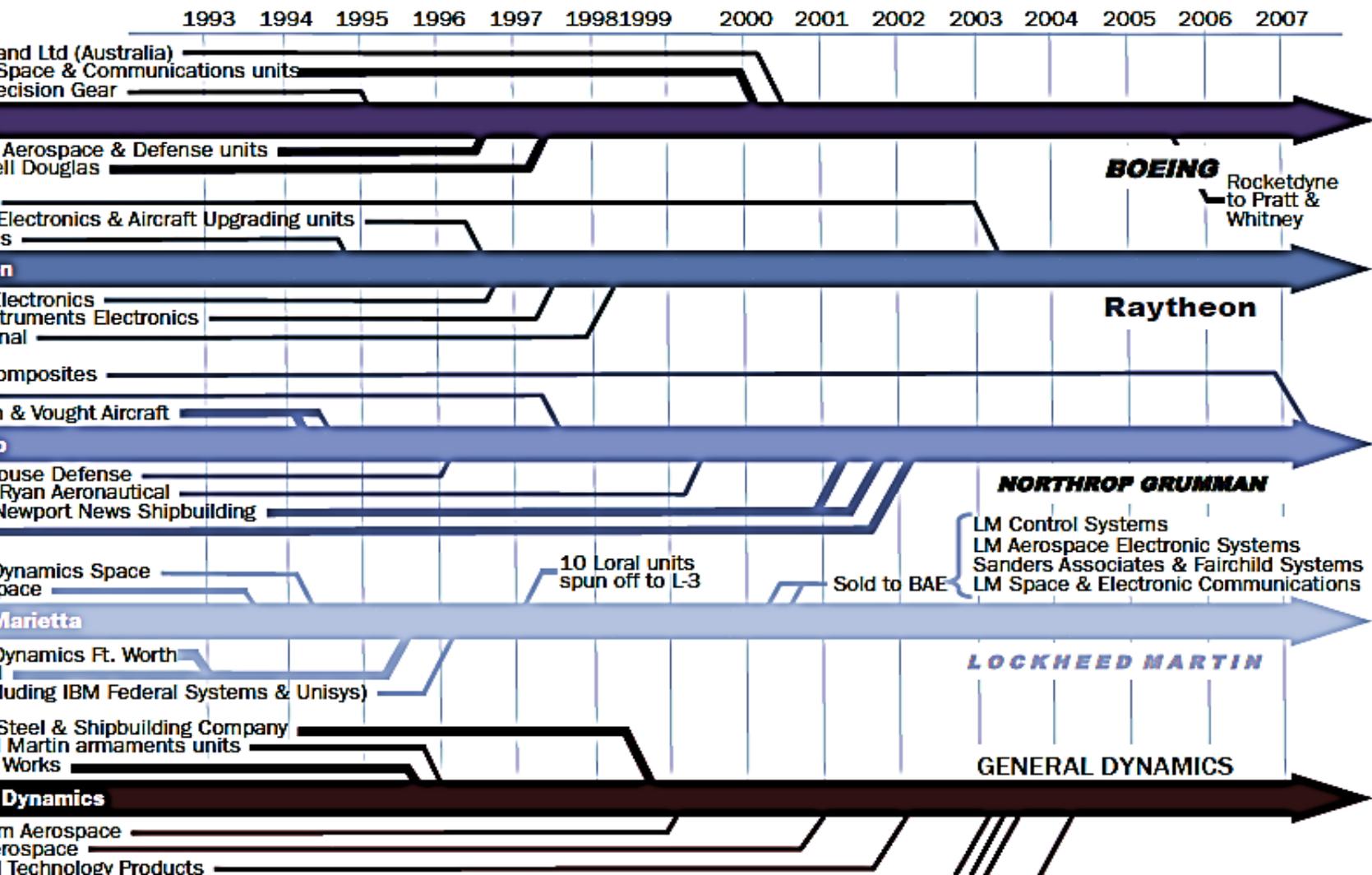
## Defense Industry to See Smaller Mergers

National Defense – April 2013

The failed merger between BAE Systems and EADS, it's likely there will be few "mega-mergers" of large defense contractors in the coming years ... Instead, largest prime contractors will try to diversify their businesses by picking up small or medium-sized companies that do commercial non-defense work or specialize in high-priority defense needs ... "Most of these companies are sitting on record amounts of cash. They've all generated healthy cash flow over the last several years"



# Consolidation from 1993 to 2007





# A Look Ahead to 2014

## After a Tumultuous Year, Can Defense Industry Get Back to Business in 2014?

National Defense – December 2013

The passage of the Bipartisan Budget Act of 2013 has given the defense sector a temporary reprieve. After turbulent cycles in 2012 and 2013, federal appropriations in 2014 and 2015 will stay relatively flat, and Congress is signaling that it will not allow the defense budget to be shut down by acts of brinkmanship.”

Despite facing a 6 percent drop in 2014, the budget bill trims 2014 spending by 1.2 percent from 2013. Under the agreement, 2015 and 2016 budgets will drop slightly in real terms ... But any hope for the end of sequester must be buried .. Rep. Paul Ryan (R-Wisc.), pointed out that 92 percent of the sequester will remain in place

The political paralysis and ensuing budget crises that began in 2011 have taken a toll on procurement programs, and it could be some time before predictability returns to the defense business.”

For the defense industry to return to a more predictable business environment, officials said, buyers and sellers will need to rebuild trust and structured relationships. Tensions have worsened over the past several years as spending plunged and mistrust ensued.”

One source of government-industry mistrust is a belief among contracting officials that prime contractors and their suppliers are inflating prices for overhead expenses.

Another source of government-industry mistrust is a belief among contracting officials that prime contractors and their suppliers are inflating prices for overhead expenses.

Charles R. Davis, military deputy at the office of the assistant secretary of the Air Force for acquisition, said fences need to be mended. “We are very poor on the military acquisition side about understanding the drivers in the business discussion and program initiation timelines are unsustainable ... “The Air Force on average loses between \$200 million and \$600 million of its appropriated budget because of “under execution,” said Davis.

Looking ahead for the future, the defense sector soon has to find ways to stem the brain drain, a crisis that has been predicted for years. “Smart young people don’t want to work in an environment filled with inertia and no ability to stay current and on the cutting edge”

With a budget agreement in place and the prospect of two drama-free fiscal years, defense industry has reason to be optimistic. However, the sector is still in for painful retrenching. Defense and aerospace firms have shed at least 160,000 jobs over the past five



# The Defense Industry and You



# Costs

## Direct vs. indirect costs

- What's driving indirect costs? What about that mandatory "FOD" training?
- CAMs only control direct costs – at mercy of indirect
- Direct on Indirect (DOI) – not a good thing!

## Recurring vs. non-recurring costs

Is reliability and/or maintainability a design priority?

Is producibility a design priority?

Dieting can be very expensive!

Delay and disruption are expensive!

- Lay-offs cost more than you think

Sequestration – what about the business base? What



# Rates

## Indirect cost pools

- Overhead, e.g., Supervision, Engineering, Mfg, Facilities
- G&A, e.g., accounting, legal, HR, executive

Allocation bases – direct costs/hours related to pools\

$$\text{Rate} = \frac{\text{Pool}}{\text{Base}}$$

What are the detriments and benefits to increased direct costs (i.e., more engineering hours than anticipated) on a CPFF contract?

What if another program cuts production in half, or delays R&D?



## Bidding a Job

From Business Development's perspective ...  
conservative or aggressive? Why?

From functional's perspective ... conservative  
or aggressive? Why?

- Historical costs – analogy and /or actuals
- Lot size?
- Learning curve?
- Management challenge?

So, who wins, BD or functional?



# Scheduling

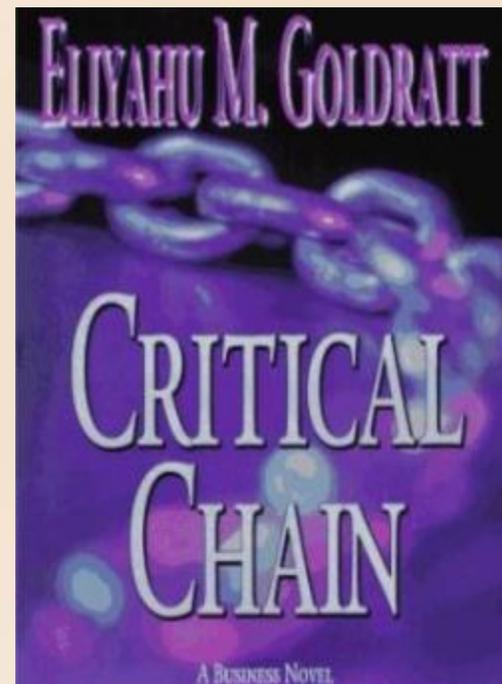
Does your contractor understand their schedule?

Schedule Performance Index (SPI) not enough

- Need IMS and understanding of critical path
- Remember the evils of DOI?

How are schedules developed?

- Traditional – extra fluff? Why?
  - Watch out for Parkinson's Law
- Critical Chain





# Continuous Improvement

## Lean Enterprise

- Reduce waste
- Reduced flow time

## Theory of Constraints

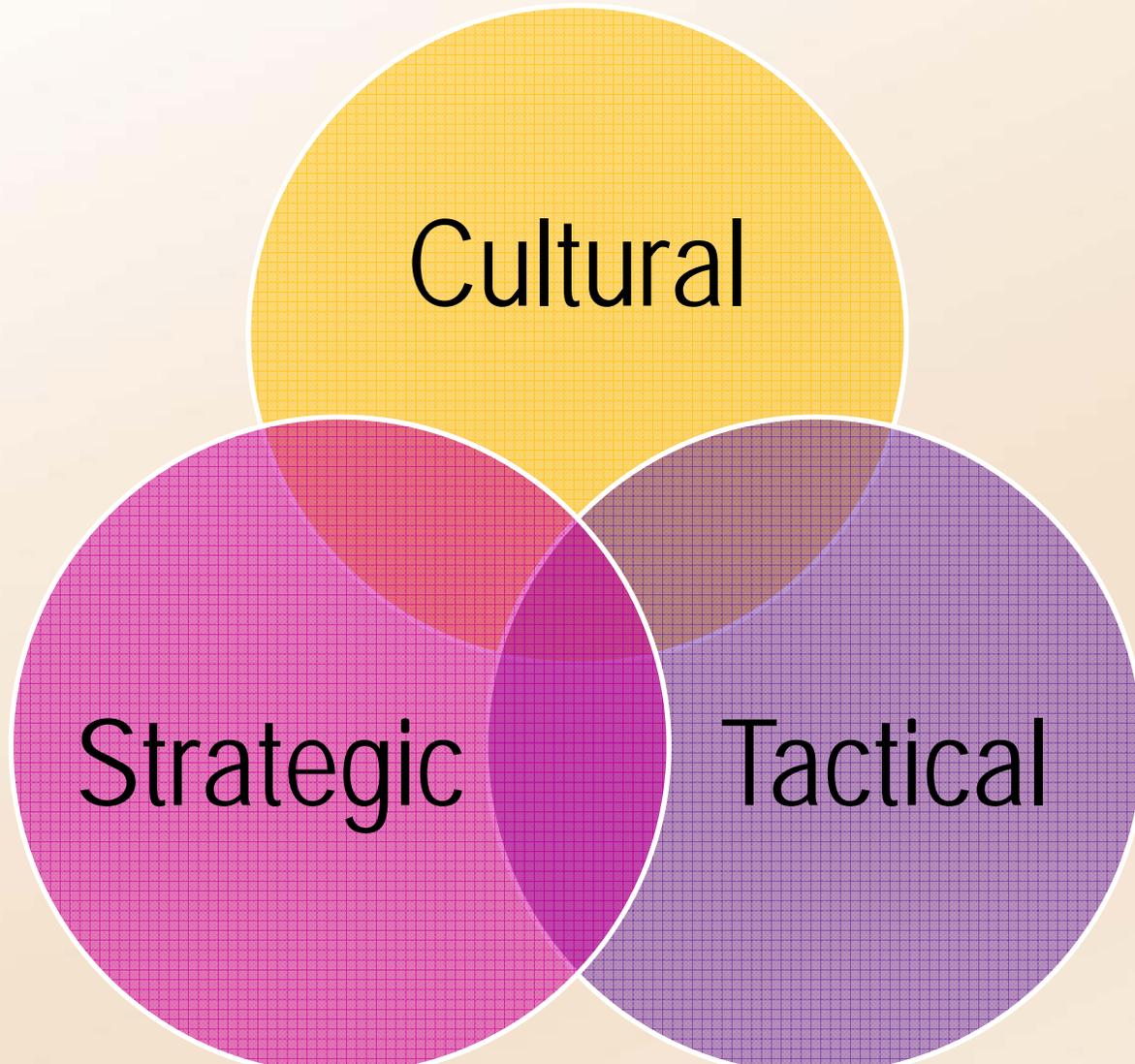
- Manage Constraints
- Fast Throughput

## Six Sigma

- Reduce Variation
- Uniform process output



# Continuous Improvement



Excerpt from Winnie-The-Pooh by A.A. Milne:

Here is Edward Bear, coming downstairs now, *bump, bump, bump*, on the back of his head, behind Christopher Robin. It is, as far as he knows *the only way*, but sometimes he feels that there is another way, if *only he could stop bumping* for a moment and think of it.

**DON'T BE A POOH!!!**

Stop Think and Find a Better Way



# Continuous Improvement

-- *Cultural Things to Look for* --

Are they motivating their employees?

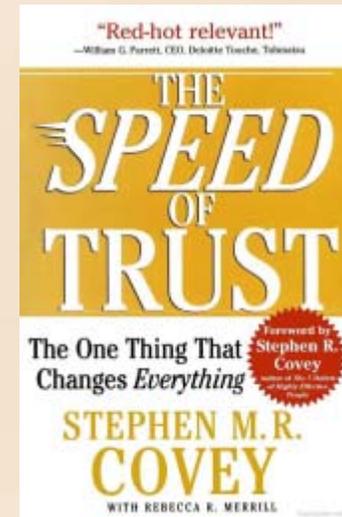
- The "Walk of the Living Dead" aka the "Pentagon Stare"
- Rewards and Recognition
  - Are they better at catching people do things right or wrong?
  - Are their EOM/EOY plaques up-to-date?
  - Achievement Awards/On-the-Spot awards timely?
- Employee Turnover Rates

Customer-focused?

- Internal, as well as external
  - Do they know who their internal customer is? External?
  - Do they treat them like a customer?
- Evidence of who their external customer is?

The Speed of Trust

- Study estimates \$100B spent on oversight with \$20B in unneeded administrative burden





# Continuous Improvement

-- *Strategic Things to Look for* --

S: Safety, Sort, Set, Shine, Standardize, Sustain

- Would you be proud to walk a customer through this facility?

Point of Use

- How much effort is made to ensure the “value-adding person” has everything readily at their disposal?

- Is there a morning “tool train”?

AQS: Feedback and Corrective Action

- Two Whys or Five Whys?

- How will you know?

- Is there a sense of urgency?





# Continuous Improvement

-- Tactical Things to Look for --

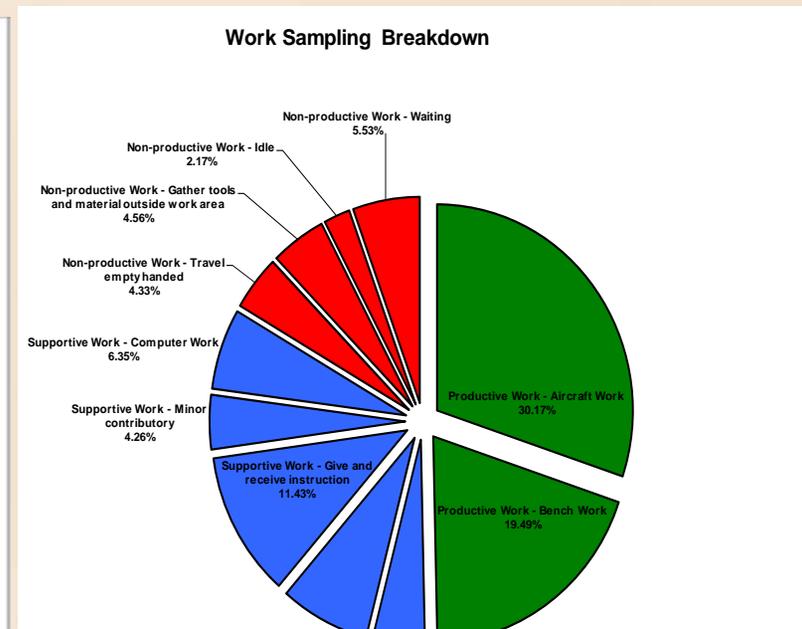
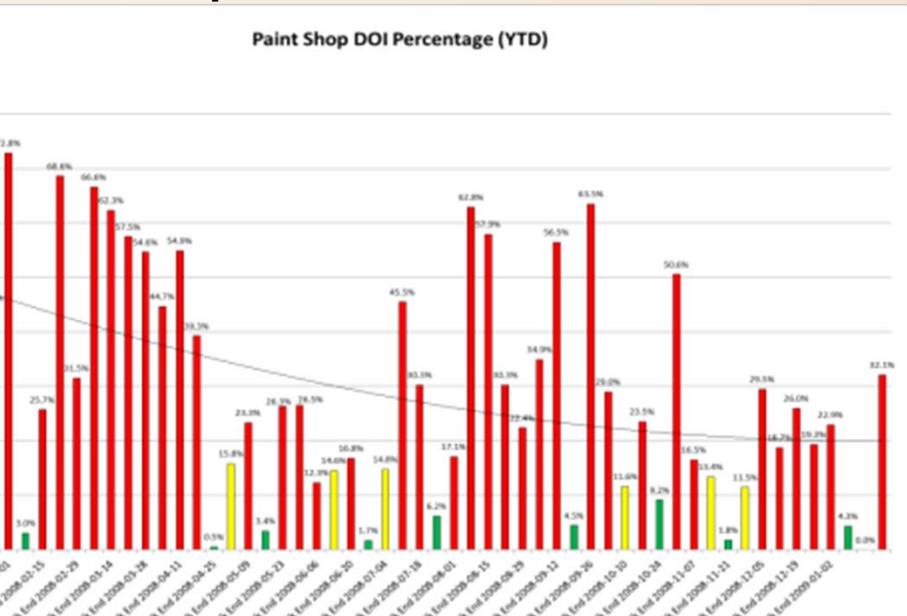
What's being measured? (You are what your measure!)

Are critical processes value stream mapped? By the people doing the work?

Are work samplings or time studies being conducted?

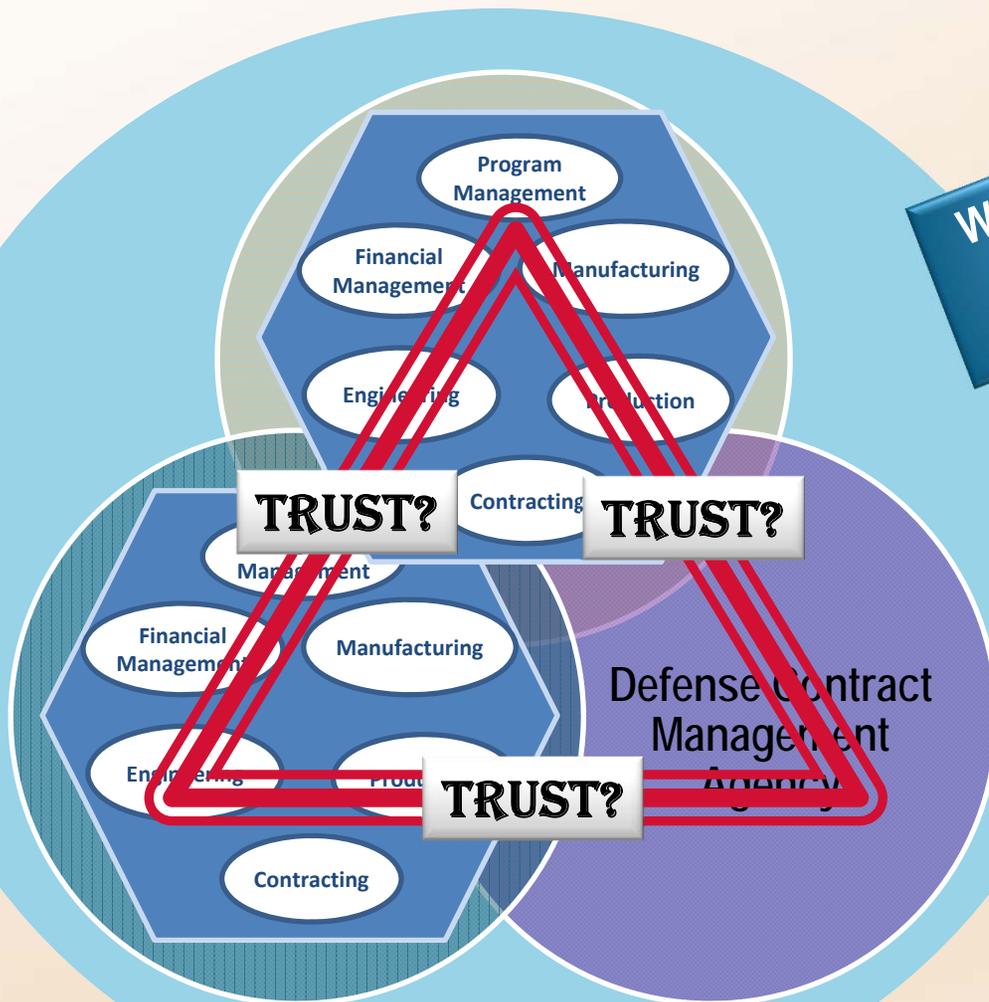
Do employees understand the processes that effect what they do?

Are there processes?





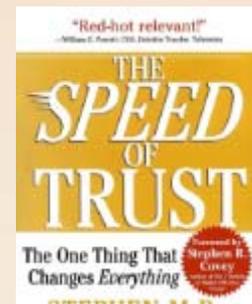
# Teaming Relationships



What (if anything) is your government team doing that drive costs?

How much value is it adding for your customer, the warfighter?

Any trust issues? If yes, then why?





# What can you do?

Understand what's going on at the entire site, not just your program

What motivates your direct counterpart? What can you do to make it a win-win?

CAMs may be able to control direct costs, but rate increases driven by decreased base much harder to control

If there's a general slowdown in the factory, expect direct costs to rise as well as indirect costs

Build a relationship with DCMA

Rewards and recognition aka "Trust and Appreciation"

Compass Call tour

Distribute RMOs, give pats on the back, learn some names, shake some hands, etc

Build trust

Be there! Early and often

Don't celebrate (or allow others to) the contractor's failure

Active involvement – be part of the solution

Compass Call Shakes process

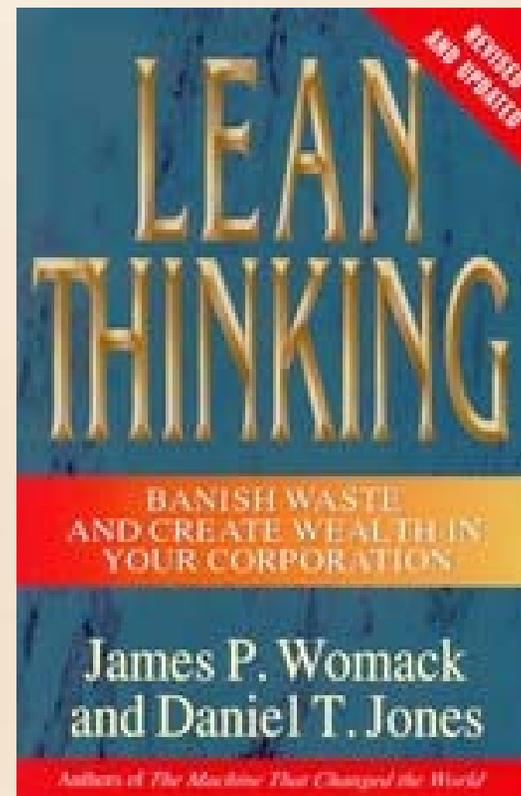
# Questions?

Steve Riel

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781-1060

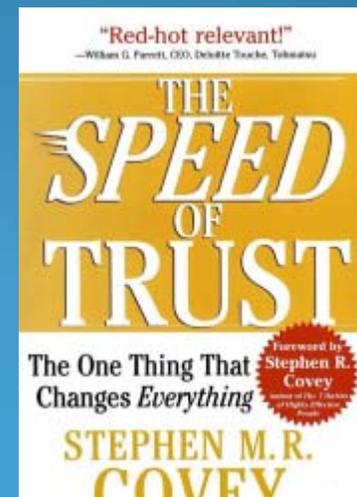
andriel@dau.mil



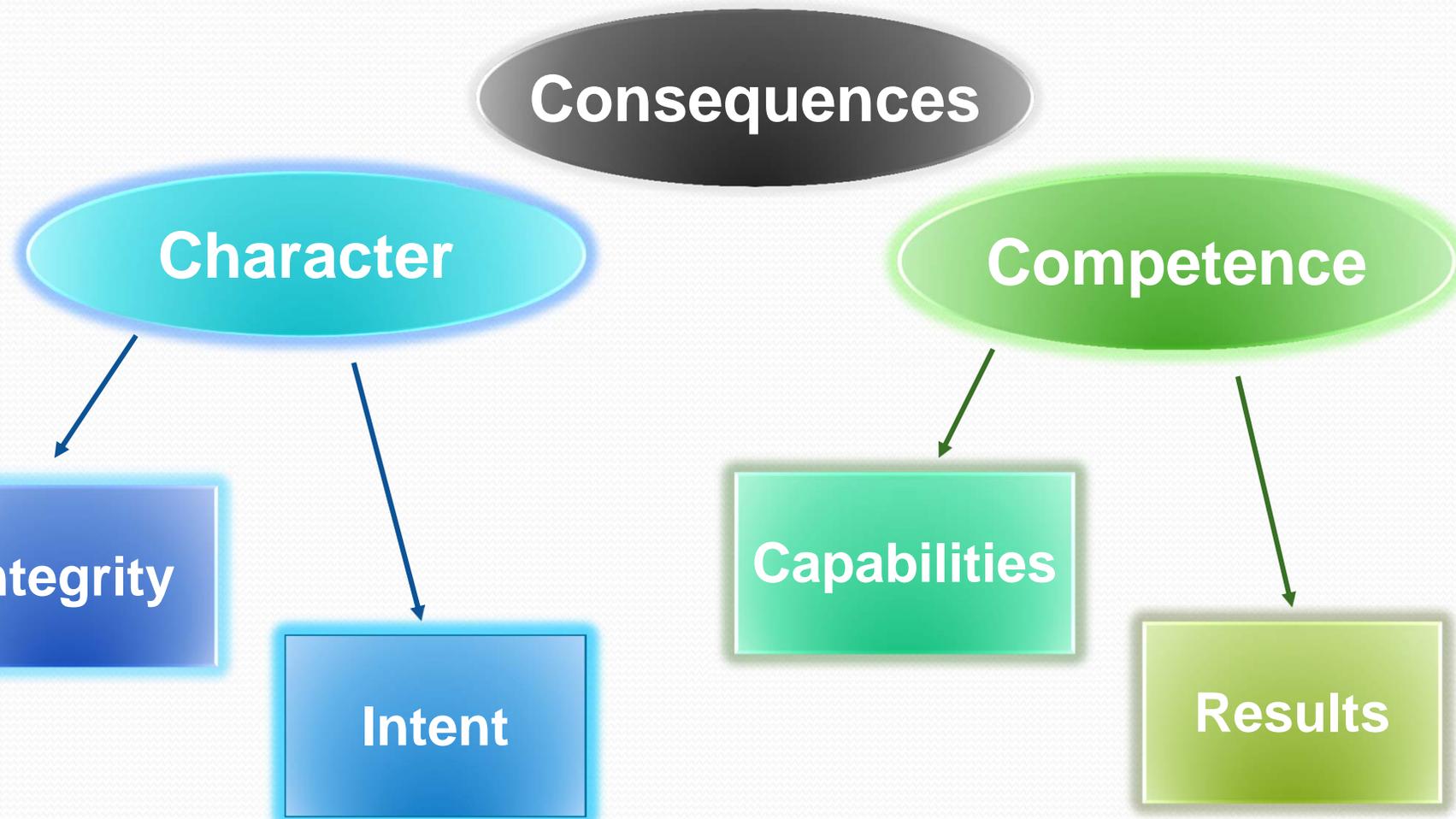


# Back-ups

# The Speed of Trust



# What Elements Constitute Trust?



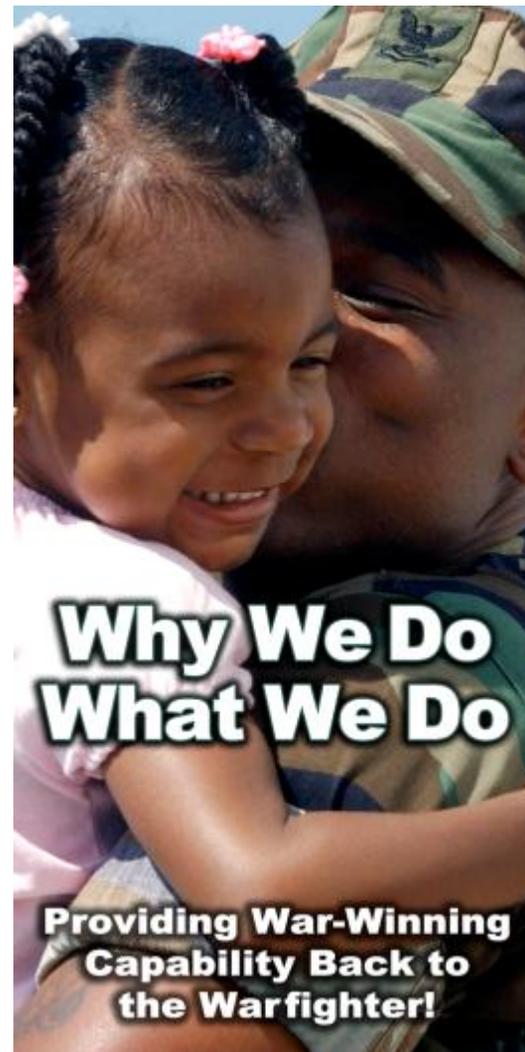
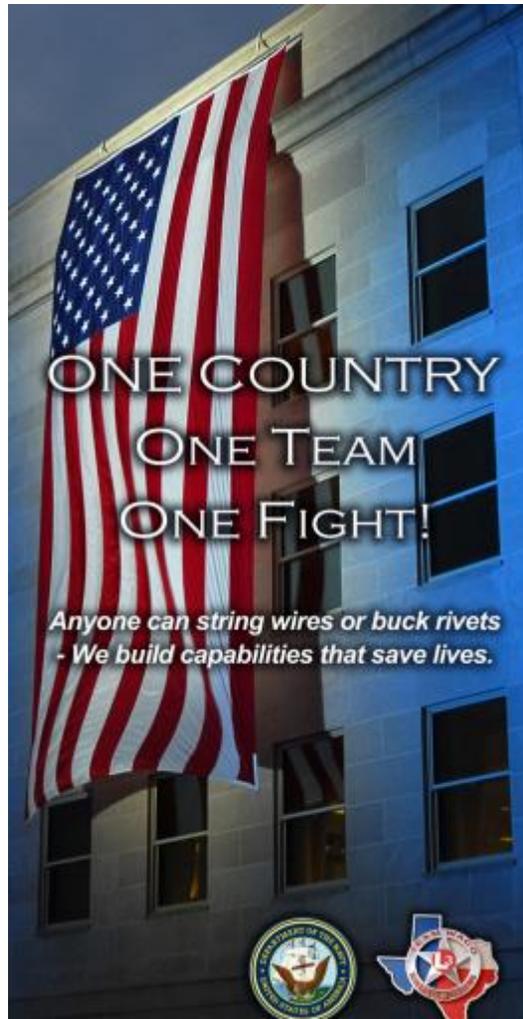
...erminent company is a dead company. Success today requires the ability to  
never confuse activities with accomplishments.

# The Thirteen Behaviors of Trust

1. Talk Straight
2. Demonstrate Respect
3. Create Transparency
4. Right Wrongs
5. Show Loyalty
6. Deliver Results
7. Get Better
8. Confront Reality
9. Clarify Expectations
10. Practice Accountability
11. Listen First
12. Keep Commitments
13. Extend Trust







# The 5 Whys

-- An Example --

Jefferson Memorial is deteriorating

**Why?**

Too much washing

**Why?**

Excess bird droppings

**Why?**

Lots of spiders to eat

**Why?**

Lots of gnats to eat

**Why?**

The lights are on all the time



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# **EVM/IMS Analysis Example**

***-- REDI\_DO\_055\_201 --***





**COST PERFORMANCE REPORT  
FORMAT 1 - WORK BREAKDOWN STRUCTURE**

DOLLARS IN: Thousands

PERFORMANCE DATA

ITEM	CURRENT PERIOD					CUMULATIVE TO DATE					REPROGRAMING ADJUSTMENTS			AT COMPLETION		
	BUDGETED COST		ACTUAL	VARIANCE		BUDGETED COST		ACTUAL	VARIANCE		COST VARIANCE	SCHEDULE VARIANCE	BUDGET	BUDGETED	ESTIMATED	VARIANCE
	WORK SCHEDULED	WORK PERFORMED	COST WORK PERFORMED	SCHEDULE	COST	WORK SCHEDULED	WORK PERFORMED	COST WORK PERFORMED	SCHEDULE	COST						
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12a)	(12b)	(13)	(14)	(15)	(16)

**What about variances?**

**What about CPI & SPI? Do we care? Why?**

**CPI = BCWP/ACWP = 28134/23941 = 1.18**  
**SPI = BCWP/BCWS = 28134/29013 = 0.97**

**Not too shabby! Are we done then?**

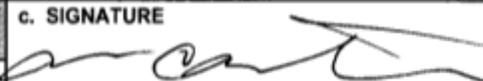
ONEY	N 2	11	13	12	2	1	194	187	146	-8	41			522	495	27
MINISTRATIVE	N 2	233	261	259	28	2	3,165	3,041	2,632	-123	409			10,109	9,862	247
ADJUSTED BUDGET	2													0	0	0
(Performance Baseline)		2,051	2,563	2,344	511	219	29,013	28,134	23,941	-879	4,193			92,726	91,383	1,342
CONT RESERVE	2													12,699	14,041	-1,342
		2,051	2,563	2,344	511	219	29,013	28,134	23,941	-879	4,193			105,425	105,425	0

**COST PERFORMANCE REPORT  
FORMAT 1 - WORK BREAKDOWN STRUCTURE**

DOLLARS IN: Thousands

<b>1. CONTRACTOR</b>	<b>2. CONTRACT</b>	<b>3. PROGRAM</b>	<b>4. REPORT PERIOD</b>
and Martin - Team	a. NAME REDI DO 055 201	a. NAME F22 MODERNIZATION	a. FROM (CCYYMMDD) 20100927
			b. TO (CCYYMMDD) 31

**Good analysis! Are we done then?**

<b>5. CONTRACT DATA</b>				<b>7. AUTHORIZED CONTRACTOR REPRESENTATIVE</b>				
a. BUDGETED COST AT COMPLETION	b. NEGOTIATED COST	c. EST COST AUTH UNPRICED WORK	d. TARGET PROFIT/FEE	e. TARGET PRICE	f. ESTIMATED PRICE	g. CONTRACT CEILING	h. EST CONTRACT CEILING	i. DATE OF OTB/OTS
	\$105,424.9	\$0.0	\$13,599.6 / 0.0%	\$119,024.5	\$119,024.5			(CCYYMMDD)
MANAGEMENT ESTIMATE AT COMPLETION (1)	CONTRACT BUDGET BASE (2)	VARIANCE (3)		a. NAME (Last, First, Middle Initial) CARLL MARTINEZ		b. TITLE PROGRAM MANAGER		d. DATE (CCYYMMDD)
BASE CASE	\$91,383.0			c. SIGNATURE 				20101119
ALTERNATE CASE	\$91,873.0							
LIKELY	\$91,386.0	\$105,424.9	\$14,038.9					

ITEM	CURRENT PERIOD					CUMULATIVE TO DATE					REPROGRAMMING ADJUSTMENTS	AT COMPLETION			
	BUDGETED COST		ACTUAL	VARIANCE		BUDGETED COST		ACTUAL	VARIANCE			COST VARIANCE	BUDGETED	ESTIMATED	VARIANCE
	WORK SCHEDULED	WORK PERFORMED	COST WORK PERFORMED	SCHEDULE	COST	WORK SCHEDULED	WORK PERFORMED	COST WORK PERFORMED	SCHEDULE	COST					
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(14)	(15)	(16)		
VEHICLE	2	1,816	2,095	1,073	479	121	22,296	21,507	18,465	-789	3,043		73,185	72,809	376
FRAME	3	-18	5	9	23	-3	44	28	39	-16	-11		139	133	6
ONICS	3	1,366	1,847	1,765	481	82	18,606	18,232	15,139	-374	3,093		65,419	65,074	345
ONICS SYSTEM	4	28	38	57	10	-19	1,439	1,411	1,307	-28	104		2,401	2,180	221
RADAR SYSTEM	4	349	547	328	198	219	4,016	4,260	3,134	245	1,126		13,576	13,570	6
ORE PROCESSING	4	101	364	330	263	34	4,395	3,794	2,873	-601	921		11,313	11,317	-4
MISSION AVIONIC	4	167	111	125	-56	-14	1,065	963	775	-102	188		5,829	5,906	-77
COMMUNICATION/N	4	347	224	385	-124	-162	3,935	4,151	3,863	216	287		13,498	13,524	-26
ELECTRONIC WARF	4	299	279	242	-20	37	3,135	3,052	2,680	-83	372		15,259	15,030	229
NTROLS AND DI	4	3	202	206	199	-4	231	231	222	0	9		236	232	4
TORES MANAGEME	4	72	83	92	11	-8	391	371	284	-20	87		3,308	3,316	-8
ICLE MANAGEM	3	181	216	156	36	60	2,109	1,810	1,822	-299	-11		3,117	3,113	4
CRAFT UTILIT	3	86	26	43	-61	-18	1,537	1,437	1,465	-100	-28		4,510	4,488	21
EM ENGINEER	2	174	158	144	-16	14	2,233	2,194	1,715	-30	479		5,174	5,481	693
EM TEST AND	2	262	310	227	48	83	3,438	3,396	2,786	-52	600		12,321	12,120	201

**SPI=0.96**

**SPI=0.98**

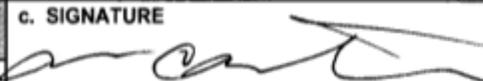
**SPI=0.98**

**COST PERFORMANCE REPORT  
FORMAT 1 - WORK BREAKDOWN STRUCTURE**

DOLLARS IN: Thousands

1. CONTRACTOR		2. CONTRACT		3. PROGRAM		4. REPORT PERIOD	
a. NAME		a. NAME		a. FROM (CCYYMMDD)		a. TO (CCYYMMDD)	
REDI DO 055 201		E22 MODERNIZATION		20100927		20101119	

**Good analysis! Are we done yet?**

5. BUDGETED COST AT COMPLETION				7. AUTHORIZED CONTRACTOR REPRESENTATIVE					
MANAGEMENT ESTIMATE AT COMPLETION (1)		CONTRACT BUDGET BASE (2)		VARIANCE (3)		a. NAME (Last, First, Middle Initial)		b. TITLE	
CASE		CASE		CASE		CARLL MARTINEZ		PROGRAM MANAGER	
\$91,383.0		\$91,873.0		\$91,386.0		c. SIGNATURE		d. DATE (CCYYMMDD)	
		\$105,424.9		\$14,038.9				20101119	

ITEM	CURRENT PERIOD					CUMULATIVE TO DATE					REPROGRAMMING ADJUSTMENTS			AT COMPLETION				
	BUDGETED COST		ACTUAL		VARIANCE		BUDGETED COST		ACTUAL		VARIANCE		COST VARIANCE (12)	SCHEDULE VARIANCE (13)	BUDGET (13)	BUDGETED (14)	ESTIMATED (15)	VARIANCE (16)
	WORK SCHEDULED (2)	WORK PERFORMED (3)	COST WORK PERFORMED (4)	SCHEDULE (5)	COST (6)	WORK SCHEDULED (7)	WORK PERFORMED (8)	COST WORK PERFORMED (9)	SCHEDULE (10)	COST (11)								
VEHICLE	2	1,616	2,095	1,973	479	121	22,296	21,507	18,465	-789	3,043				73,185	72,809	376	
FRAME	3	-18	5	9	23	-3	44	28	39	-16	-11				139	133	6	
ONICS	3	1,306	1,647	1,765	481	82	18,606	18,232	15,139	-374	3,093				65,419	65,074	345	
ONICS SYSTEM	4	28	38	57	10	-19	1,439	1,411	1,307	-28	104				2,401	2,180	221	
RADAR SYSTEM	4	349	547	328	198	219	4,016	4,260	3,134	245	1,126				13,576	13,570	6	
ORE PROCESSING	4	101	364	330	263	34	4,395	3,794	2,873	-601	921				11,313	11,317	-4	
MISSION AVIONIC	4	167	111	125	-56	-14	1,065	963	775	-102	188				5,829	5,906	-77	
COMMUNICATION/N	4	347	224	385	-124	-162	3,935	4,151	3,863	216	287				13,498	13,524	-26	
ELECTRONIC WARF	4	299	279	242	-20	37	3,135	3,052	2,680	-83	372				259	15,030	229	
NTROLS AND DI	4	3	202	206	199	-4	231	231	222	0	9				236	232	4	
TORES MANAGEME	4	72	83	92	11	-8	391	371	284	-20	87				308	3,316	-8	
ICLE MANAGEM	3	181	216	156	36	60	2,109	1,810	1,822	-299	-11				3,117	3,113	4	
CRAFT UTILIT	3	86	26	43	-61	-18	1,537	1,437	1,465	-100	-28				4,510	4,488	21	
EM ENGINEER	2	174	158	144	-16	14	2,233	2,194	1,715	-39	479				6,174	5,481	693	
EM TEST AND	2	262	310	227	48	83	3,438	3,386	2,786	-52	600				3,321	12,120	201	

**SPI=0.98**

**SPI=0.86**

**SPI=0.93**

CLASSIFICATION (WHERE APPLICABLE)

**COST PERFORMANCE REPORT  
FORMAT 1 - WORK BREAKDOWN STRUCTURE**

DOLLARS IN: Thousands

1. FACTOR d Martin - Team	2. CONTRACT a. NAME REDI DO 055 201	3. PROGRAM a. NAME F22 MODERNIZATION	4. REPORT PERIOD a. FROM (CCYYMMDD) 20100927
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**Good analysis! Are we (finally) done?**

FACT DATA								
b. NEGOTIATED COST \$10	c. EST COST AUTH UNPRICED WORK	d. TARGET PROFIT/FEE	e. TARGET PRICE	f. ESTIMATED PRICE	g. CONTRACT CEILING	h. EST CONTRACT CEILING	i. DATE OF OTB/OTS (CCYYMMDD)	
<p><b>Nope, you've just begun 😊</b></p>							d. DATE (CCYYMMDD) 20101119	

ITEM (1)	CURRENT PERIOD					CUMULATIVE TO DATE					REPROGRAMMING ADJUSTMENTS			AT COMPLETION		
	BUDGETED COST		ACTUAL	VARIANCE		BUDGETED COST		ACTUAL	VARIANCE		COST	SCHEDULE	BUDGET	BUDGETED	ESTIMATED	VARIANCE
	WORK SCHEDULED (2)	WORK PERFORMED (3)	COST WORK PERFORMED (4)	SCHEDULE (5)	COST (6)	WORK SCHEDULED (7)	WORK PERFORMED (8)	COST WORK PERFORMED (9)	SCHEDULE (10)	COST (11)	VARIANCE (12a)	VARIANCE (12b)	(13)	(14)	(15)	(16)
VEHICLE	2	1,616	2,095	1,973	479	121	22,296	21,507	18,465	-789	3,043			73,185	72,809	376
FRAME	3	-18	5	9	23	-3	44	28	39	-16	-11			139	133	6
ONICS	3	1,366	1,847	1,765	481	82	18,606	18,232	15,139	-374	3,092			65,419	65,074	345
ONICS SYSTEM	4	28	38	57	10	-19	1,439	1,411	1,307	-28	104			2,401	2,180	221
ADAR SYSTEM	4	349	547	328	198	219	4,016	4,260	3,134	245	1,126			13,576	13,570	6
ORE PROCESSING	4	101	364	330	263	34	4,395	3,794	2,873	-601	921			11,313	11,317	-4
MISSION AVIONIC	4	167	111	125	-56	-14	1,065	983	775	-102	188			5,829	5,906	-77
MMUNICATION/N	4	347	224	385	-124	-162	3,935	4,151	3,883	216	287			13,498	13,524	-26
ELECTRONIC WARF	4	299	279	242	-20	37	3,135	3,052	2,680	-83	372			15,259	15,030	229
ONTROLS AND DI	4	3	202	206	199	-4	231	231	222	0	9			236	232	4
ORES MANAGEME	4	72	83	92	11	-8	391	371	284	-20	87			3,308	3,316	-8
ICLE MANAGEM	3	181	216	156	36	60	2,109	1,810	1,822	-299	-11			3,117	3,113	4
CRAFT UTILIT	3	86	26	43	-61	-18	1,537	1,437	1,465	-100	-28			4,510	4,488	21
EM ENGINEER	2	174	158	144	-16	14	2,233	2,194	1,715	-39	479			6,174	5,481	693
EM TEST AND	2	262	310	227	48	83	3,438	3,386	2,786	-52	600			12,321	12,120	201

**SPI=0.86**

**SPI=0.90**



# EVM Analysis

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**Which elements do we want to look at?**

**- Core Processing, Mission Avionics, Vehicle Management, Aircraft Utilities**

**How far behind are we? What does “\$601K” behind mean for core processing?**

**- Burn rates**

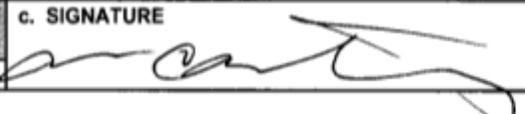
CLASSIFICATION (WHERE APPLICABLE)

**COST PERFORMANCE REPORT  
FORMAT 1 - WORK BREAKDOWN STRUCTURE**

DOLLARS IN: Thousands

1. CONTRACTOR d Martin - Team	2. CONTRACT a. NAME REDI DO 055 201	3. PROGRAM a. NAME F22 MODERNIZATION	4. REPORT PERIOD a. FROM (CCYYMMDD) 20100927
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# How do we calculate burn rates?

5. BUDGETED COST AT COMPLETION				7. AUTHORIZED CONTRACTOR REPRESENTATIVE				
MANAGEMENT ESTIMATE AT COMPLETION (1)	CONTRACT BUDGET BASE (2)	VARIANCE (3)	a. NAME (Last, First, Middle Initial) CARLL MARTINEZ	b. TITLE PROGRAM MANAGER				
CASE \$91,383.0			c. SIGNATURE 		d. DATE (CCYYMMDD) 20101119			
T CASE \$91,873.0								
LIKELY \$91,386.0	\$105,424.9	\$14,038.9						

ITEM (1)	CURRENT PERIOD					CUMULATIVE TO DATE					REPROGRAMMING ADJUSTMENTS			AT COMPLETION			
	BUDGETED COST		ACTUAL	VARIANCE		BUDGETED COST		ACTUAL	VARIANCE		COST VARIANCE (12a)	SCHEDULE VARIANCE (12b)	BUDGET (13)	BUDGETED (14)	ESTIMATED (15)	VARIANCE (16)	
	WORK SCHEDULED (2)	WORK PERFORMED (3)	COST WORK PERFORMED (4)	SCHEDULE (5)	COST (6)	WORK SCHEDULED (7)	WORK PERFORMED (8)	COST WORK PERFORMED (9)	SCHEDULE (10)	COST (11)							
VEHICLE	2	1,616	2,095	1,973	479	121	22,296	21,507	18,465	-789	3,043				73,185	72,809	376
FRAME	3	-18	5	9	23	-3	44	28	39	-16	-11				139	133	6
ONICS	3	1,366	1,847	1,765	481	82	18,606	18,232	15,139	-374	3,093				65,419	65,074	345
IONICS SYSTEM	4	28	38	57	10	-19	1,439	1,411	1,307	-28	104				2,401	2,180	221
ADAR SYSTEM	4	349	547	328	198	219	4,016	4,260	3,134	245	1,126				13,576	13,570	6
ORE PROCESSING	4	101	364	330	34	34	4,055	3,794	2,973	-601	921				11,313	11,317	-4
MISSION AVIONIC	4	167	111	125	56	-14	1,665	965	975	-102	188				5,829	5,906	-77
COMMUNICATION/N	4	347	224	385	-124	-162	3,935	4,151	3,863	216	287				13,498	13,524	-26
ELECTRONIC WARF	4	299	279	242	-20	37	3,135	3,052	2,680	-83	372				15,259	15,030	229
ONROLS AND DI	4	3	202	206	199	-4	231	231	222	0	9				236	232	4
TORES MANAGEME	4	72	83	92	11	-8	391	371	284	-20	87				3,308	3,316	-8
ICLE MANAGEM	3	181	216	156	60	60	2,163	1,816	1,972	-299	-11				3,117	3,113	4
CRAFT UTILIT	3	86	26	43	61	-16	1,557	1,437	1,365	-100	-28				4,510	4,488	21
EM ENGINEER	2	174	158	144	-16	14	2,233	2,194	1,715	-39	479				6,174	5,481	693
EM TEST AND	2	262	310	227	48	83	3,438	3,386	2,786	-52	600				12,321	12,120	201



# EVM Analysis

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**Which elements do we want to look at?**

**- Core Processing, Mission Avionics, Vehicle Management, Aircraft Utilities**

**How far behind are we? What does “\$601K” behind mean for core processing?**

**- Using burn rates:**

- **Core Processing – approx. 2 months behind**
- **Mission Avionics – approx. 1 month behind**
- **Vehicle Management – approx. 2 months behind**
- **Aircraft Utilities – approx. 2 months behind**

**What other questions can you ask based on the current data vs. cumulative schedule variance?**

CLASSIFICATION (WHERE APPLICABLE)

**COST PERFORMANCE REPORT  
FORMAT 1 - WORK BREAKDOWN STRUCTURE**

DOLLARS IN: Thousands

1. FACTOR	2. CONTRACT	3. PROGRAM	4. REPORT PERIOD
1. Martin - Team	a. NAME REF ID: 055 201	a. NAME F22 MODERNIZATION	a. FROM (CCYYMMDD) 20100927

**What questions can we ask be comparing ACWP to BCWS?**

**Adequate staffing?**

5. BUDGETED COST AT COMPLETION	7. AUTHORIZED CONTRACTOR REPRESENTATIVE	d. DATE (CCYYMMDD) 20101119
UNLIKELY	\$91,386.0	\$105,424.9
	\$14,038.9	

ITEM	CURRENT PERIOD					CUMULATIVE TO DATE					REPROGRAMMING ADJUSTMENTS			AT COMPLETION		
	BUDGETED COST		ACTUAL	VARIANCE		BUDGETED COST		ACTUAL	VARIANCE		COST VARIANCE (12a)	SCHEDULE VARIANCE (12b)	BUDGET (13)	BUDGETED (14)	ESTIMATED (15)	VARIANCE (16)
	WORK SCHEDULED (2)	WORK PERFORMED (3)	COST WORK PERFORMED (4)	SCHEDULE (5)	COST (6)	WORK SCHEDULED (7)	WORK PERFORMED (8)	COST WORK PERFORMED (9)	SCHEDULE (10)	COST (11)						
VEHICLE	2	1,616	2,095	1,973	479	121	22,296	21,507	18,465	-789	3,043			73,185	72,809	376
FRAME	3	-18	5	9	23	-3	44	28	39	-16	-11			139	133	6
ONICS	3	1,366	1,847	1,765	481	82	18,606	18,232	15,139	-374	3,093			65,419	65,074	345
IONICS SYSTEM	4	28	38	57	10	-19	1,439	1,411	1,307	-28	104			2,401	2,180	221
ADAR SYSTEM	4	349	547	328	198	219	4,016	4,260	3,134	245	1,126			13,576	13,570	6
ORE PROCESSING	4	101	364	330	263	34	4,395	3,794	2,873	-601	921			11,313	11,317	-4
MISSION AVIONIC	4	167	111	125	-56	-14	1,065	963	775	-102	188			5,829	5,906	-77
COMMUNICATION/N	4	347	224	385	-124	-162	3,935	4,151	3,863	216	287			13,498	13,524	-26
ELECTRONIC WARF	4	299	279	242	-20	37	3,135	3,052	2,680	-83	372			15,259	15,030	229
ONROLS AND DI	4	3	202	206	199	-4	231	231	222	0	9			236	232	4
TORES MANAGEME	4	72	83	92	11	-8	391	371	284	-20	87			3,308	3,316	-8
ICLE MANAGEM	3	181	216	156	36	60	2,109	1,810	1,822	-299	-11			3,117	3,113	4
CRAFT UTILIT	3	86	26	43	-61	-18	1,537	1,437	1,465	-100	-28			4,510	4,488	21
EM ENGINEER	2	174	158	144	-16	14	2,233	2,194	1,715	-39	479			6,174	5,481	693
EM TEST AND	2	262	310	227	48	83	3,438	3,386	2,786	-52	600			12,321	12,120	201

**COST PERFORMANCE REPORT  
FORMAT 4 - STAFFING (EAC)**

1. CONTRACT NUMBER	2. CONTRACT	3. PROGRAM	4. REPORT PERIOD
Contract Name - Team	a. NAME	a. NAME	a. FROM (CCYYMMDD) 20100927
Contract Address and ZIP code			b. TO (CCYYMMDD) 20101031
Contract USA 76101	CPIF	NONE	

**What does this tell you?**

ORGANIZATIONAL CATEGORY	ACTUAL CURRENT PERIOD	ACTUAL END OF CURRENT PERIOD (Cum)	FORECAST (Non-Cumulative)											AT COMPLETION	
			SIX MONTH FORECAST (Enter Names of Months)						ENTER SPECIFIED PERIODS						
			NOV	DEC	JAN	FEB	MAR	APR	2Q11	3Q11	4Q11	1Q12	TC		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	
...	2	4,581	41,128	3,800	3,414	3,563	4,217	3,702	3,604	7,897	9,676	9,303	8,491	25,194	123,989
...CLE ANA	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0
...E	3	46	147	10	0	0	38	65	47	67	62	12	12	60	519
...SION SYST	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0
...S	3	3,392	28,334	2,825	2,527	2,831	3,276	2,943	3,151	6,627	8,363	7,999	6,489	21,890	97,254
...CS SYSTEM	4	332	7,474	409	315	-84	295	264	375	691	726	685	240	839	12,231
...SYSTEM	4	121	952	213	280	174	240	134	64	103	158	89	59	149	2,614
...ROCESSING	4	871	6,160	554	463	546	558	505	493	753	958	930	828	1,796	14,544
...N AVIONIC	4	720	4,472	648	590	1,023	1,113	1,113	1,112	2,068	2,584	2,385	1,872	8,688	27,668
...NICATION/N	4	659	5,836	467	347	440	356	278	342	1,093	1,621	1,529	1,037	2,077	15,422
...RONIC WARF	4	112	1,661	159	178	213	215	208	208	445	649	669	656	3,351	8,612
...OLS AND DI	4	47	141	14	11	0	0	0	0	0	0	0	0	0	166
...S MANAGEME	4	529	1,639	360	343	520	500	440	557	1,474	1,667	1,712	1,797	4,989	15,998
...AL REFERE	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0
...R SUPPLIES	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0
...MANAGEM	3	900	7,824	621	530	336	322	390	230	178	20	8	59	959	11,477
...T UTILIT	3	243	4,823	344	357	396	581	305	177	1,025	1,231	1,284	1,931	2,285	14,740
...SYSTEMS	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0
...STUDIES	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0
...SYSTEM	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
...SYSTEM	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
...GINEER	2	842	10,498	1,149	1,057	832	1,048	1,104	1,051	2,176	2,494	2,019	1,564	3,983	28,974
...EST AND	2	1,454	13,686	1,346	1,167	1,325	1,572	1,401	1,459	2,847	3,811	3,333	2,770	20,562	55,279



# EVM Analysis

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**What other questions can you ask based on the current data vs. cumulative schedule variance?**

**- Are you adequately manned for the task? Aircraft Utilities?**

**- If so, is there some task that's behind that's not allowing you to make adequate progress?**

**Where's the first place to look for answers?**

**- Format 5 of the CPR**

Unclassified

CLASSIFICATION (When filled in)

**COST PERFORMANCE REPORT  
FORMAT 5 - EXPLANATIONS AND PROBLEM ANALYSIS**

Narrative 1 of 1

1. REPORT PERIOD	2. CONTRACT	3. PROGRAM	4. REPORT PERIOD
1. FROM (CCYYMMDD) 20100927	a. NAME REDI DO 055 201	a. NAME F22 MODERNIZATION	a. FROM (CCYYMMDD) 20100927
1. TO (CCYYMMDD) 20101031	b. NUMBER F33657-02-D-0009	b. PHASE RDT&E	b. TO (CCYYMMDD) 20101031
	c. TYPE CPIF	d. SHARE RATIO	c. EVMS ACCEPTANCE (CCYYMMDD) NONE

REPORT PERIOD ANALYSIS

THIS REPORT PERIOD IS FOR DELIVERY ORDER 0055 CLIN 201, "VAX MIGRATION-PHASE II" IN ACCORDANCE WITH CDRL DATA ITEM A800-55 FOR MONTH END OCTOBER. THIS REPORT PERIOD IS THE BEGINNING AND ENDING DATES OF LOCKHEED MARTIN AERONAUTICS' ACCOUNTING PERIOD. THE ACCOUNTING PERIOD FOR BOEING IS 10/01/2010 - 10/28/2010.

NO COST VARIATIONS, CUMULATIVE, OR AT COMPLETE THRESHOLDS WERE EXCEEDED THIS MONTH.

ANALYSIS

ALLOTTED BUDGET

MANAGEMENT RESERVE

CURRENT AMOUNT ALLOTTED FOR MANAGEMENT RESERVE IS \$12,699 FOR BAC AND \$14,041 FOR EAC.

VAR: A DECREASE OF \$7 DUE LM MATERIAL MRP ALIGNMENT OF \$5 AND LM REVISED SUPPLIER SPEND PLAN OF \$2.

VAR: AN INCREASE OF \$115 DUE TO LM REVISED MATERIAL EAC OF \$101 AND LM SDA EFFICIENCIES OF \$14.

CUMULATIVE-TO-DATE ACTUAL COST IN THIS REPORT EXCLUDES UNBILLABLE COST, INVENTORY, AND PROGRESS PAYMENTS TO SUBCONTRACTORS FOR HARDWARE NOT YET RECEIVED.

TOPICS:

FREE POINT EAC ANALYSIS REFLECTS A BOEING MEDIUM RISK FOR AVDS OF \$800 AND A BOEING MEDIUM OPPORTUNITY FOR VENDOR SW LICENSE AND EFFICIENCIES IN SAVINGS OF \$990.

ISSUES GREATER THAN EAC ON WBS 7000 IS CURRENTLY UNDER INVESTIGATION.



# EVM Analysis

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**What other questions can you ask based on the current data vs. cumulative schedule variance?**

**- Are you adequately manned for the task? Aircraft Utilities?**

**- If so, is there some task that's behind that's not allowing you to make adequate progress?**

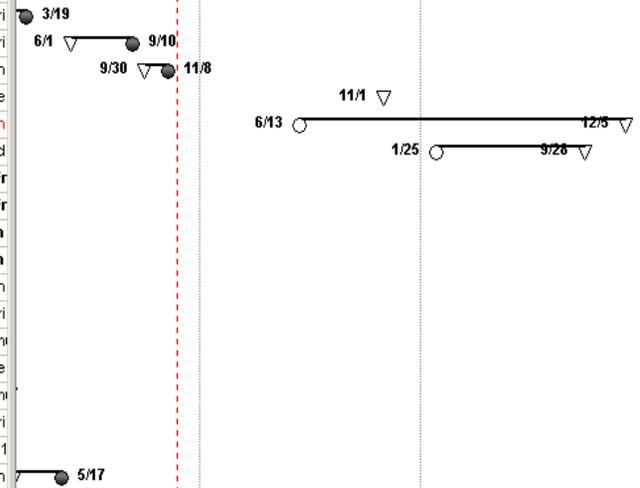
**Are any of the "behind tasks" from the "behind areas" on the critical path?**

**- What do we need to analyze to determine this?**

**That's right! The IMS**

2595

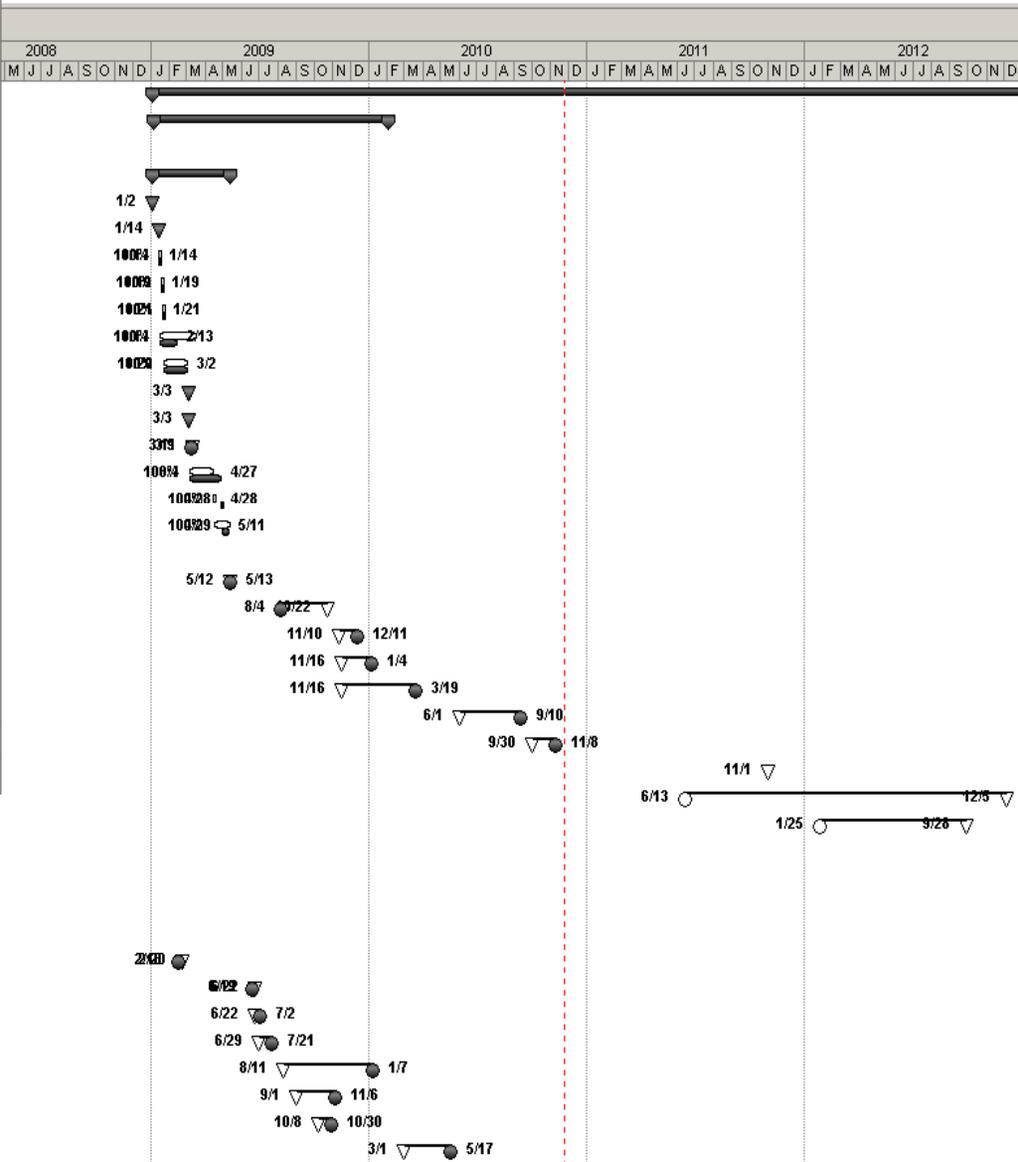
Name	CAM	F-22 Physical Complete	Total Slack	Duration	Baseline Start	Baseline Finish	Sti	2010												2011												2012																																																															
								M				A				M				J				J				A				S				O				N				D				J				F				M				A				M				J				J				A				S				O				N				D			
<b>DO-55 VAX Migration</b>	<b>C. Martinez</b>	<b>31</b>	<b>0 days</b>	<b>1553 days</b>	<b>Fri 1/2/09</b>	<b>Thu 2/19/15</b>	<b>Fr</b>																																																																																								
<b>DO-55 Phase 1 (CLIN 301)</b>	<b>B. McKean</b>	<b>75</b>	<b>791 days</b>	<b>762 days</b>	<b>Mon 1/5/09</b>	<b>Mon 2/1/10</b>	<b>Fr</b>																																																																																								
<b>DO-55 Phase 1 Program Milestones/Events</b>	<b>T. Guilbault</b>	<b>99</b>	<b>786 days</b>	<b>762 days</b>	<b>Wed 1/14/09</b>	<b>Fri 9/28/12</b>	<b>Fr</b>																																																																																								
<b>NUCIF Baseline Activities</b>	<b>T. Guilbault</b>	<b>100</b>	<b>0 days</b>	<b>91 days</b>	<b>Fri 1/2/09</b>	<b>Wed 5/13/09</b>	<b>Fr</b>																																																																																								
Raytheon Go-Ahead (critical long lead suppl	T. Guilbault	100	0 days	0 days	Fri 1/2/09	Fri 1/2/09	Fi																																																																																								
Contract Award (Phase 1)	T. Guilbault	100	0 days	0 days	Wed 1/14/09	Wed 1/14/09	Wed																																																																																								
Issue WAM	Holt	100	0 days	1 day	Wed 1/14/09	Wed 1/14/09	Wed																																																																																								
Issue WAD & SNs (critical)	Bettis	100	0 days	1 day	Mon 1/19/09	Mon 1/19/09	Mon																																																																																								
Contract Kick-off Meeting Window	T. Guilbault	100	0 days	1 day	Wed 1/21/09	Wed 1/21/09	Wed																																																																																								
Prepare & Submit IMP	J. Carlson	100	0 days	23 days	Wed 1/14/09	Tue 3/17/09	Wed																																																																																								
Detail Planning of CA Work Packages/MS AI	T. Guilbault	100	0 days	30 days	Tue 1/20/09	Mon 3/2/09	Tue																																																																																								
Boeing PMB Established in OPP	T. Guilbault	100	0 days	0 days	Tue 3/3/09	Tue 3/3/09	Tu																																																																																								
LM PMB Established	T. Guilbault	100	0 days	1 day	Tue 3/3/09	Tue 3/3/09	Tu																																																																																								
NUCIF CDR-2 (CSE Tools & HW Update)	U. Jackson	100	0 days	0 days	Wed 3/11/09	Wed 3/11/09	Mo																																																																																								
IBR Prep	Bettis	100	0 days	39 days	Wed 3/4/09	Mon 4/13/09	We																																																																																								
Conduct IBR	Bettis	100	0 days	1 day	Tue 4/14/09	Tue 4/14/09	Tue																																																																																								
Prepare & Submit IBR Report	Bettis	100	0 days	9 days	Wed 4/15/09	Wed 5/13/09	Wed																																																																																								
<b>NUCIF Key Milestones</b>	<b>T. Guilbault</b>	<b>0</b>	<b>786 days</b>	<b>670 days</b>	<b>Tue 5/12/09</b>	<b>Fri 9/28/12</b>	<b>Wed</b>																																																																																								
NUCIF CDR (System level)	I. Nogradi	100	0 days	0 days	Tue 5/12/09	Tue 5/12/09	Wed																																																																																								
NUCIF RDRu/PDR-3 (SPE Tools)	U. Jackson	100	0 days	0 days	Thu 10/22/09	Thu 10/22/09	Tu																																																																																								
NUCIF CDR-3 (SPE Tools)	U. Jackson	100	0 days	0 days	Tue 11/10/09	Tue 11/10/09	Fri 1																																																																																								
NUCIF Phase 2 Raytheon Funding (Referenc	U. Jackson	100	0 days	0 days	Mon 11/16/09	Mon 11/16/09	Mo																																																																																								
NUCIF PRR	U. Jackson	100	0 days	0 days	Mon 11/16/09	Mon 11/16/09	Fri																																																																																								
Team FQT Freeze	T. Guilbault	100	0 days	0 days	Tue 6/1/10	Tue 6/1/10	Fri																																																																																								
NUCIF Ready for Deployment	U. Jackson	100	0 days	0 days	Thu 9/30/10	Thu 9/30/10	Mon																																																																																								
CMP (DuCE/MOV) TRR Complete	U. Jackson	0	839 days	0 days	Tue 11/1/11	Tue 11/1/11	Tue																																																																																								
<b>NUCIF FCA</b>	<b>U. Jackson</b>	<b>0</b>	<b>937 days</b>	<b>0 days</b>	<b>Wed 12/5/12</b>	<b>Wed 12/5/12</b>	<b>Mon</b>																																																																																								
End of PoP for DO-55 Phase 1	T. Guilbault	0	786 days	0 days	Fri 9/28/12	Fri 9/28/12	Wed																																																																																								
<b>Group B (Processor Specific Tools)</b>	<b>T. Guilbault</b>	<b>75</b>	<b>791 days</b>	<b>762 days</b>	<b>Mon 1/5/09</b>	<b>Fri 9/28/12</b>	<b>Fr</b>																																																																																								
<b>NUCIF/CIP Toolset Rehost</b>	<b>U. Jackson</b>	<b>75</b>	<b>791 days</b>	<b>762 days</b>	<b>Mon 1/5/09</b>	<b>Fri 9/28/12</b>	<b>Fr</b>																																																																																								
<b>NUCIF Team to Team Handoffs</b>	<b>U. Jackson</b>	<b>99</b>	<b>1056 days</b>	<b>467 days</b>	<b>Fri 2/13/09</b>	<b>Fri 8/26/11</b>	<b>Mon</b>																																																																																								
<b>Raytheon Deliveries to LM</b>	<b>U. Jackson</b>	<b>0</b>	<b>0 days</b>	<b>435 days</b>	<b>Fri 2/13/09</b>	<b>Mon 9/20/10</b>	<b>Mon</b>																																																																																								
Raytheon Delivers ASMHS Types to	U. Jackson	100	0 days	0 days	Fri 2/20/09	Fri 2/20/09	Mon																																																																																								
Raytheon Delivers NUCIF HW with I	U. Jackson	100	0 days	0 days	Mon 6/22/09	Mon 6/22/09	Fri																																																																																								
Raytheon Delivers NUCIF HW with I	U. Jackson	100	0 days	0 days	Mon 6/22/09	Mon 6/22/09	Th																																																																																								
Raytheon Delivers BSI, DTI, Timer H	U. Jackson	100	0 days	0 days	Mon 6/29/09	Mon 6/29/09	Tue																																																																																								
Raytheon Delivers Label Message I	U. Jackson	100	0 days	0 days	Tue 8/11/09	Tue 8/11/09	Th																																																																																								
Raytheon Delivers Full NDL, Firmw	U. Jackson	100	0 days	0 days	Tue 9/1/09	Tue 9/1/09	Fri																																																																																								
Raytheon Delivers ASMHS to New	U. Jackson	100	0 days	0 days	Thu 10/8/09	Thu 10/8/09	Fri 1																																																																																								
Raytheon Delivers EC Server Softw	U. Jackson	100	0 days	0 days	Mon 3/1/10	Mon 3/1/10	Mon																																																																																								



C. Martinez

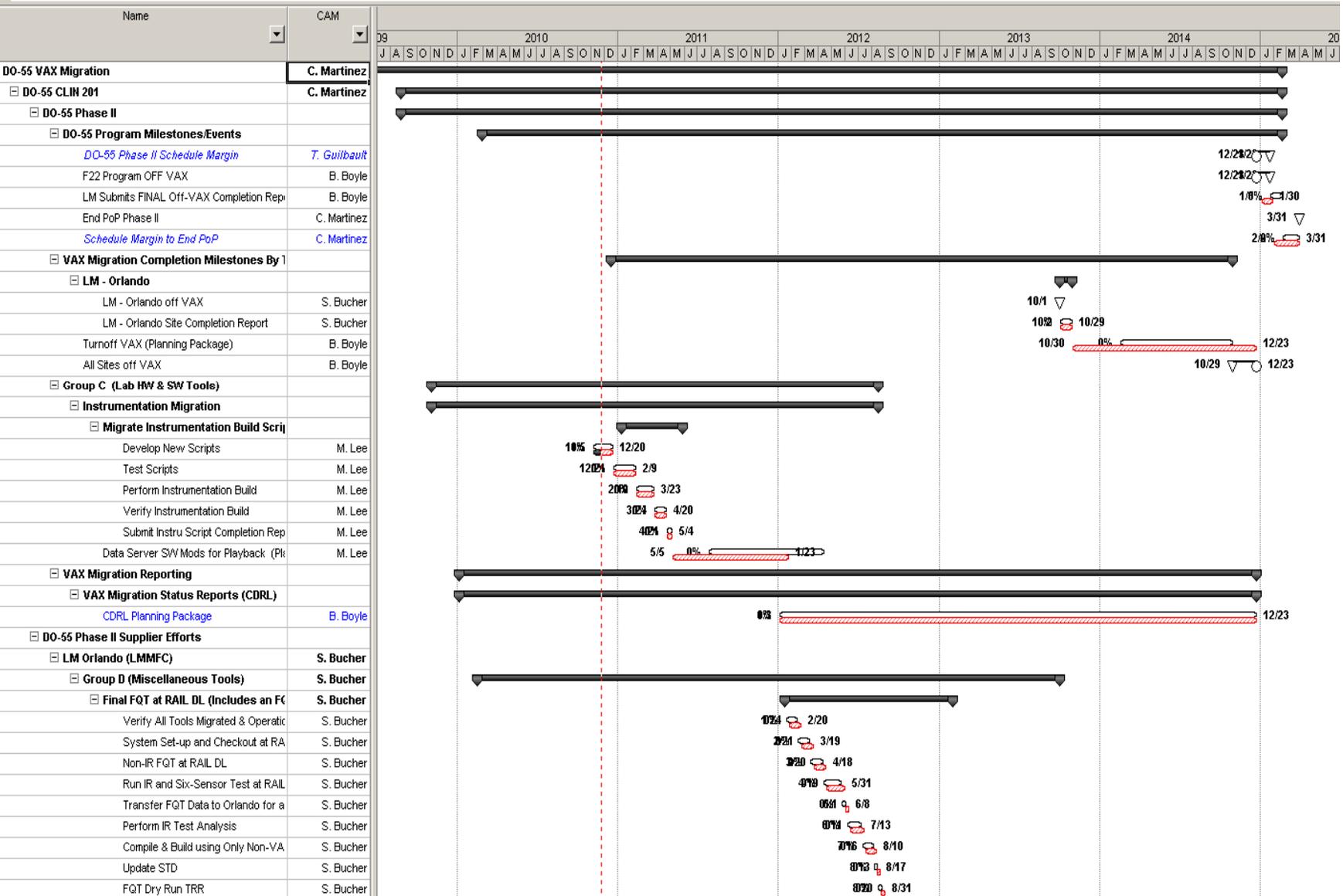
- DO-55 VAX Migration
- DO-55 Phase I (CLM)
- DO-55 Phase 1
  - NUCIF Base
    - Raytheon Contract Award (Phase 1)
    - Contract Award (Phase 1)
    - Issue WAM
    - Issue WAD & SNs (critical)
    - Contract Kick-off Meeting Window
    - Prepare & Submit IMP
    - Detail Planning of CA Work Packages/IMS AI
    - Boeing PMB Established in OPP
    - LM PMB Established
    - NUCIF CDR-2 (CSE Tools & HW Update)
    - IBR Prep
    - Conduct IBR
    - Prepare & Submit IBR Report
    - NUCIF Key Milestones
      - NUCIF CDR (System level)
      - NUCIF RDRuPDR-3 (SPE Tools)
      - NUCIF CDR-3 (SPE Tools)
      - NUCIF Phase 2 Raytheon Funding (Referenc
      - NUCIF PRR
      - Team FQT Freeze
      - NUCIF Ready for Deployment
      - CMP (DuCE/KOV) TRR Complete
      - NUCIF FCA

- Sort
  - Filtered for: All Tasks
    - 100% check
    - 60 day Look ahead
    - All Tasks
    - BL > 44
    - Boeing Late Finish
    - Boeing Late Start
    - Completed Tasks
    - Critical
    - Date Range...
    - Incomplete NonSummary Tasks
    - Incomplete Tasks
    - late finish
    - late start
    - Milestones
    - Needs Status
    - New Late Finishes
    - New Late Starts
    - NGSD Needs Status
    - Not Summary
    - Planning Packages
    - Summary Tasks
    - Task Range...
    - Tasks With Estimated Durations
    - Using Resource...
    - More Filters...
    - AutoFilter



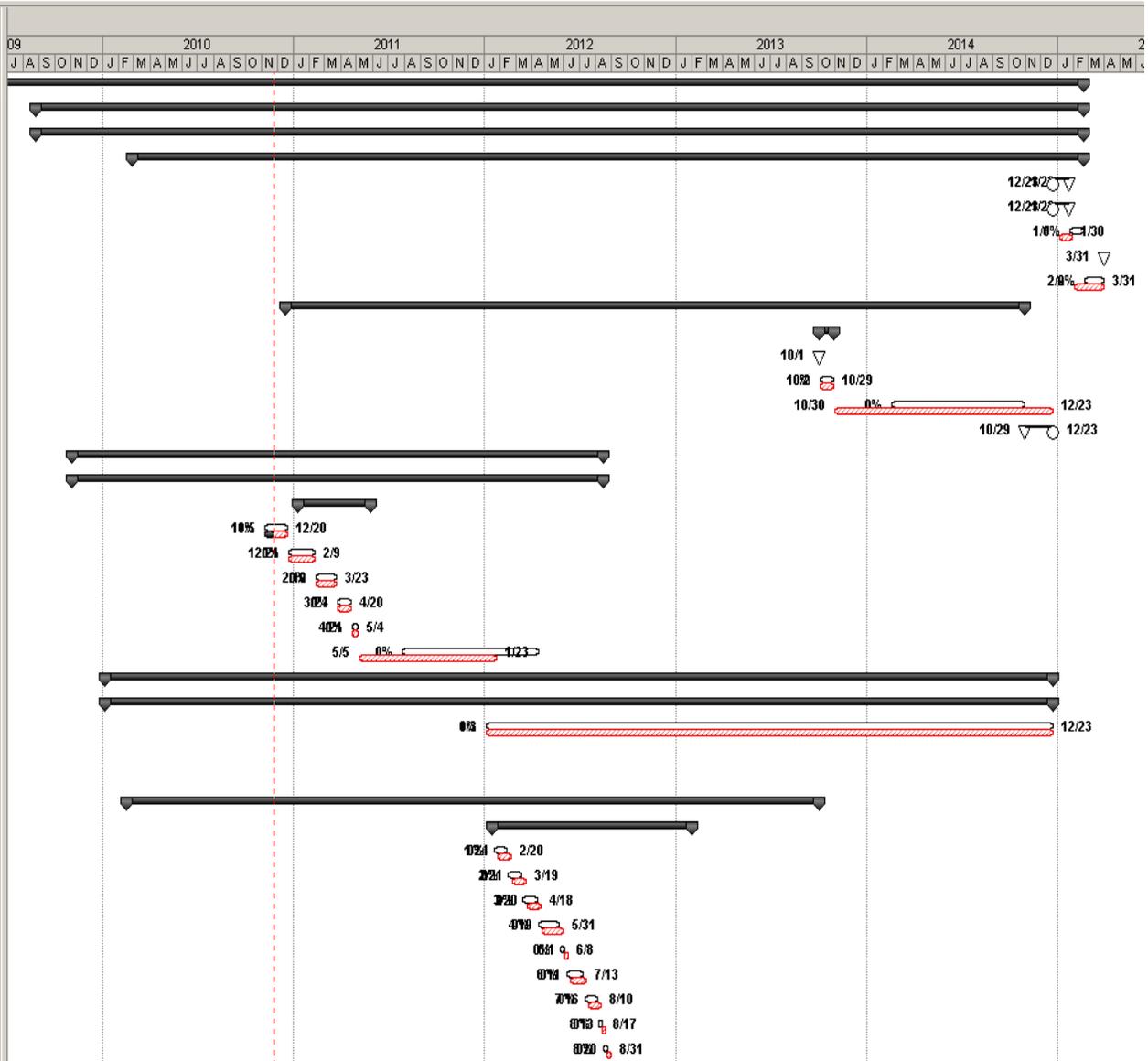
End of PoP for DO-55 Phase 1	T. Guilbault
<b>Group B (Processor Specific Tools)</b>	<b>T. Guilbault</b>
<b>NUCIF/CIP Toolset Rehost</b>	<b>U. Jackson</b>
<b>NUCIF Team to Team Handoffs</b>	<b>U. Jackson</b>
<b>Raytheon Deliveries to LM</b>	<b>U. Jackson</b>
Raytheon Delivers ASMHs Types to	U. Jackson
Raytheon Delivers NUCIF HW with I	U. Jackson
Raytheon Delivers NUCIF HW with I	U. Jackson
Raytheon Delivers BSI, DTI, Timer H	U. Jackson
Raytheon Delivers Label Message I	U. Jackson
Raytheon Delivers Full NIDL, Firmw	U. Jackson
Raytheon Delivers ASMHs to New	U. Jackson
Raytheon Delivers EC Server Softw	U. Jackson

C. Martinez



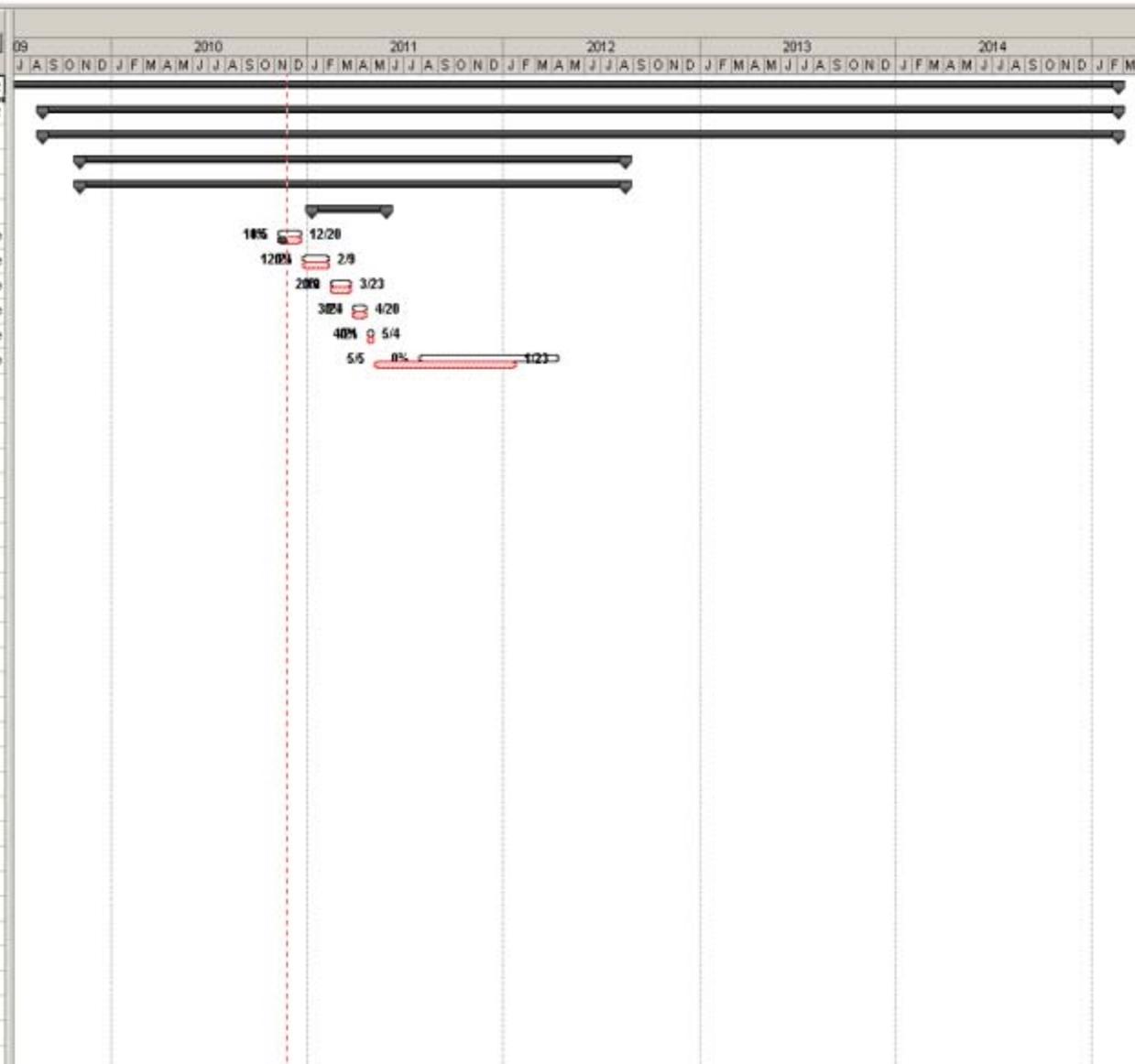
C. Martinez

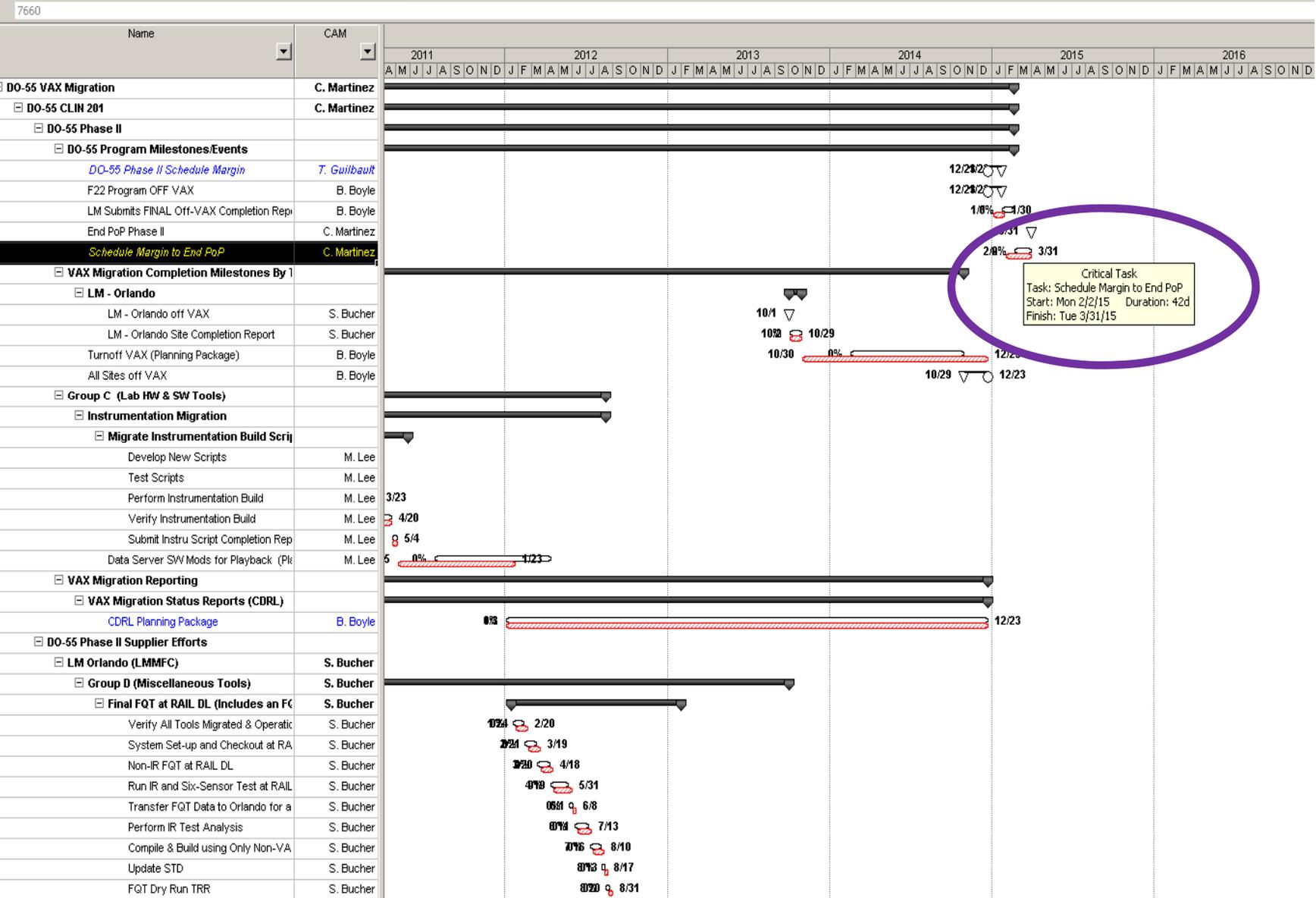
Name	CAM
(All)	
(Custom...)	
<b>DO-55 VAX Migration</b>	
<b>DO-55 CLIN 201</b>	
<b>DO-55 Phase II</b>	B. Boyle
<b>DO-55 Program Milestones/Events</b>	C. Martinez
DO-55 Phase II Schedule Margin	M. Lee
F22 Program OFF VAX	S. Bucher
LM Submits FINAL Off-VAX Comple	T. Guilbault
End PoP Phase II	C. Martinez
Schedule Margin to End PoP	C. Martinez
<b>VAX Migration Completion Milestones By 1</b>	
<b>LM - Orlando</b>	
LM - Orlando off VAX	S. Bucher
LM - Orlando Site Completion Report	S. Bucher
Turnoff VAX (Planning Package)	B. Boyle
All Sites off VAX	B. Boyle
<b>Group C (Lab HW &amp; SW Tools)</b>	
<b>Instrumentation Migration</b>	
<b>Migrate Instrumentation Build Scrip</b>	
Develop New Scripts	M. Lee
Test Scripts	M. Lee
Perform Instrumentation Build	M. Lee
Verify Instrumentation Build	M. Lee
Submit Instru Script Completion Rep	M. Lee
Data Server SW Mods for Playback (Pl	M. Lee
<b>VAX Migration Reporting</b>	
<b>VAX Migration Status Reports (CDRL)</b>	
CDRL Planning Package	B. Boyle
<b>DO-55 Phase II Supplier Efforts</b>	
<b>LM Orlando (LMMFC)</b>	S. Bucher
<b>Group D (Miscellaneous Tools)</b>	S. Bucher
<b>Final FQT at RAIL DL (Includes an FC</b>	S. Bucher
Verify All Tools Migrated & Operatic	S. Bucher
System Set-up and Checkout at RA	S. Bucher
Non-IR FQT at RAIL DL	S. Bucher
Run IR and Six-Sensor Test at RAIL	S. Bucher
Transfer FQT Data to Orlando for a	S. Bucher
Perform IR Test Analysis	S. Bucher
Compile & Build using Only Non-VA	S. Bucher
Update STD	S. Bucher
FQT Dry Run TRR	S. Bucher



C. Martinez

Name	CAM
DO-55 VAX Migration	C. Martinez
DO-55 CLIN 201	C. Martinez
DO-55 Phase II	
Group C (Lab HW & SW Tools)	
Instrumentation Migration	
Migrate Instrumentation Build Scrip	
Develop New Scripts	M. Lee
Test Scripts	M. Lee
Perform Instrumentation Build	M. Lee
Verify Instrumentation Build	M. Lee
Submit Instru Script Completion Rep	M. Lee
Data Server SW Mods for Playback (Pk)	M. Lee







# MS Project and Critical Path

The screenshot shows a web browser window displaying search results for 'Critical Path' in the Microsoft Project Help system. The browser's address bar shows the path: 'Project 2007 Home > Project 2007 Help and How-to > Building a schedule'. The search bar contains the text 'Search help' and the Bing logo. Below the search bar, there are links for 'downloads', 'images', and 'templates'. The main content area features a heading 'Search this: Show the critical path' followed by a paragraph: 'Having a close eye on your project's critical path is important when trying to meet a specific finish date.' Below this, another paragraph begins: 'In this demo, I show several methods for displaying a project's critical tasks. I also show how to display multiple critical paths in a project.' At the bottom left, there is a section titled 'Watch this video' with a play button icon and a thumbnail image of a Gantt chart showing a project schedule with critical path tasks highlighted in red.

Type “Critical Path” into  
“Search Help”

