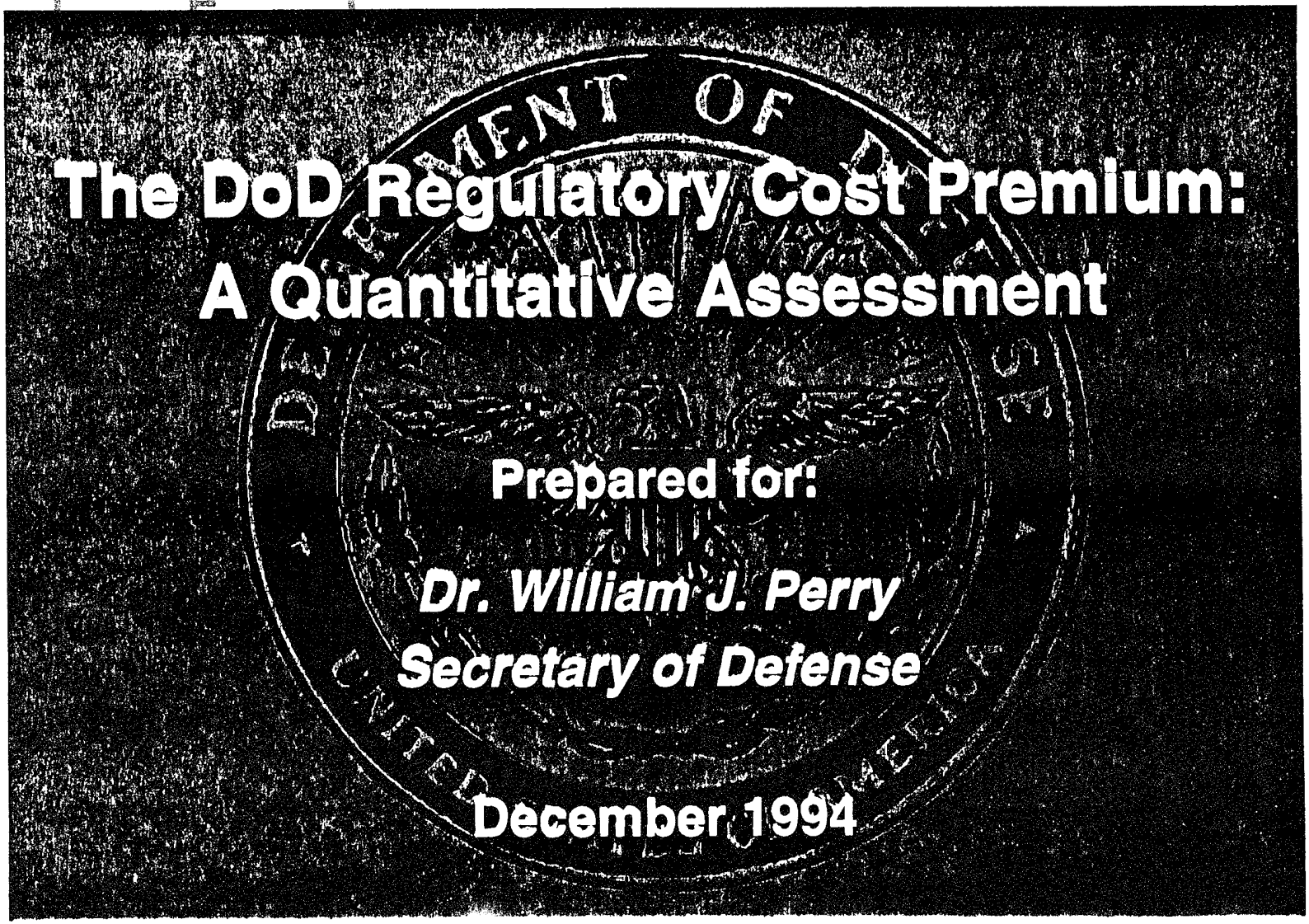
DTIC
ELECTE
JUL 1 8 1995
S D
F



The DoD Regulatory Cost Premium: A Quantitative Assessment

Prepared for:

Dr. William J. Perry
Secretary of Defense

December 1994

DTIC QUALITY INSPECTED 8

Coopers
&Lybrand

DISTRIBUTION STATEMENT A
Approved for public release;
Distribution Unlimited

19950717 000

TASC

Report Outline — Background

This annotated briefing summarizes the findings of the study conducted by a joint Coopers & Lybrand/TASC Project Team from March to October, 1994 at the request of then-Deputy Secretary of Defense Dr. William J. Perry. The study was conducted under the auspices of the Office of the Under Secretary of Defense for Acquisition and Technology (OUSD(A&T)).

DoD and Congress have developed a complex regulatory environment intended to maintain public accountability in defense acquisition and prevent contractor abuses. Especially in recent decades, reported incidents of contractor misdeeds have engendered a further extension of the regulatory web. Indeed, there has been a certain circularity to this evolution: a single alleged violation of the rules begets more legislation, more rules and more oversight, which almost inevitably leads to more accusations of wrong-doing.

The need to protect against contracting abuses must be balanced by a concern for the cost of this oversight. However, while horror stories about over-priced toilet seats are very visible — oftentimes on page one, above the fold — the costs of regulatory compliance are difficult to identify, as they are buried throughout contractors' cost structure, both direct and overhead. As a result, the traditional tendency has been to develop regulatory "fixes" for specific problems encountered with individual defense firms, and to impose the new requirements on all contractors — with little regard for the systemic impact on the acquisition process as a whole.

While compliance costs are a key issue in this era of constrained acquisition resources, the regulatory environment also has a powerful influence over the composition and capabilities of the defense industry. Many defense contractors now find that their "core capability" often has relatively little to do with technical capability or efficiency, and a lot to do with their ability to deal with the government and comply with its requirements. In contrast, world class commercial-oriented firms are increasingly reluctant to participate in the defense market because of concerns that the DoD regulatory environment will raise their costs and expose them to unacceptable civil and criminal risks.

Fortunately, DoD has recognized the need for a new approach, and has moved aggressively to streamline the acquisition system. The recent passage of the Federal Acquisition Streamlining Act of 1994 (FASTA 94) and Secretary Perry's directive on the use of commercial specifications and standards represent important steps toward a more balanced regulatory environment. Moreover, DoD is committed to implementing further improvements in the acquisition process.

The purpose of this study is to assist DoD's reform efforts by providing credible, empirically-based estimates of the industry cost impact of DoD regulation and oversight. We believe the study results will support DoD's efforts to strike an appropriate balance between the need for adequate accountability and the costs of compliance and oversight, and to promote a greater integration of the defense and commercial sectors — a key imperative if DoD wishes to maintain a viable national industrial base responsive to national security requirements.

The Project Team extends its sincere thanks to the ten firms that participated in the site assessments. The companies devoted considerable time and effort to this project. The enthusiastic and public-spirited nature of their participation was impressive given that many of these firms are undergoing painful restructuring as a result of the on-going defense drawdown.

Report Outline

- **Background**
- **Site Assessment Results**
  - Top Level Results
  - Key Cost Drivers
  - Regulatory Categories
  - Business Functions
- **Conclusions**
- **Appendices**
  - Appendix A - Cost Driver Glossary
  - Appendix B - Project Team
  - Appendix C - Industry Contacts

Accesion For	
NTIS CRA&I	☑
DTIC TAB	☐
Unannounced	☐
Justification	
By	
Distribution /	
Availability Codes	
Dist	Avail and / or Special
A-1	

Coopers &Lybrand

TASC

Study Objectives

In recent years, many government and private sector organizations have conducted case studies and other analyses relating to the impact of the DoD acquisition environment on contractor's costs — including the National Performance Review,[1] the Carnegie Commission,[2] Defense Science Board,[3] and the Center for Strategic and International Studies (CSIS).[4] Such efforts have contributed to an improved understanding of this important problem, and focused attention on the need for DoD to address the cost of regulatory compliance.

However, previous studies have generally not provided DoD with a complete basis for developing and implementing concrete reform measures to reduce regulatory compliance costs. First, these efforts have focused largely on estimating the total DoD cost premium, and do not attempt to tie compliance costs to specific DoD regulatory requirements. Moreover, previous analyses are based primarily on unverifiable anecedotal or quasi-anecdotal information which lack the analytic credibility needed to support policy decisions.

This study seeks to build upon the foundation of earlier studies to achieve three primary objectives: first, to develop and employ a credible, systematic, empirically-based approach to assessing the industry cost impact of specific DoD regulations; second, to measure the overall impact of the DoD regulatory environment on contractors' costs; and, third, to identify the key regulatory cost drivers and describe how they impact contractors' business processes. The ultimate goal of this study is to provide DoD with a detailed roadmap for reducing contractors' regulatory compliance costs.

---

[1] Gore, A., *Report of the National Performance Review*, U.S. Government Printing Office, September 1993.
[2] Carnegie Commission on Science, Technology, and Government, *New Thinking and American Defense Technology*, May 1993.
[3] Defense Science Board, *Report of the Defense Science Board Task Force on Defense Acquisition Reform*, July 1993.
[4] van Opstal, D., *Integrating Commercial and Military Technologies for National Strength*, March 1991.

Study Objectives

- **Develop a Systematic, Empirical Approach to Assessing the Industry Cost Impact of the DoD Regulatory Environment**
- **Measure the Total DoD Cost Premium Associated with the DoD Regulatory Environment**
- **Identify Specific DoD Regulatory Cost Drivers**

Study Scope/Excluded Factors

To accurately interpret the findings of this study, it is important to have a full understanding of the scope of the project, as well as an appreciation of those factors that the Project Team did not address.

First, the Project Team conducted site assessments at ten contractor facilities. These sites — which were selected in close consultation with DoD — represent a diverse range of contractor facilities with respect to size, region, industry sector, tier position, participation in the commercial market, and other factors. We believe that, taken together, the study sites represent a fair cross-section of the defense industry, and provide an adequate basis for assessing the general impact of the DoD regulatory environment on contractors' costs. (The participating firms are identified and described in greater detail on pages 9-9a.)

Nevertheless, the defense industry is a highly complex entity with thousands of contractors, and it is unlikely that any ten companies are fully representative of the whole. Therefore, those seeking to project the study results to the entire defense industrial base or to estimate in a precise fashion the budgetary savings likely to result from reform of the DoD acquisition environment should exercise caution when interpreting the study results.

Second, the Project Team addressed only the issue of acquisition-related regulations, procedures, and oversight. Any specification or other provision bearing on the "form, fit, and function" of defense items was considered to be performance- or design-related and therefore outside the scope of the study. Accordingly, the Project Team did not consider the potential benefits to DoD of increased purchases of commercial products or components, or the cost implications of a shift toward less technologically-sophisticated weapon system designs.

Third, our mandate was to assess only the industry cost impact of DoD acquisition regulations and oversight. DoD's direct oversight costs — the costs of maintaining auditors in the field, for example — were not part of our inquiry. Also, some claim that DoD receives substantial benefits from its regulatory activities. The Project Team did not attempt to validate the existence of such benefits or quantify their value. In other words, we looked only at the "cost" portion of the cost/benefit ratio.

Fourth, the basic framework of our assessment was the contractors' existing organization and processes. Many observers argue that the DoD regulatory environment not only imposes direct compliance costs on industry, but also prevents contractors from taking full advantage of the economies of scale that might be achieved through the complete integration of military and commercial production. (The Project Team found limited civil/military integration at five of the ten sites; even at these five sites, management had taken measures to "wall off" many defense-related operations.) The Project Team did not attempt to measure the potential benefits of reducing the barriers to greater civil/military integration.

Finally, the Project Team used value added costs (i.e., total costs less material/subcontract purchases) as the cost base for this assessment. Material costs were not addressed. The reasons for this approach are discussed below.

Study Scope / Excluded Factors

We Analyzed / Measured:	We Did Not Analyze / Measure:
• Diverse Sample of 10 Facilities	• Entire Defense Industry
• Acquisition *Process* — Regulation / Oversight	• Performance / Design Requirements
• Contractors' Compliance Costs	• DoD's Direct Oversight Costs • Benefits to DoD of Regs / Oversight
• Impact of Regs / Oversight on Contractors' Prevailing Processes	• Potential Benefits of Greater Civil / Military Integration
• Value Added Costs	• Material Purchases

Coopers &Lybrand

TASC

Why Value Added?

Throughout this report, we use value added costs as the basis for calculating the industry cost impact of DoD acquisition regulations and oversight. As noted above, value added costs are equal to total costs less the costs of material purchases, including subcontracts. In other words, the so-called DoD "cost premium" is equal to contractors' compliance costs divided by the contractors' value added costs (DoD "Cost Premium" (%) = Contractor Compliance Costs ($)/Value Added Costs ($)).

Value added provides the appropriate basis for this study because of the tier structure of the defense industry. As illustrated in the accompanying chart, the material purchases of a prime contractor are largely the value added costs of its subcontractors and suppliers. Using total costs rather than value added costs in the denominator of the equation would result in the double counting of material costs. The result would be an increase in the denominator and an unchanging numerator — and the substantial understatement of the regulatory cost impact.

In light of the focus on value added costs, both the government sponsor and the Project Team took great pains to ensure that the study sites represented a balanced mix of firms from a tier perspective. For example, Oshkosh Truck-Chassis Division is a prime contractor to the Army for heavy duty military trucks. Allison Transmission, another of our study sites, is a major subcontractor to Oshkosh, as it produces the heavy duty automatic transmissions used in these military vehicles. The Project Team also visited Timken Bearing, which is a major supplier to Allison of bearings used in the transmission for the Oshkosh trucks.

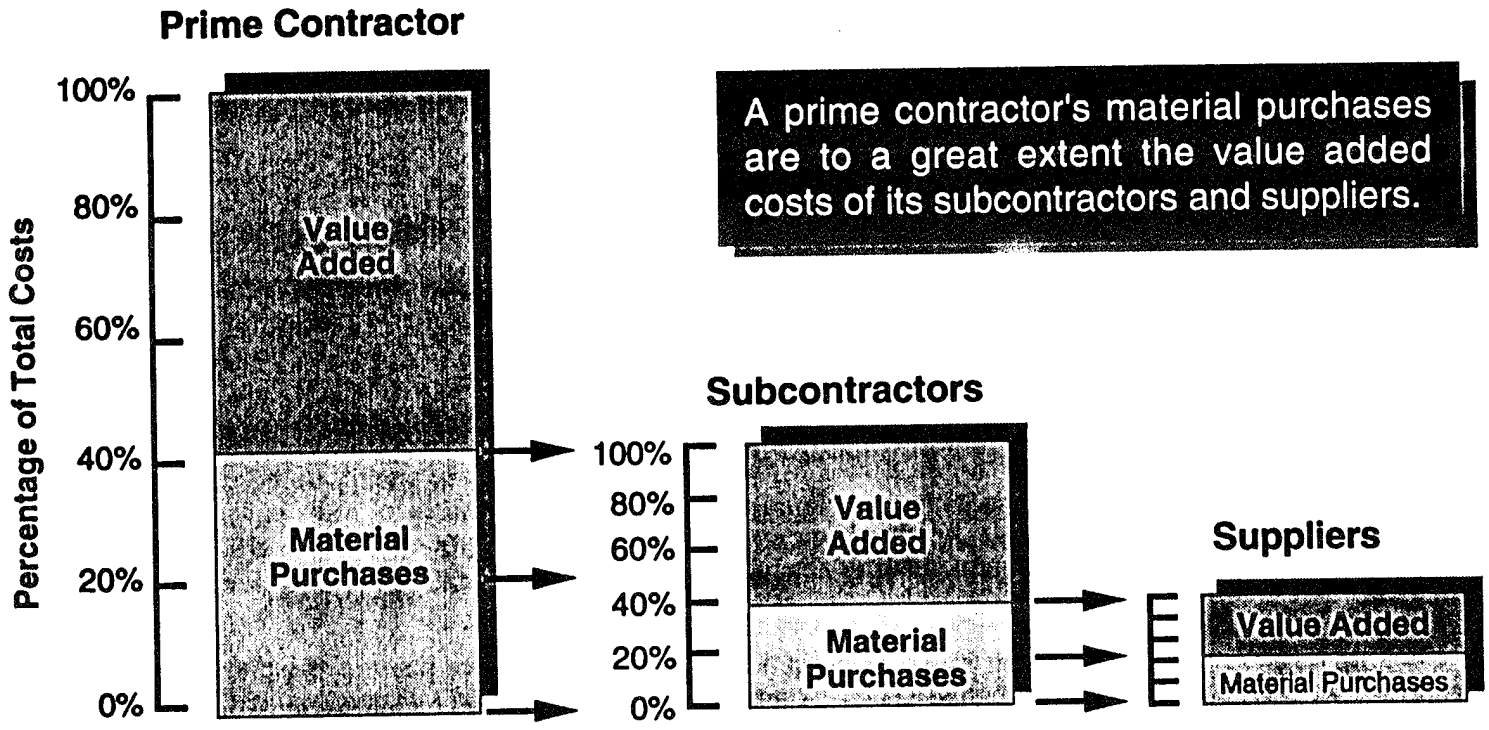
Another reason that value added is an appropriate basis for measuring regulatory cost impact relates to the widespread practice on the part of prime contractors of "flowing down" most contract terms and conditions to their major subcontractors. As a result of this practice, prime contractors and subcontractors shoulder similar regulatory burdens. Thus, there is little reason to be believe that the regulatory cost impact on a prime contractor's material purchases would be substantially different than the impact on his value added costs. (An exception should be made for suppliers of commodity items sold widely in the commercial market, which are not subject to a variety of regulations relating to the disclosure and accurate accounting of costs.)

It should be noted that the Project Team adjusted the value added cost base slightly by excluding profits and, when applicable, corporate general and administrative (G&A) allocations. Profits were excluded because of the firms' reluctance to provide this sensitive information and because, in the defense industry, profits are driven largely by costs. In other words, we assume that a 10% reduction in contractors' costs achieved through improvements in the regulatory environment are also likely to result in approximately a 10% reduction in company profits. Corporate G&A allocations were excluded because the Project Team had no means to assess regulatory impacts at the corporate level when conducting site assessments at the division/facility level. However, we believe that DoD regulation and oversight have significant impacts at the headquarters level, as many headquarters organizations (e.g. corporate contract policy departments) exist primarily for the purpose of interacting with the government. (While for simplicity's sake we refer throughout this report to "value added costs," in all cases the cost base has been adjusted in the manner described above.)

In summary, we believe that the calculation "compliance costs divided by value added costs (less profits and corporate G&A allocations)" is representative of the regulatory cost impact on the contractors' division/facility total cost base.

Why Value Added?

Value Added = Total Costs - Material Costs



A prime contractor's material purchases are to a great extent the value added costs of its subcontractors and suppliers.

Coopers &Lybrand

TASC

Activity-Based Costing (ABC)

The Project Team employed an activity-based costing (ABC) approach to calculating the industry cost premium associated with DoD regulation and oversight. ABC is an innovative cost management tool which allows managers and business analysts to assess costs from the perspective of the activities actually performed by an organization. The keystone of the ABC technique is to identify the key activities performed by an organization and to determine the costs of these activities through detailed interviews with appropriate company personnel.

In recent years, ABC techniques have been utilized with growing frequency in the commercial sector to — among other applications — identify the "true" product costs, help firms ration productive resources in the most efficient manner (e.g., make vs. buy decisions), and establish benchmarks for business process re-engineering. This approach has won strong adherents among many world class commercial firms in the United States and elsewhere.

The Project Team used an ABC-oriented approach because traditional accounting methods do not provide an adequate basis for assessing the cost impact of the regulatory environment. Most accounting systems track costs by cost element (salaries, benefits, supplies, etc.), labor category, or by corporate organization, but usually provide little insight into the costs associated with performing specific tasks — such as complying with DoD acquisition rules. Regulations are a "given," an accepted fact of business life, and neither regulators nor executives have a strong interest in isolating and tracking compliance costs in and of themselves.

The accompanying chart highlights differences between the traditional cost accounting and ABC perspectives for a notional engineering department.

Activity-Based Costing (ABC)

Traditional Accounting Perspective		Activity-Based Perspective	
Salaries	$1,350,000	Design / Develop Widgets	$330,000
Benefits	495,000	Resolve Mfg Problems	550,000
Travel Expenses	45,000	Conduct Field Failure Analysis	110,000
Facilities /Eqpt	220,000	Support Proposal Development	110,000
Supplies	52,000	Support Government Audits	440,000
Training	38,000	Perform Project Mgmt Tasks	330,000
		Monitor Development Tests	330,000
TOTAL	$2,200,000		$2,200,000

Traditional vs. ABC Cost Breakdowns for Notional Engineering Department

Coopers &Lybrand

TASC

Site Assessment Strategy

This slide provides a graphical overview of the assessment strategy used during the company site visits.

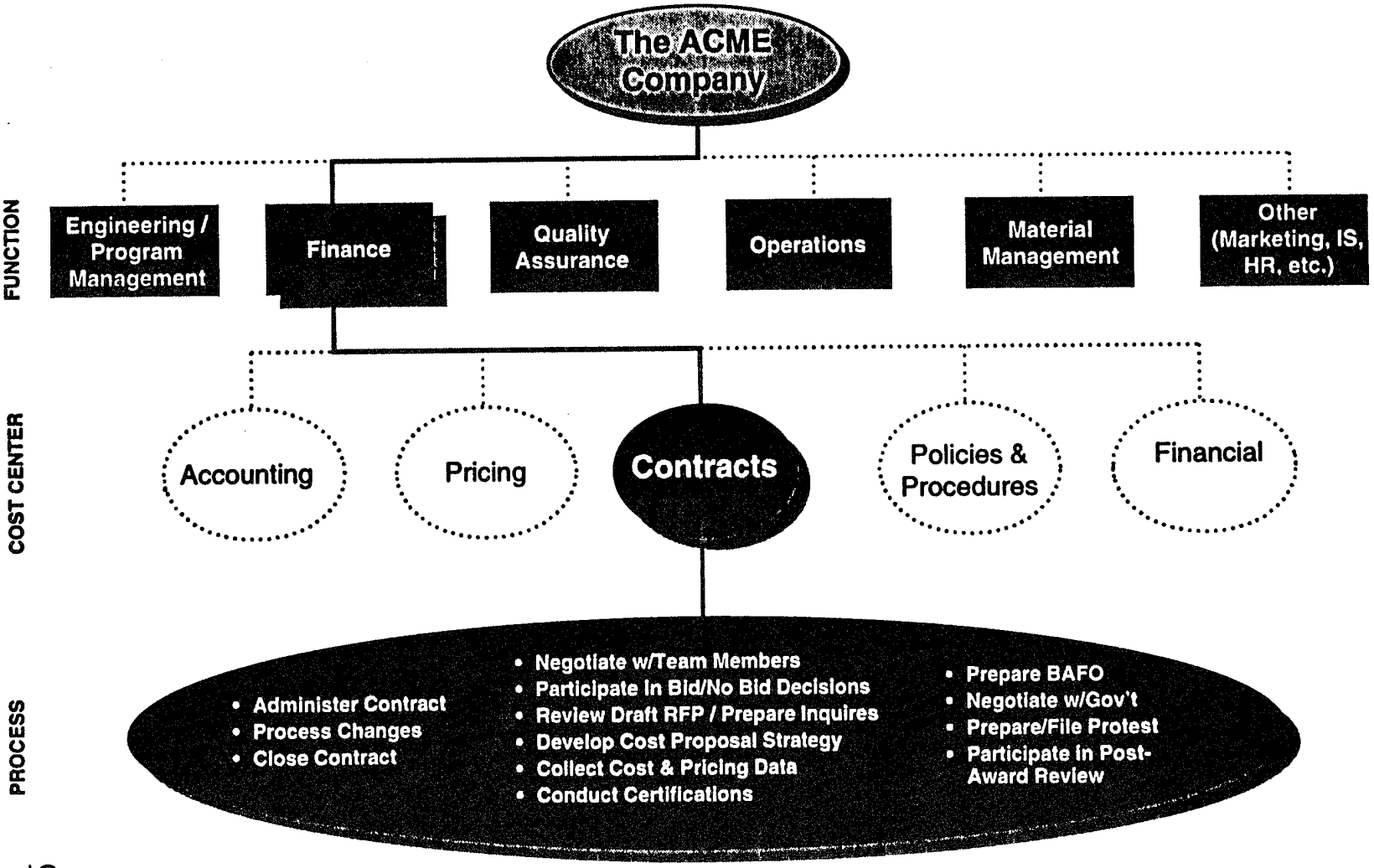
The Project Team utilized a function-oriented site assessment approach. After arriving at a company site, the Project Team reviewed the firm's organization structure with company personnel and identified cost centers — the lowest level of organization for which costs are budgeted or collected — to primary business functions such as finance, quality assurance, operations, etc. In most cases, the assignment of cost centers to functions was largely consistent with the firm's existing organizational structure. Some highly "matrixed" firms, however, were organized around product lines or programs rather than functions. In such a company, for example, contracting personnel might report to a program manager rather than the chief financial officer. In these cases, we broke down the product line or program organization into its subordinate parts, and assigned these elements to the appropriate function.

After grouping the cost centers into business functions, the Project Team initiated the data collection effort by interviewing cost center managers and their key subordinates. For those company sites devoted exclusively to the development and manufacture of DoD-related military products and services — Texas Instruments, Rockwell Collins, Boeing, and Teledyne Ryan — the analysis extended to all cost centers except those associated exclusively with material costs or corporate allocations. (At Boeing, because of the scale of its military aerospace operations in Seattle, the B-2 program was selected as a surrogate for all program activities at the facility.) At those facilities with a mix of both DoD and commercial business — Motorola, Allison, Beech, Hughes, Oshkosh, and Timken — cost centers supporting commercial operations only were excluded from the site assessment. However, indirect cost centers supporting both DoD and commercial operations were addressed; in such cases, cost allocation formulas approved by the Defense Contract Audit Agency (DCAA) were used to remove from the defense cost base those expenses related to the support of the commercial side of the business. In other words, we ensured that our value added cost base included only DoD-related costs.

For each cost center included in the site assessment, the Project Team used a structured ABC interview technique to develop a hierarchical "process model" documenting all of the cost center's processes, sub-processes, and activities; allocate 1994 budgeted expenses across these processes, sub-processes, and activities (at some sites 1993 actuals were used rather than 1994 budgets); identify those activities that are impacted by DoD regulation and oversight; estimate the cost impact on those activities should the regulation and oversight "disappear"; and allocate this cost impact to specific regulatory cost drivers. Project Team members also asked cost center personnel to provide appropriate qualitative information, and to make suggestions as to how DoD might reduce compliance costs while preserving appropriate government accountability. Page 10 provides a sample data collection worksheet, as well as a detailed discussion of the ABC interview process.

After examining all cost centers in a given function, the Project Team consolidated the interview results into a summary worksheet for the functional area, and provided the results to appropriate function managers for their review and concurrence. With the completion of all functions, the Project Team prepared a briefing for senior executives indicating the total regulatory cost impact for the site and identifying the major cost drivers. Accordingly, the site assessment results presented in this report have been thoroughly reviewed and endorsed by the senior executives at the participating company sites.

Site Assessment Strategy



Coopers &Lybrand

TASC

Calculating the DoD Cost Premium

The calculation of the DoD cost premium is the central element of the site assessment methodology employed by the Project Team. Cost center managers were asked to estimate the cost impact on specific activities of substituting best commercial practices for all DoD regulation and oversight. The Project Team instructed cost center managers to assume that the physical characteristics and performance requirements of the DoD-purchased item do not change.

The Project Team found that most cost center managers had sufficient knowledge of commercial practices to identify the DoD cost premium. To a great extent, this was the result of the effort of the government sponsor and Project Team to identify and recruit firms with substantial commercial experience. In fact, five of the ten participating sites maintain some form of integrated military and commercial operations, and two of the sites have commercial-oriented "sister" facilities nearby that produce items that are similar to those manufactured in the defense facility.

In those cases in which company personnel had little or no commercial experience, cost center managers used direct military sales to foreign governments — which usually involve little customer oversight — as their "commercial" frame of reference. Similarly, some of the company sites have experience in so-called "streamlined" DoD programs, in which many regulatory requirements have been waived. In short, we believe that virtually all cost center managers interviewed by the Project Team have an adequate basis for assessing the cost impact of DoD acquisition regulations and oversight on the costs of specific activities.

It should also be noted that each of the site assessment teams included one government contracting expert who assisted company personnel when necessary in linking cost impacts to specific regulations or other cost drivers.

Calculating the DoD Cost Premium

- **Cost center manager compares current practice to:**
  - **Best commercial practice, or**
  - **Prevailing practice in contractor's commercial operations, or**
  - **Practice utilized in direct military sales to foreign governments**
- **Nearly all managers experienced in streamlined, non-DoD practices**
  - **Five firms have both defense and commercial operations at same site**
  - **Two firms have "sister" commercial facilities near military plant**
  - **Three firms have related commercial operations in separate divisions / locations**

At each company site, Survey Team included a government contracting expert to assist cost center managers when necessary in identifying applicable regulations.

Coopers &Lybrand

TASC

Data Collection Worksheet

This slide provides a sample ABC worksheet developed by the Project Team in the course of our interview with a procurement manager at one of the company sites. Similar worksheets were created for each cost center at all the participating sites, except when the cost center was not impacted by DoD regulations or oversight.

During the initial portion of the interview, cost center representatives develop a hierarchical "process model" describing all of the tasks performed by the cost center. The process model, which is recorded on the left-hand side of the worksheet, breaks down the primary processes of the cost center into their corresponding sub-processes and activities. In this example, all endeavors of the procurement department are grouped under a single process — "1.0.0 - Perform Purchasing Operations." There are five sub-processes under this heading, such as "1.2.0 - Evaluate Responses to Requests for Quotes (RFQs)." This sub-process includes five subordinate activities, from establishing a pricing matrix (1.2.1) to determining a preliminary fair and reasonable price (1.2.5).

Next, cost center personnel were asked to allocate a percentage of the department's 1994 budget to each of the identified sub-processes. In this example, the procurement manager estimates that evaluating responses to RFQs accounts for 15% of the department's total budget of $1.6 million, or $240 thousand. Activity costs are calculated in a similar manner. In this example, the activity "1.2.1 - Establish Pricing Matrix" accounts for 35% of the costs associated with the sub-process "1.2.0 - Evaluate Responses to RFQ" for an estimated activity cost of $84 thousand. At this point, cost center representatives were requested to identify those activities that are impacted by DoD regulations and oversight. In this example, the procurement manager indicated that all of the activities under "1.2.0 - Evaluate Responses to RFQ" are impacted except interaction with the program manager.

Cost center managers then estimated the cost impact on these activities should DoD regulations and oversight suddenly disappear. Under this scenario, the design and performance requirements of the goods and services provided to DoD do not change; however, the process used to satisfy these requirements is determined by commercial practice, not DoD regulations. Here, the procurement manager estimated that half of all the costs associated with establishing a pricing matrix ($42 thousand) would go away, as would all of the costs related to confirming certifications of cost and pricing data ($24 thousand). The sum of the impact costs divided by the cost center's budgeted expenses represents the total impact of DoD regulations and oversight on the cost center. In this case, the estimated impact is 57% of the total costs of the procurement department.

As the final step in the interview process, cost center representatives were asked to allocate impacted activity costs to specific regulations, drawing upon a list of prominent regulatory cost drivers provided by the Project Team. (This cost driver glossary is provided in Appendix A.) The codes recorded under the "Cost Driver" column heading correspond to specific regulatory cost drivers. In the case of "1.2.4 - Select Supplier," 50 percent of the impacted costs were allocated to the Competition in Contracting Act, with the remainder split evenly between the Buy American Act and small/disadvantaged business programs. Finally, in a section not shown here, the worksheet calculates the total impact of individual cost drivers across all cost center activities.

The Project Team also solicited qualitative information from cost center personnel regarding their personal experiences with the regulatory environment, and asked for their suggestions as to how DoD might change the regulatory environment to reduce compliance costs, while maintaining appropriate accountability. These comments were recorded at the bottom of the worksheet.

Data Collection Worksheet

ACME Company/Procurement

(Contact: John Smith, Dept Mngr)

	Process	Sub-Process	Activity	Sub-Process Cost Distribution (%)	Sub-Process Cost Distribution ($000)	Activity Cost Distribution (%)	Activity Cost Distribution ($000)	Impacted by DoD Regs? (Y/N)	% Impact	Impacted Cost ($000)	Cost Drivers
1.0.0	Perform Purchasing Operations										
1.1.0		Prepare RFQ		25%	$400						
1.1.1			Obtain/Check Dwgs			10%	$40	N			
1.1.2			Obtain Quality Requirements			20%	$80	N			
1.1.3			Obtain Regulations			10%	$40	N			
1.1.4			Review T&Cs for Gov't Flowdowns			40%	$160	Y	100%	$160	Contract Specific Rqmnts
1.1.5			Issue RFQ			20%	$80	Y	60%	$48	CICA/Cont Specific Rqmnts
1.2.0		Evaluate Responses to RFQ		15%	$240						
1.2.1			Establish Pricing Matrix			35%	$84	Y	50%	$42	TINA
1.2.2			Check Certs/Obtain Written Confirmation			10%	$24	Y	100%	$24	TINA
1.2.3			Interface w/Prog Mgr			10%	$24	N			
1.2.4			Select Supplier			10%	$24	Y	50%	$12	
1.2.5			Determine Preliminary Fair & Reasonable			35%	$84	Y	60%	$50	CPSR
1.3.0		Support Contract Negotiations		10%	$160			Y	15%	$24	TINA
1.4.0		Conduct "Award Phase" Procurement Ac		40%	$640						
1.4.1			Prepare Procurement File			10%	$64	Y	80%	$51	CPSR
1.4.2			Determine Fair and Reasonable Price			40%	$256	Y	60%	$154	CPSR
1.4.3			Prepare Case File Narrative (>$100K)			10%	$64	Y	80%	$51	CPSR
1.4.4			Negotiate P.O. and/or T&Cs			20%	$128	Y	60%	$77	CPSR(75%)/TINA(25%)
1.4.5			Prepare contract-specific T&Cs			15%	$96	Y	100%	$96	Small/Disadv
1.4.6			Award P.O.			5%	$32	N			
1.5.0		Support Audits		10%	$160						
1.5.1			CPSR			80%	$128	Y	80%	$102	CPSR
1.5.2			MMAS			2%	$3	Y	80%	$3	MMAS
1.5.3			DCAA Audit of Customers			5%	$8	Y	80%	$6	DCAA Audits
1.5.4			DCAA Post-Award Audit (Def. Pricing)			10%	$16	Y	100%	$16	DCAA Audits
1.5.5			Internal Audits			3%	$5	Y	50%	$2	CPSR
			TTL:	100%	$1,600				57%	$919	
			94 Budget:		$1,600						

Notes:

- The DoD has recently established a new step in the facilities acquisition process for GOCO plants.
  Now, after bids for facilities are opened by the GOCO operator, DoD convenes a selection panel to make the selection of the winning bidder.
- The DoD Priority Allocation System is ignored by most suppliers and is therefore ineffective. However, contractors are still required to implement the program.
- DoD's insistence upon competition makes it impossible to develop partnerships with suppliers; TQM rhetoric is incompatible w/competition rqmnts
- Commercial manufacturer in town has 12-13 buyers for $1bn in sales compared to ACME's 6 buyers for $100 million.

Coopers &Lybrand

TASC

Company Sites

The data analyzed in this report was obtained from extensive ABC assessments at the following ten defense contractor sites during the period April - September 1994:

- Allison Transmission (a subsidiary of General Motors)
- Beech Aircraft (a division of Raytheon)
- Boeing Defense and Space Group
- Rockwell Collins Avionics and Communications Division
- Hughes Space & Communications Company (a subsidiary of General Motors)
- Motorola Government Systems Technology Group
- Oshkosh Truck — Chassis Division
- The Timken Company
- Teledyne Ryan Aeronautical TCAE Turbine Engines
- Texas Instruments Defense Systems and Electronics Group

The Project Team proposed candidate sites for the review and final approval of the government sponsor. The primary objective of the site selection process was to develop a diverse cross-section of contractors with regard to industry sector, product orientation, tier position, regional location, and facility size. It was also considered important that the candidate sites and/or their key personnel have some experience in commercial operations in order to better understand the differences between DoD and commercial practice when assessing the impact of the DoD regulatory environment on business processes. Another key factor was the willingness of the contractor to provide the necessary staff support to the Project Team (at most sites, two full-time professionals for the duration of the site assessment) and the detailed financial information needed for our ABC analysis. The Project Team concluded proprietary information agreements with each of the participating companies, and pledged not to provide any company- or site-specific information to the government sponsor or any other DoD organization. The duration of site assessments ranged from one to five weeks, depending on the volume of defense production at the site, with the average site visit close to four weeks.

It should be noted that the 1993 military sales figures cited below are estimates only, and that they include both direct and indirect sales to DoD and other U.S. national security agencies.

Company Sites

Company Site	State	1993 DoD Sales ($m)	Degree of Civil/Military Integration	Military Products
Allison Transmission (GM)	IN	$217	Partially Integrated	Transmissions
Beech Aircraft (Raytheon)	KS	$199	Integrated	Aircraft
Boeing Defense & Space Group	WA	$4,024	Some Integrated Fabrication	Aerospace
Rockwell Collins CACD	IA	$317	Adjacent "Sister Facility"	Comm/Avionics
Hughes Space & Comm Co. (GM)	CA	$722	Partially Integrated	Comm/Satellites
Motorola GSTG	AZ	$505	Partially Integrated	Comm/Electronics
Oshkosh Truck-Chassis Division	WI	$373	Integrated	Military Trucks
The Timken Company	OH	$100	Integrated	Bearings
Teledyne Ryan TCAE	OH	$34	Defense Only	Turbine Engines
Texas Instruments DSEG	TX	$1,222	Defense Only	Electronics/Missiles

Total $7.2 BN

Coopers &Lybrand

TASC

Site Assessment Metrics

To collect the data presented in this report, the Project Team conducted detailed activity-based costing (ABC) assessments for a diverse group of ten defense contractors. This slide provides some key metrics which document the detailed and thorough nature of this data collection effort. Accordingly, this study has a very strong empirical foundation — an element missing in many of the previous analyses of regulatory cost impacts.

Site Assessment Metrics

• **Company Sites Analyzed**	=	**10**
• **Military Sales Addressed**	≈	**$7.2B**
• **Man-months in Field**	≈	**25**
• **Contractor Personnel Interviewed**	≈	**1000**
- Execs, Cost Center Mngrs, Key Workers		
• **Worksheets Completed**	≈	**500**
• **Business Activities Documented**	≈	**5000**
• **Cost Drivers Assessed**	≈	**120**

Report Outline: Site Assessment Results — Top Level Results

This sub-section presents the DoD regulatory cost premium for the ten company sites, as well as for groups of sites categorized by industry sector, product type, and engineering content.

Report Outline

- **Background**
- **Site Assessment Results**
  - Top Level Results
  - Key Cost Drivers
  - Regulatory Categories
  - Business Functions
- **Conclusions**
- **Appendices**
  - Appendix A - Cost Driver Glossary
  - Appendix B - Project Team
  - Appendix C - Industry Contacts

Coopers &Lybrand

TASC

The DoD Regulatory Cost Premium

The Project Team found an average DoD regulatory cost premium of 18 percent of value added costs at the ten company sites. This figure represents a straight average of the site assessment results from the 10 company facilities; in other words, all of the firms were given equal weight, regardless of the volume of their defense sales. The primary reason for the decision to employ a straight rather than a weighted average is that the use of weighted average would greatly increase the influence of the three largest company sites on the consolidated results, essentially overwhelming the data from the eight medium-sized and small contractors.

It is important to note that this ten site average includes the site assessment results from one firm which refuses to provide certified cost and pricing data to DoD, and limits its contractual relationship with DoD largely to catalogue sales. Accordingly, compliance costs for this firm are substantially lower (albeit still significant) than for those firms that have full exposure to the DoD regulatory environment. The removal of this site from the sample population measurably increases the average for the remaining nine sites. (Our non-disclosure agreement with study participants precludes release of the average cost premium figure for these nine contractors.)

The site assessment results show an intriguing distribution. Results from six of the company sites fall within a range of ± 4 percent around the mean. However, four outliers are significantly outside this range, with a spread between the two extremes totaling more than 25 percentage points.

Finally, we note the obvious point that had we examined a different set of company sites, we probably would have found somewhat different regulatory cost impacts. Compliance costs are influenced by a large numbers of variables arising from the specific circumstances of each contractor. However, these top level results suggest strongly that the DoD regulatory environment imposes a substantial cost premium throughout the defense sector — which ultimately is absorbed by DoD in the form of increased unit costs for military equipment and services.

The DoD Regulatory Cost Premium

- Ten Site Average = 18% of Value Added Costs
- Average Includes Results from One Site that Conducts Business with DoD Primarily on a Commercial Basis
- Results from Six Sites Clustered Around Mean (± 4%)
- Outliers Span Range of More than 25%

Related Studies and Analyses

In recent years, several defense contractors and policy organizations have attempted to assess the impact of DoD regulation and oversight on industry costs. This slide compares the methdological approach and the top-level findings of the C&L/TASC study with those of its predecessors. Complete citations of previous studies and analyses follow:

- Defense Science Board, *Report of the Defense Science Board Task Force on Defense Acquisition Reform — Appendix C*, July 1993.
- Carnegie Commission on Science, Technology, and Government, *New Thinking and American Defense Technology*, May 1993.
- American Defense Preparedness Association, *Doing Business with DoD — The Cost Premium*, 1992.
- Center for Strategic and International Studies, *Integrating Commercial and Military Technologies*, March 1991.
- *IBM Case Study* (prepared for CSIS report cited above), March 1991.
- Honeywell, *Defense Acquisition Improvement Study*, May 1986.

Scope and methodological differences account for much of the variation in the findings of previous studies. While there is significant variation in the specific findings, all previous studies agree that both DoD and industry would benefit considerably from greater use of commercial practices in defense procurement. These conclusions are fully validated by the C&L/TASC analysis.

It should be noted that this study goes considerably beyond previous efforts in this field. The findings presented in this report are the result of a extensive, highly structured, and systematic data collection effort featuring detailed activity-based costing (ABC) assessments of ten defense contractors. In contrast, previous studies have been based largely on anecdotal or quasi-anecdotal information, and have not involved a disinterested third party in the data collection and analysis.

Related Studies & Analyses

Study	Approach	Estimated Cost Impact/Potential Savings	Comments
C&L / TASC, 1994	*ABC Analyses of 10 Contractors*	*18% of Contractor's Value Added Costs*	*Empirical Approach; 3rd Party Data Collection*
DSB Task Force, 1993	Government / Industry Panel	20% DoD Budget Savings After 5 Years	Macro-Level Analysis — Case Study Extrapolation
Carnegie Commission, 1992	Industry Panel	30-40% of Contractor's Costs	Macro-Level Analysis — No New Data Collection
ADPA, 1992	Questionnaires / Internal Studies	30-50% of Product Costs	No Consistent Approach; Rqmnt Changes; No Data Validation
CSIS, 1990	Internal Case Study	18% Savings in Labor Costs	Focus On Barriers to Integration — Not Reg Costs
IBM, 1990	Internal Case Study	26% of Product Costs	Includes Material Costs; Value Added Savings: 6-9%
Honeywell, 1986	Internal Study of 20 Programs	13% of Contractor's Costs	Closest to C&L/TASC Approach

Coopers &Lybrand

TASC

Site Assessment Results by Industry Sector

In this and the following three slides, we report average regulatory compliance costs by selected company groupings. To prevent the disclosure of site-specific information, each of the groupings contains at least three companies. The purpose of this analysis is to identify those characteristics associated with high levels of regulatory cost impact. However, given the many variables that undoubtedly contribute to a firm's regulatory cost burden — as well as the small sample sizes involved — we cannot draw definitive conclusions regarding the existence of causal relationships between a given characteristic (industry sector, engineering orientation, etc.) and the variations in the group results. However, where appropriate, we have provided possible explanations that seem consistent with our understanding of the impact of DoD regulation and oversight on contractors' business processes.

For our first cut, we have grouped the ten company sites into three broad industry sectors: aerospace, electronics/ communications, and land/mechanical systems and components. Clearly, there is an element of subjectivity involved in such classifications, especially in drawing the distinction between aerospace and electronics/communications firms. After consulting with the government sponsors, we have decided for non-disclosure reasons not to identify the companies in each grouping or reveal the number of firms in each category.

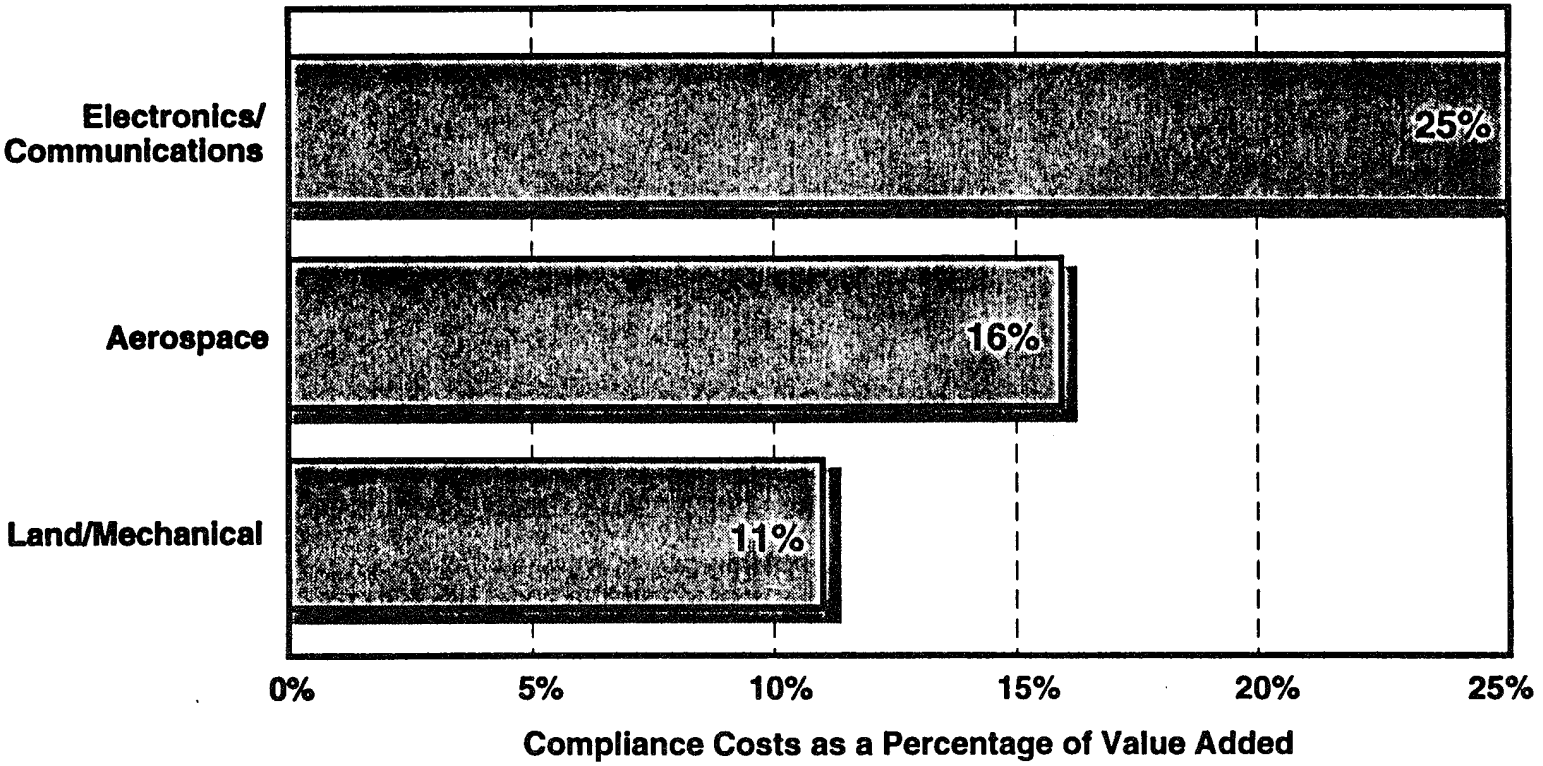
Of the three industry groupings, electronics/communications firms appear to have the highest exposure with an average DoD regulatory cost premium of 25 percent. In comparison to other defense contractors, such firms appear to have some additional requirements, particularly in the area of soldering requirements (MIL-STD-2000A) and reliability testing — issues that are discussed in greater detail later in this report. These additional requirements may contribute to higher compliance costs.

Those company sites primarily involved in the manufacture of aerospace equipment occupy an intermediate position, with an average regulatory cost burden of 16 percent. However, we believe that the company sites that form this group may not be representative of defense aerospace firms as a whole. For example, one firm in this group sells items to DoD which are modified versions of commercial products. For such reasons, our results for the aerospace sector may be somewhat lower than might otherwise be the case.

Finally, firms producing land/mechanical systems have an average cost premium of only 11 percent, considerably lower than found in the other two industry groupings. We believe that the relatively low engineering content associated with the production of land/mechanical systems and components contributes strongly to this result. A full discussion of the impact of engineering on compliance costs is provided in following sections of this report.

Site Assessment Results by *Industry Sector*

Electronics/communications firms have the highest compliance costs -- in part the result of special soldering and test requirements. Aerospace's relatively low cost impact probably reflects the specific circumstances of our company sample.



Coopers &Lybrand

TASC

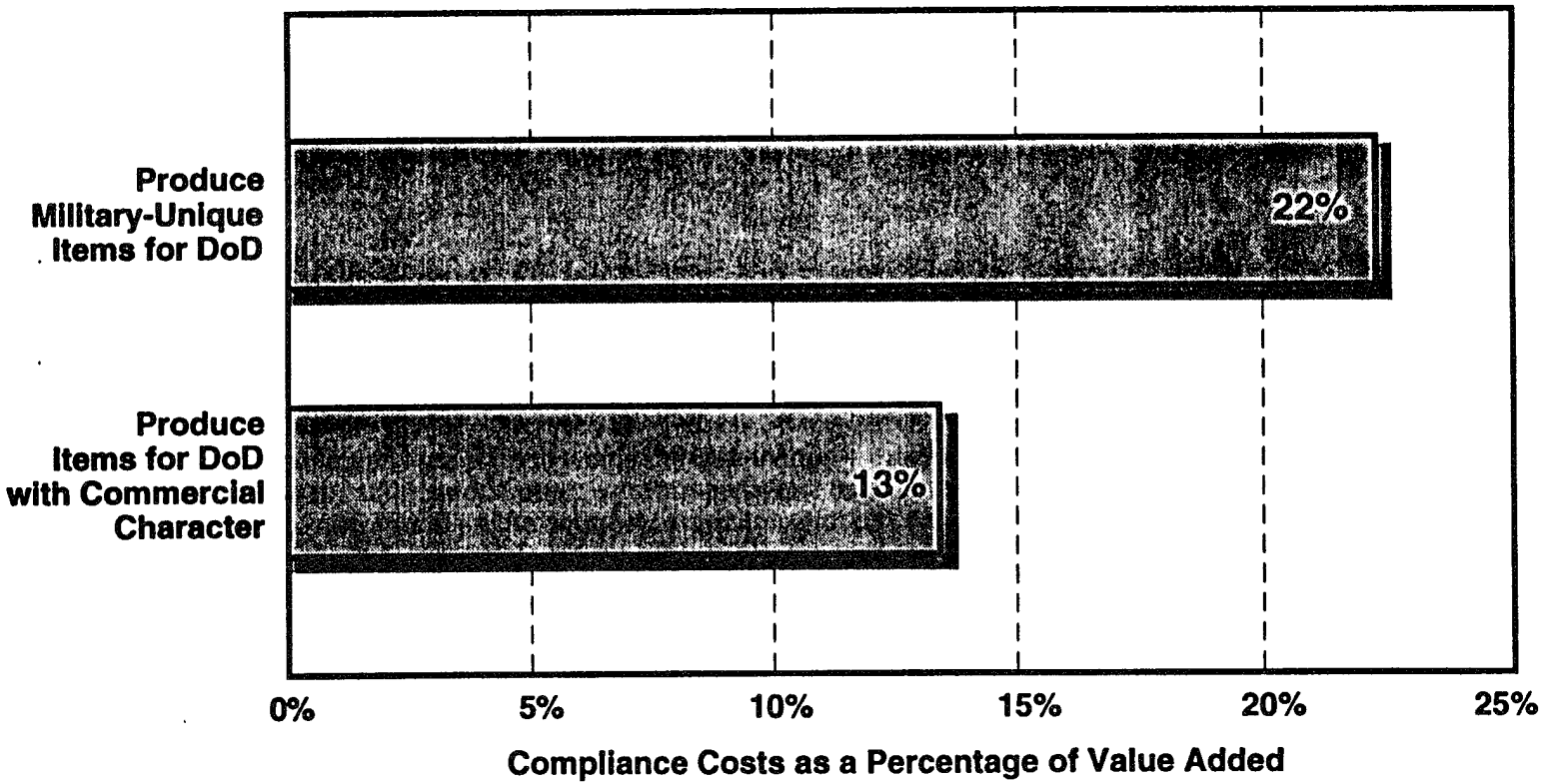
Site Assessment Results by Product Type

This slide examines regulatory costs as a function of the commercial orientation of the item provided to DoD. In one category, we have grouped those firms that produce products for DoD that are based substantially on commercial designs, utilize a high proportion of commercial parts, or are modifications of commercial items. Producers of defense items with unique military designs utilizing mostly milspec parts form the second category. One firm that produces items for DoD based on both military and commercial designs and whose military products incorporate a large number of commercial components was excluded from this analysis.

This analysis suggests that the DoD acquisition environment imposes substantially greater compliance costs on those contractors that develop and manufacture products based on unique military designs, in comparison to facilities that produce items with a strong commercial orientation.

Site Assessment Results by *Product Type*

Firms that produce unique military equipment for DoD have higher compliance costs than those that provide products which are based substantially on commercial designs, utilize many commercial parts, or are modifications of commercial items.



Coopers &Lybrand

TASC

Site Assessment Results By Engineering Content

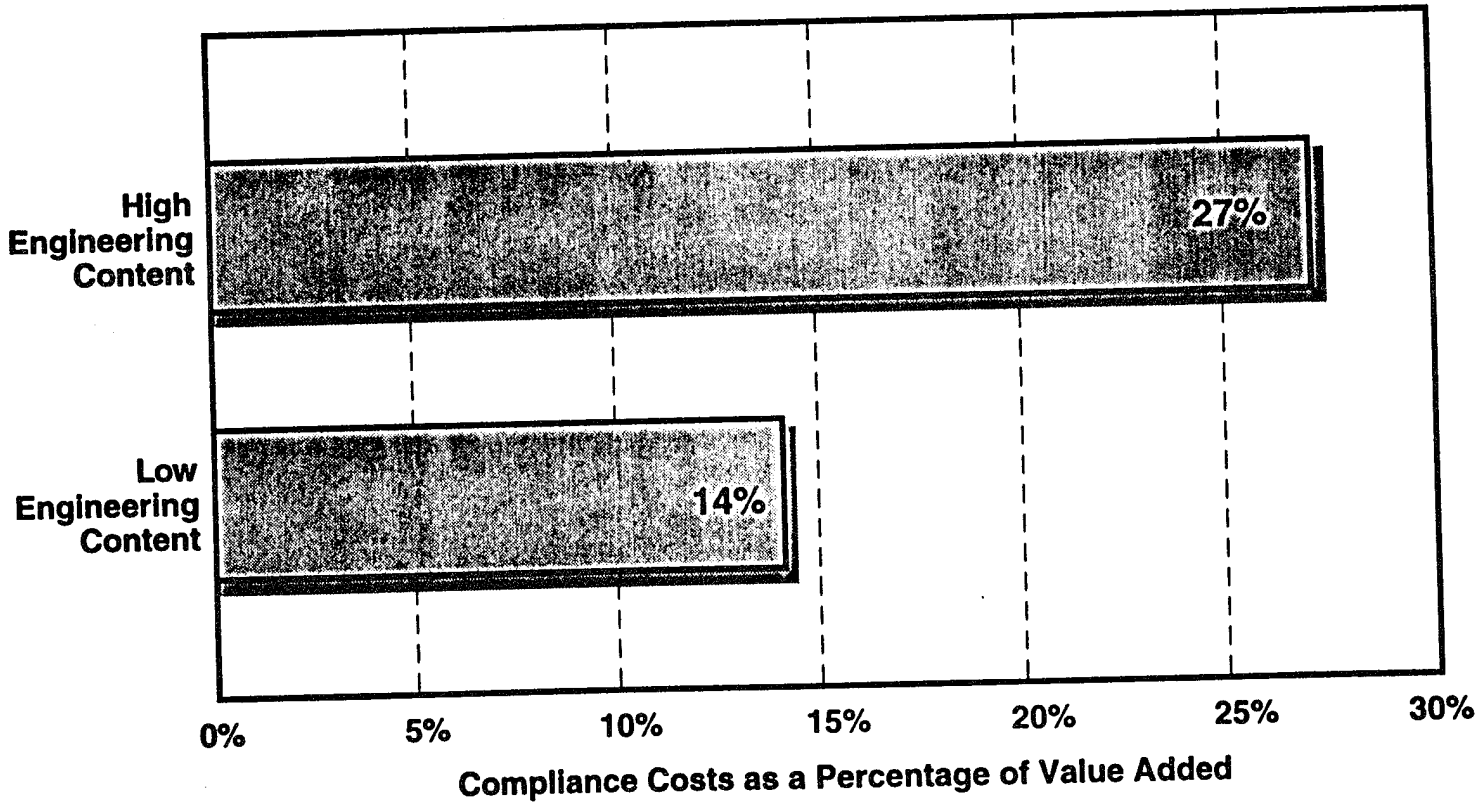
In this slide, we compare the average results for the three company sites with the highest engineering content against the results of those three sites in which engineering-related expenses account for the smallest share of total value added costs. The three sites with the highest engineering content have an average regulatory cost premium of 27 percent, almost twice the impact found at those sites with relatively little engineering.

Engineering content appears to correlate strongly with regulatory cost impact. Highly-engineered programs are associated with higher levels of technical and financial risk, and therefore appear to be subject to more intense government scrutiny. DoD's interaction with the contractor is highly intrusive during the engineering-intensive development phase, when designs are still evolving and quality concerns are in the forefront. In the production phase, where engineering accounts for a relatively small share of total program costs, designs are stable and the contractor has established a quality track record — factors that appear to contribute to less intervention on the part of the government.

These results suggest that DoD should focus its acquisition reform efforts on reducing the impact of the DoD regulatory environment on the engineering process.

Site Assessment Results by *Engineering Content*

The three company sites with the highest engineering content have almost twice the compliance costs as their low engineering counterparts.



Coopers &Lybrand

TASC

Report Outline: Site Assessment Results — Key Cost Drivers

This subsection identifies the key regulatory cost drivers, quantifies their average cost impact, addresses the site distribution of that impact, and discusses the impact of each cost driver on business processes.

Report Outline

- **Background**
- **Site Assessment Results**
  - Top Level Results
  - Key Cost Drivers
  - Regulatory Categories
  - Business Functions
- **Conclusions**
- **Appendices**
  - Appendix A - Cost Driver Glossary
  - Appendix B - Project Team
  - Appendix C - Industry Contacts

Coopers &Lybrand

TASC

Key Cost Drivers — 10 Site Average

This slide identifies the ten DoD regulatory/oversight drivers that impose the greatest costs on the ten contractors examined by the Project Team, quantifies that impact as a percentage of value added costs (less profits and corporate G&A), and calculates the cost impact of each driver as a percentage of the total DoD cost premium.

For example, the number one cost driver was MIL-Q-9858A, DoD Quality Program Requirements. At the ten company sites, this single regulatory cost driver accounted on average for 1.7 percent of total value added costs, or 10 percent of the total DoD regulatory cost premium. This cost impact is significantly higher than the second biggest driver, the Truth in Negotiations Act (and its implementing regulations), which had an average cost impact of 1.3 percent. The Cost/Schedule Control System (C/SCS) occupies third place, accounting for an average of 0.9 percent of value added costs for our ten company sample.

During the ABC site assessments, company personnel at the 10 contractor sites identified over 100 regulatory/oversight areas that contribute to increased industry costs. Interestingly, the top three drivers account for almost 25 percent of the total DoD cost premium; half of the total regulatory cost impact is concentrated in ten key areas. These results suggest that DoD could achieve significant benefits from concentrating its reform efforts on a relatively small number of high leverage regulatory areas.

Each of the top ten cost drivers will be discussed in greater detail in a following slide.

Key Cost Drivers — 10 Site Average

	Cost Driver	DoD Cost Premium	% of Total Cost Premium	Category
1	MIL-Q-9858A	1.7%	10.0%	QA
2	Truth in Negotiations Act (TINA)	1.3%	7.5%	Acct'g/Finance
3	Cost/Schedule Control System (C/SCS)	0.9%	5.1%	Prog Mgmt
4	Configuration Management Rqmts	0.8%	4.9%	Engineering
5	Contract Specific Requirements	0.7%	4.3%	Contracting/Purch
6	DCAA/DCMAO Interface	0.7%	3.9%	Acct'g/Finance
7	Cost Accounting Standards (CAS)	0.7%	3.8%	Acct'g/Finance
8	Mat'l Mgmt Acct'g System (MMAS)	0.6%	3.4%	Mat'l Mgmt
9	Engineering Drawings	0.6%	3.3%	Engineering
10	Government Property Administration	0.5%	2.7%	Mat'l Mgmt
	Subtotal	8.5%	48.9%	

Nearly half of all DoD regulatory / oversight costs are concentrated in 10 Key Cost Drivers—with MIL-Q-9858A and TINA leading the way.

Coopers & Lybrand

TASC

Key Cost Drivers — Site Distribution

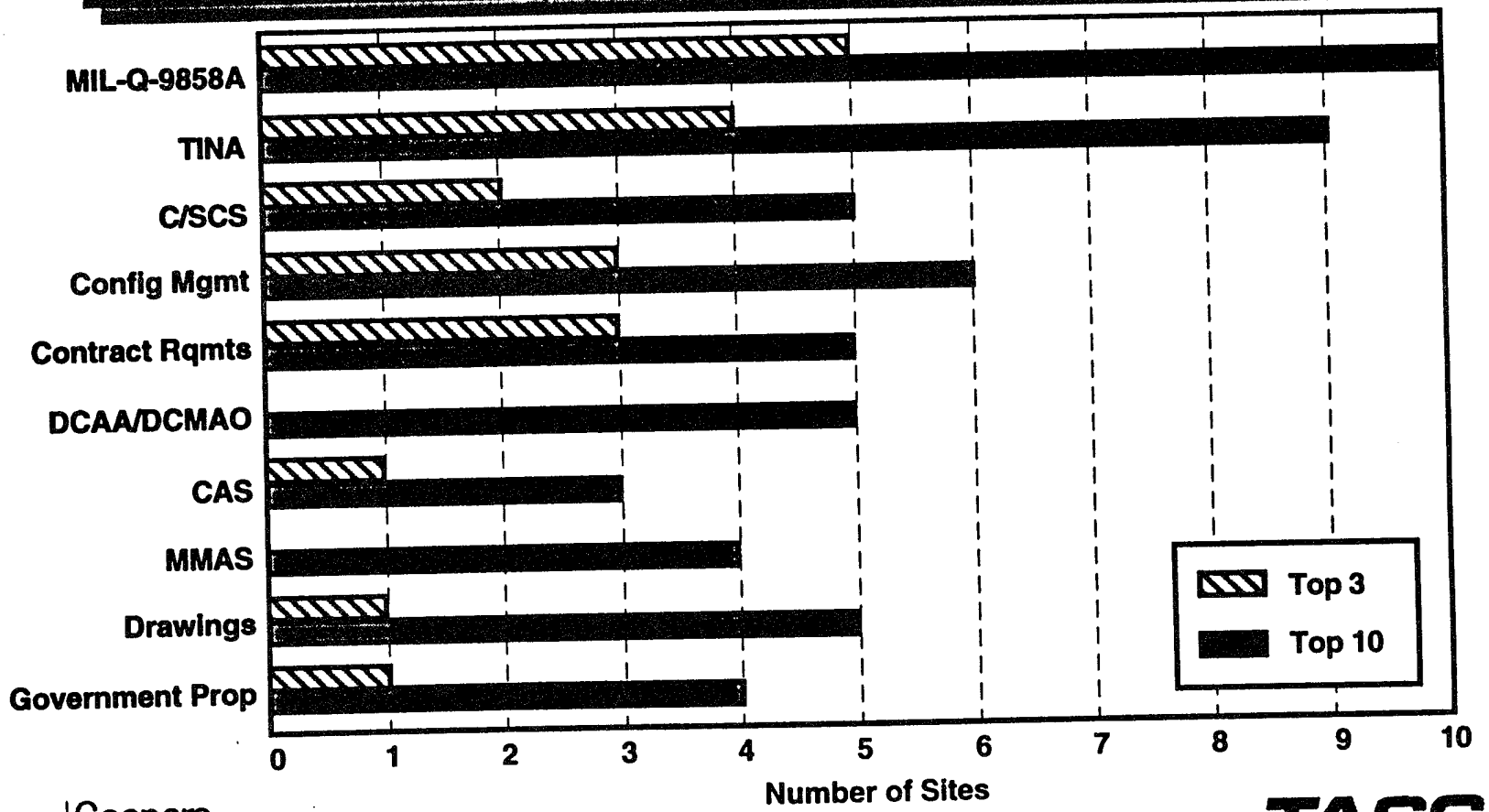
This slide examines the breadth of impact of each of the key cost drivers across the ten company sites.

MIL-Q-9858A was the top cost driver at five sites and in the top ten at all of the participating contractor facilities. While TINA was the top driver at only one company, it was in the top five four times, and in the top ten at every site except one. These results suggest that MIL-Q-9858A and TINA impose significant compliance costs throughout the defense sector, regardless of industry sector, tier position, or other factors.

In contrast, while C/SCS imposed extremely high compliance costs on two contractors, this cost driver made it into the top ten at only three of the remaining eight sites. (C/SCS is a program monitoring and reporting system that applies primarily to major acquisition programs; accordingly, many contractors are not subject to these requirements.) Thus, the cost impact of C/SCS appears to be relatively deep but narrow.

Key Cost Drivers — Site Distribution

MIL-Q-9858A is a leading cost driver at all the survey sites; TINA impacts are also pervasive, but are especially strong in firms that handle many contracts; C/SCS is prominent among those firms active in major acquisitions.



Coopers &Lybrand

TASC

MIL-Q-9858A

Description: MIL-Q-9858A, otherwise known as DoD Quality Program Requirements, is the umbrella specification that establishes the framework and principles of DoD quality assurance requirements. The program requires the establishment of an effective quality program involving all areas of contract performance: design, development, fabrication, processing, assembly, inspection, test, maintenance, packaging, shipping, storage and site installation. Under MIL-Q-9858A, contractors must maintain adequate standards in the management, preparation, and use of technical drawings, engineering changes, measuring equipment, and other facilities or processes involved in quality assurance. MIL-Q-9858A requires that all work affecting quality must be documented in written instructions. Also, the program requires maintenance of detailed records on tests and inspections; actions taken in response to test deviations; scrapped material; and process trends and corrective actions. MIL-Q-9858A is imposed when, in the opinion of the DoD contracting officer, it is essential to control development and manufacturing processes as well as inspections and tests.

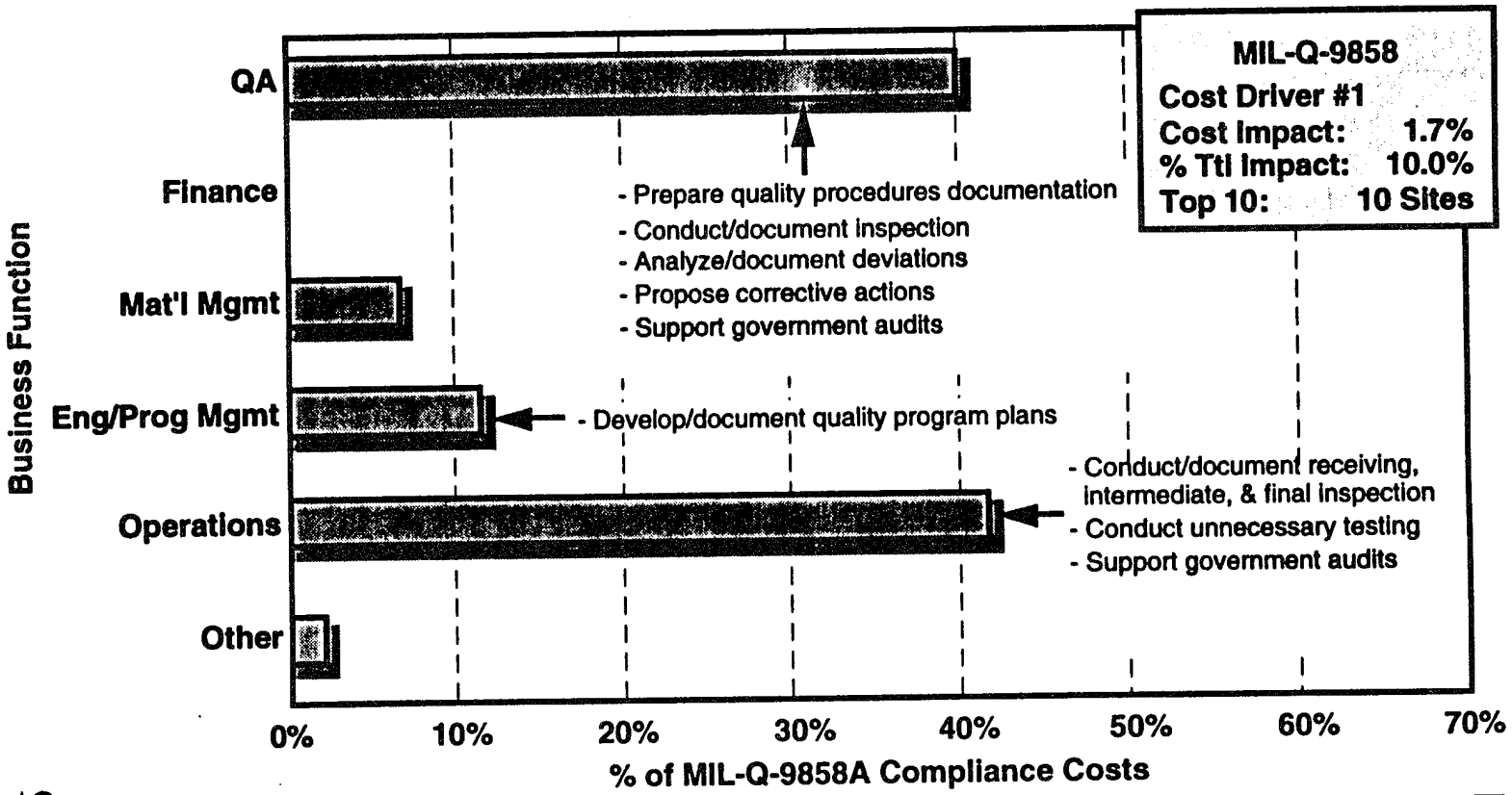
Impact on Business Processes: At eight of the study sites, the Project Team identified compliance costs by major business function: quality assurance, finance, material management, engineering/program management, operations, and other. These functional areas are defined in greater detail on page 42. The data presented in this slide — as well as the following slides that feature a functional breakout of compliance costs — are drawn from this eight site sample. This database indicates that compliance costs associated with MIL-Q-9858A are concentrated in operations and quality assurance organizations, with some impact in engineering/program management.

To identify the impact of MIL-Q-9858A on specific contractor activities, the Project Team reviewed the process worksheets developed during the interviews with cost center managers and their key subordinates. These records indicate that, in the operations area, MIL-Q-9858A compels workers on the manufacturing floor to conduct (in their view) repetitive or unnecessary tests and to maintain much more detailed test records than they would otherwise. Quality assurance personnel are heavily impacted by the requirement to prepare quality assurance procedures and monitor their implementation; prepare detailed documentation on inspections and test deviations; interact with DCMAO quality personnel; and to support government audits. Engineering/program management staffs must prepare specialized quality program plans for each contract and document development testing activities/results.

Industry Comments: While many contractors support the objectives and general framework of MIL-Q-9858A, there is broad agreement that both the documentation and record keeping requirements are excessive, and that the day-to-day DCMAO oversight results in unnecessary testing, delays the resolution of problems, and is generally counterproductive. Industry is hopeful that DoD's recent endorsement of ISO-9000 as an acceptable alternative to MIL-Q-9858A may resolve some of these problems, particularly if DoD accepts ISO certification as a replacement for DoD quality system audits and on-site compliance oversight. (Many contractors characterized ISO-9000 as a basic restatement of MIL-Q-9858A principles. Most of the contractors visited have or are pursuing ISO-9000 certification.) However, there is a strong concern that DoD will treat ISO-9000 as a supplement to and not a replacement for the current requirements — and that it ultimately may not reduce on-site quality oversight.

MIL-Q-9858A

MIL-Q-9858A requires detailed documentation of quality procedures, and mandates extensive factory floor inspections contrary to the growing commercial emphasis on process control.



Coopers &Lybrand

TASC

Truth in Negotiations Act (TINA)

Relevant Provisions

FAR 15.804-2,4,6,7; FAR 15.806-11; DFARS 215.805-5; DFARS 215.805-70; other related DFARS clauses

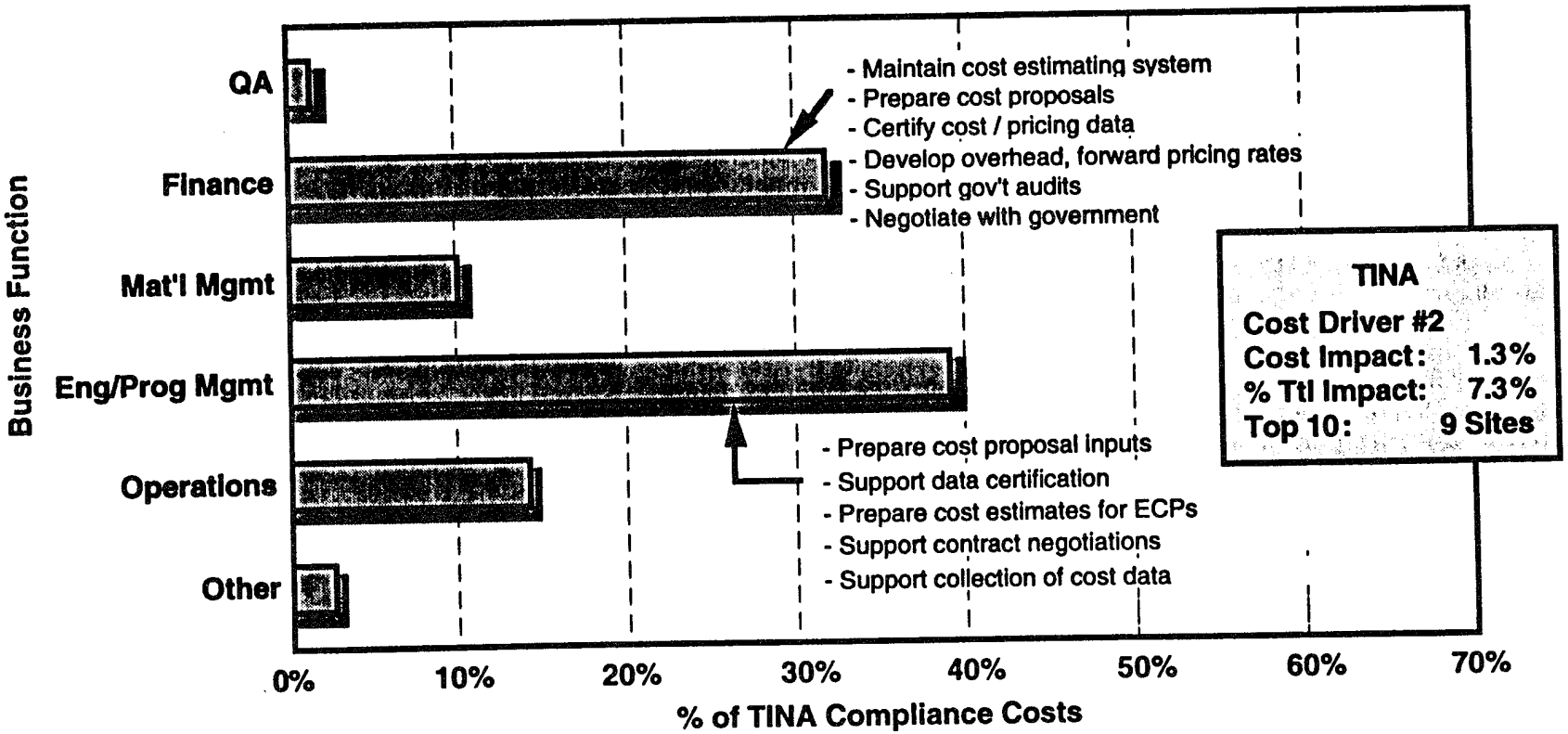
Description: TINA is the legal basis for several FAR and DFARS provisions that require contractors to justify their cost proposals with detailed cost or pricing data. This data must be sufficiently timely and accurate for the government contracting official to make a fair and reasonable price determination. The contractor must certify the accuracy of this information and is subject to significant penalties if the data is found defective. To comply with these requirements, contractors must establish and maintain an elaborate system for estimating, segregating, and tracking costs. TINA and its regulatory clauses are unique to the government contracting environment and, in principle, are invoked only when the government contracting official determines that there is inadequate competition to ensure a fair and reasonable price.

Impact on Business Processes: About three quarters of the TINA compliance costs are concentrated in the finance and engineering/program management functions. Finance personnel must establish and maintain a cost estimating system; prepare cost and pricing data and certify to its accuracy; prepare cost proposals; support/respond to government pre-award and contract close-out audit-negotiations; and support financial system, defective pricing, and other government audits. In the engineering/program management area, personnel provide cost inputs to finance for inclusion in cost proposals; develop cost estimates for engineering cost proposals; support finance (contracts) in price negotiations; and ensure that program-related cost data is collected in a manner that is consistent with the cost estimating system requirements. TINA imposes costs in the material management area as well, as procurement personnel must also justify the costs of material purchases and services from subcontractors and suppliers.

Industry Comments: The TINA requirement to provide certified cost and pricing data, and especially the large amount of auditing and other government oversight associated with this requirement, is a unique feature of the defense market. Accordingly, industry reported a high DoD regulatory cost premium in those business processes related to pricing. All of the contractors visited by the Project Team acknowledge that there will always be a need in many cases for some cost-based mechanism to validate prices in the defense market. However, contractors argue that the government now requires cost data in a form that is much too detailed, and complain that this information must frequently be provided three different times for each contract — initially with the cost proposal, updated during negotiation, and finalized once negotiations are completed. The site assessment results indicate that TINA is particularly a problem at those sites that handle a high volume of contracts. One firm, which specializes in customizing a small number of basic products for a broad range of DoD customers, must provide complete cost information with each low dollar value contract. This contractor suggests that DoD allow in such cases for cost information to be submitted on a product line, rather than a contract basis. There was also wide agreement that DoD should reduce its requirements for detailed cost data by easing restrictions on the use of price analysis and taking greater advantage of historical price information.

Truth In Negotiations Act (TINA)

Contractors object to TINA's criminal sanctions, & argue that greater use of price analysis, historical data, & product line baselines would reduce compliance costs while preserving accountability.



Coopers &Lybrand

TASC

Cost/Schedule Control System (C/SCS)

Relevant Provisions

DFARS 234.005-70, DoD 5000.2/5000.2-M

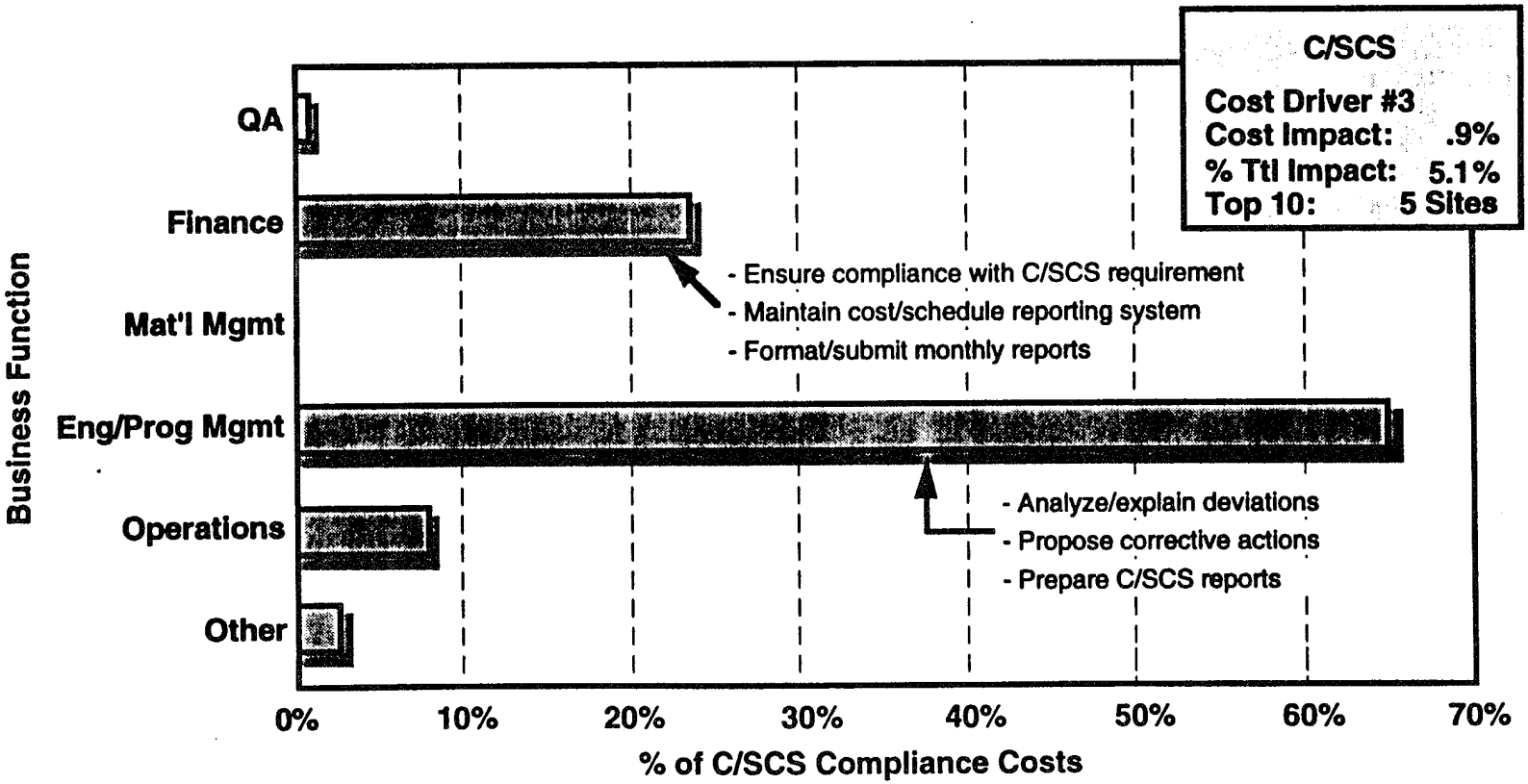
Description: The Project Team collected compliance costs under this category related to the performance of both the Cost/Schedule Control System (C/SCS), Cost/Schedule Status Reports (C/SSRs), and other DoD cost/schedule control requirements. C/SCS applies primarily to major acquisitions with a contract value greater than $2 million; C/SSR reporting is required for selected other contracts. C/SCS requires that contractors monitor and report on technical progress against the trend of budgeted vs. actual expenditures, usually at the cost account and work package level; to explain significant deviations in periodic (usually monthly) reports; and to propose management responses to such deviations. Variance analyses are also performed for budgeted versus actual indirect costs. This analysis must be extended to at least level three of the work breakdown structure (WBS). C/SSR requirements are similar in principle, but require significantly less detail.

Impact on Business Processes: Cost/schedule control requirements have a major cost impact on two sites in the study sample that are involved in major system acquisitions and are thus subject to C/SCS. Compliance costs in this area were significant at three other sites, two of which were subject to C/SCS. In other words, cost/schedule control reporting is an important cost driver whenever contractors are subject to C/SCS. Almost 90 percent of these compliance costs are concentrated in engineering/program management and finance. Program managers are responsible for establishing and implementing the cost/schedule control system; for establishing the initial cost/schedule baseline; for analyzing significant deviations against the baseline; for explaining these deviations in periodic reports to the government customer; and for proposing appropriate corrective actions. At those sites subject to C/SCS, program managers devote a significant share of their time to performing the variance analysis and preparing the reports. Finance personnel monitor reporting compliance; develop and maintain the automated reporting system; generate and format the budget vs. cost data in the periodic reports; and resolve related progress payment issues with the government.

Industry Comments: In general, industry views the general framework and principles of cost/schedule reporting positively. Sound program management requires regular analysis of expenditure and performance trends, and deviations must be addressed early to avoid overruns and delays. However, all contractors subject to C/SCS agree that, as currently required by DoD, cost/schedule reporting is too detailed, repetitive, and voluminous to be used effectively as a management tool by either the government or industry, and that the requirement may in fact undermine program performance by diverting the time and attention of the company program manager. (Indeed, at one site, the Project Team was shown one C/SCS monthly report that was an inch thick.) Industry suggests that DoD require reporting to summary levels in the WBS structure only; limit variance analysis to only those deviations that truly warrant analysis and corrective action; or discard C/SCS altogether in favor of standard commercial cost/schedule reporting.

Cost / Schedule Control System (C/SCS)

While industry concurs that C/SCS principles are valid, there is broad agreement that reporting requirements are too detailed for C/SCS to be used as an effective management tool.



Coopers &Lybrand

TASC

Configuration Management Requirements

Relevant Provisions

MIL-STD-973

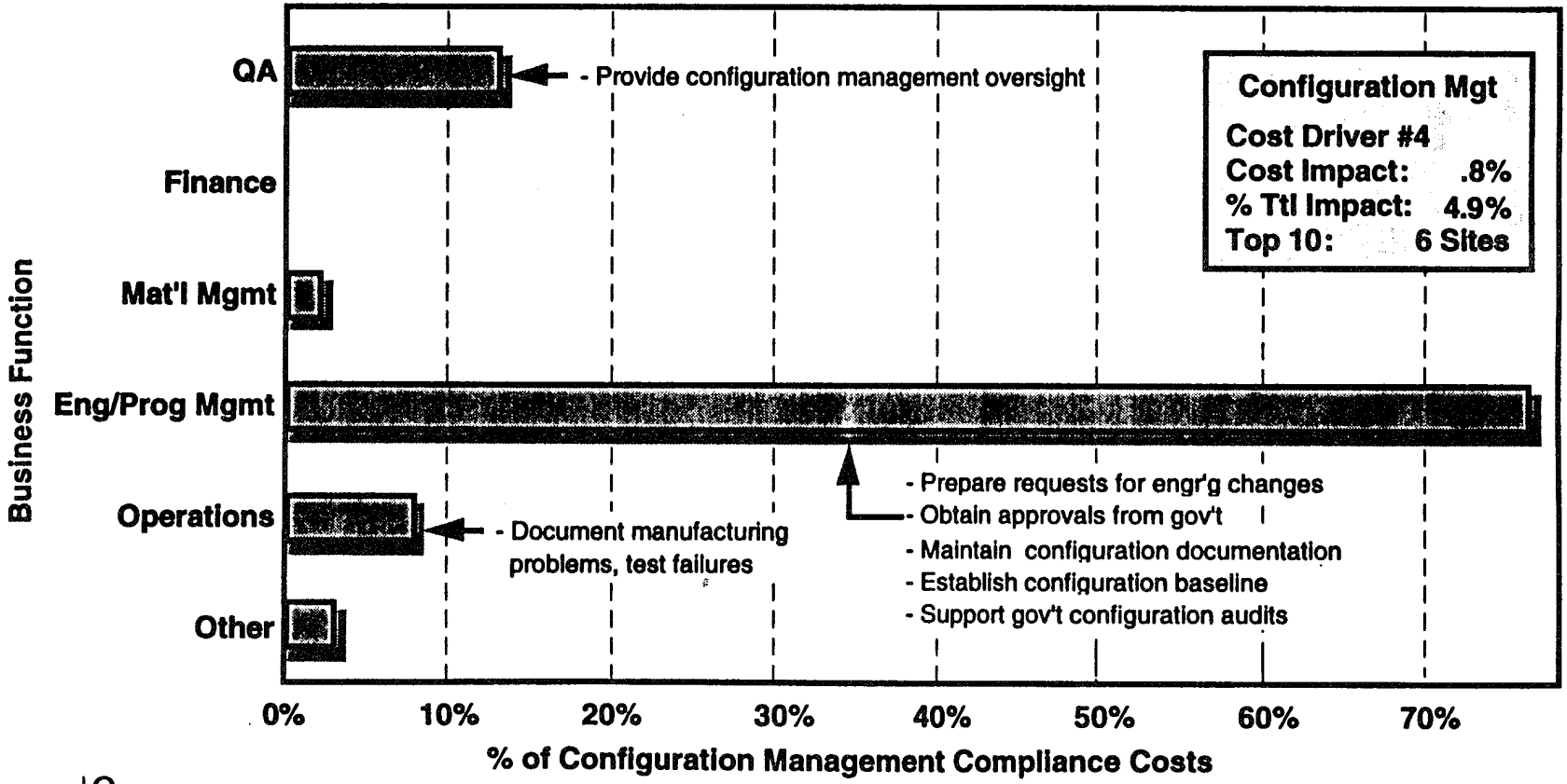
Description: MIL-STD-973 is the general standard for contractors' configuration management. (The previous configuration control standard, MIL-STD-480, has been canceled but is still cited in some active contracts.) This standard establishes the requirements for configuration status accounting; documenting configuration baselines; and managing the engineering change process, including the process of obtaining waivers and deviations. In general, MIL-STD-973 ensures that DoD reviews and approves all configuration changes to technical data packages (the engineering drawings and other technical data that explain how to make a military item) controlled by DoD.

Impact on Business Processes: The engineering function accounts for three quarters of the compliance costs associated with DoD configuration management requirements. Product support engineers are impacted most strongly by MIL-STD-973, as they must devote considerable effort to analyzing and documenting manufacturing or performance problems, including field failures, which may require an engineering change order. These efforts may include the design, implementation, and documentation of special diagnostic tests. Proposed corrective actions are subject to similar analysis and testing. To obtain approval of a significant engineering change, engineering personnel must submit a comprehensive proposal that justifies the proposed change and the corrective action; analyzes its potential impact on other system elements; and estimates the cost implications of the proposed change, if any. Through every step of this process, company engineers must interact and consult with on-site DCMAO quality assurance personnel, who frequently review the proposals and make recommendations to the DoD program manager. Company engineers must frequently respond in writing to questions from the program office, sometimes leading to the iteration of the engineering change proposal, before obtaining an engineering change order. Requests for waivers and deviations follow a similar procedure.

Industry Comments: Industry agrees that the general principles of MIL-STD-973 are valid: configurations must be effectively documented and managed, and proposed engineering changes should be carefully considered before they are implemented. Nevertheless, there is widespread agreement among contractors that the DoD's configuration management oversight requires improvement. The current system is considered to be too complicated and to require excessive documentation. Virtually all contractors feel that the DoD decision-making process takes much too much time. Some firms complained that the DoD buying commands and on-site DCMAO quality personnel often lack the technical expertise to effectively evaluate the change proposals, which sometimes results in confusion and more delays. In sum, industry believes that the current system does not allow contractors sufficient latitude to make common sense improvements in a timely or cost-effective manner.

Configuration Management Requirements

Industry believes that the DoD engineering change process is overly formalized and time-consuming, and that contractors do not have enough latitude to make common sense modifications on their own authority.



Coopers &Lybrand

TASC

Contract-Specific Requirements/Statement of Work

Description: This cost driver refers to those process-oriented, contract-specific requirements imposed by DoD which are not codified in statutes, regulations, military specifications, or military standards such as requirements for unnecessary or repetitive testing. In some cases, DoD contracting officers impose additional requirements on contractors through the practice of "tailoring" otherwise standard provisions; such cost impacts are captured here. This cost driver also addresses the complex nature of many DoD statements of work (SOWs), and the added costs associated with managing such contracts.

Impact on Business Processes: Compliance costs associated with contract-specific requirements are concentrated in the engineering/program management function. Program managers observe that most DoD contracts are far more complex and detailed than their commercial counterparts. The voluminous nature of these contracts compels program managers to devote considerable time to reviewing and analyzing contract provisions, and taking action to ensure full compliance with the range of contract requirements. Frequently, statements of work are written in a confusing or contradictory manner; in such cases, program managers must work with the DoD customer to clarify these issues.

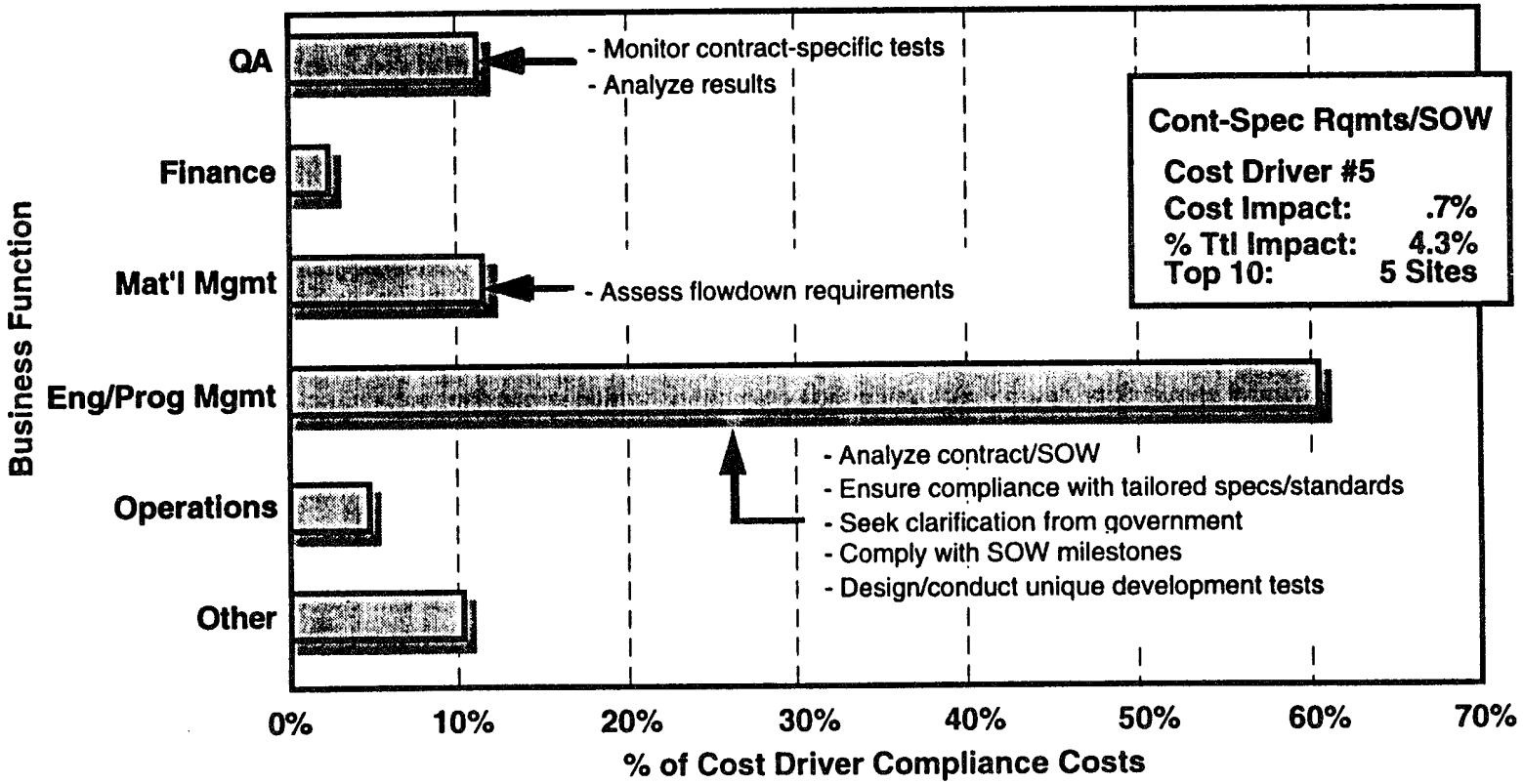
In the engineering area, the primary complaint is that DoD sometimes imposes unnecessary or redundant contract-specific tests. At several sites, contractors indicated that they are compelled to conduct particular engineering tests despite the fact that the defense item never fails the required test; in such cases, the test provides no useful information to either DoD or the contractor. Moreover, at one site, engineers noted that they must a conduct 100 hour tests on at least one production item in every production lot. (In such a test, the item is operated in a test cell under a variety of conditions for 100 hours. The item is then disassembled, and engineers examine the parts for unexpected signs of wear.) However, the item — a missile component — is an expendable product with an expected mission life of only twenty minutes. Engineers at several sites indicated that contractors do not always object to such tests since the firms are fully reimbursed for these activities.

This cost driver also has significant impacts in the material management function. Procurement managers must carefully review contracts to identify all contract clauses that must be "flowed down" to its suppliers, and peruse all proposed subcontracts and purchase orders to ensure that such provisions have been incorporated.

Industry Comments: Virtually all contractors indicated that defense contracts and SOWs are unnecesarily complex. The companies believe that, on many occasions, contracting officials and DoD program managers copy contract clauses and SOW provisions from previous contracts with little regard for changing circumstances — or for the potential impact of this "boilerplate" approach on contractor's costs. In the view of industry, DoD personnel have the tendency to impose superflous requirements on contractors because there are few incentives to balance the desire of acquisition officials to reduce program risk with a comparable concern for minimizing program costs. Many contractors expressed concern that DoD contracting officials lack the broad perspective, training, and experience needed to effectively make such judgments.

Contract - Specific Requirements / SOW

This cost driver addresses the complex nature of most DoD contracts, and the tendency of some contracting officials/program managers to impose process-oriented requirements that provide little value added to DoD.



Coopers &Lybrand

TASC

DCAA/DCMAO Interaction

Description: This cost driver captures the costs associated with day-to-day interaction with Defense Contract Audit Agency (DCAA) auditors and Defense Contract Management Organization (DCMAO) quality inspectors and functional experts. When possible, industry cost related to supporting formal government audits, inspections, and program reviews were allocated to the specific provision that establishes DoD's legal authority to perform the oversight. For example, the costs relating to contractors' support for DCAA defective pricing audits were generally allocated to TINA. However, some contractor personnel support such audits, inspections, and reviews, but have little visibility into the specific nature of these oversight activities. In such cases, the costs of this contractor support are captured here. Moreover, compliance costs associated with contractor personnel whose sole responsibility is to manage the firm's interaction with DoD auditors and other oversight personnel are also allocated to this area.

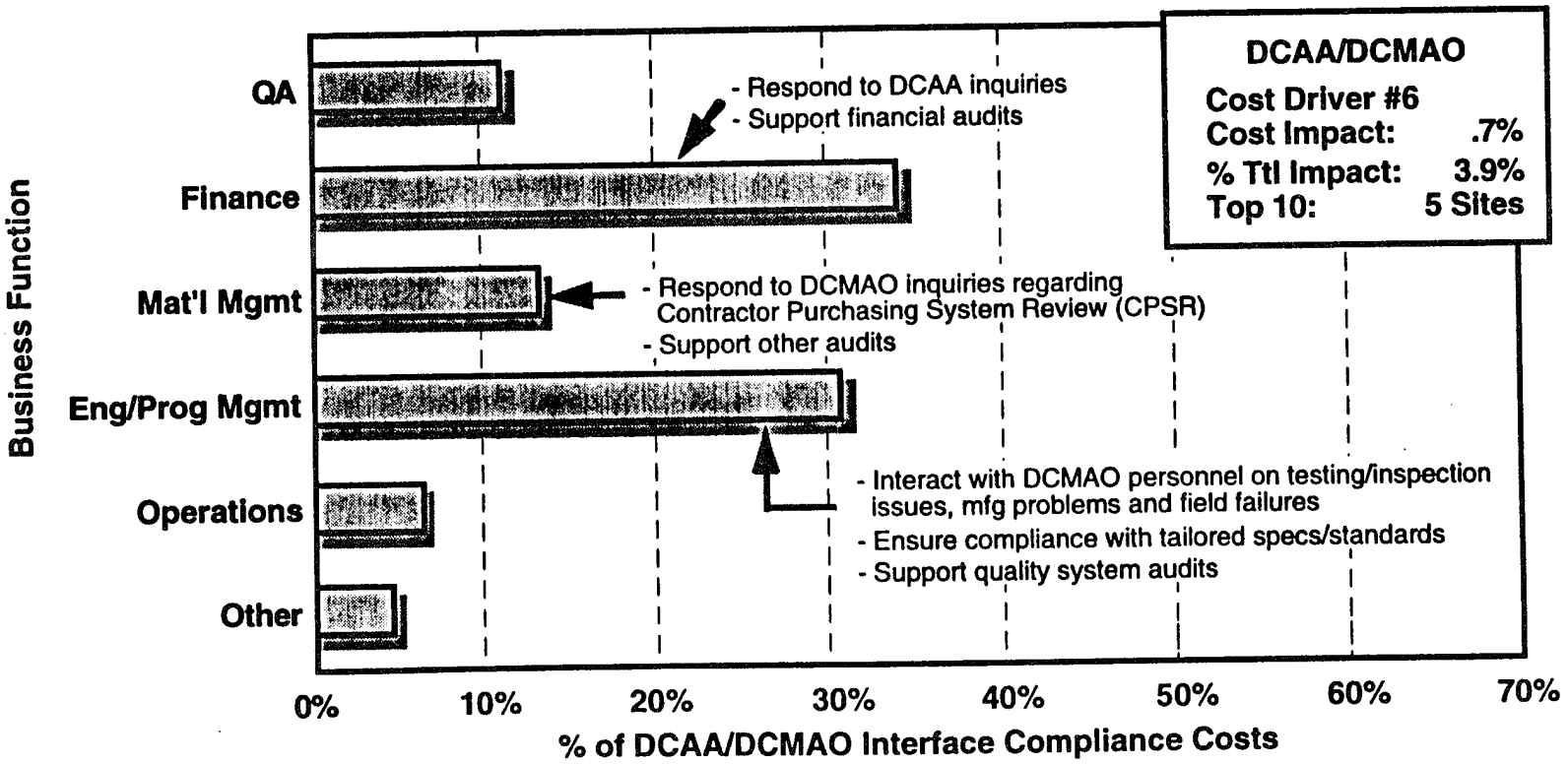
Impact on Business Processes: The finance function accounts for some 35 percent of total compliance costs associated with this cost driver. These costs are almost exclusively related to DCAA interface. In fact, several contractors have established separate offices which are dedicated to managing this interaction. Such offices respond to a wide variety of DCAA requests for information in the areas of certified cost and pricing data; cost accounting standards and proposed changes thereto; overhead rate negotiations and forward pricing agreements; financial systems; and other areas.

Engineering/program management represents over 30 percent of total DCAA/DCMAO compliance costs. These costs refer largely to the day-to-day interaction of program and product support personnel with DCMAO quality inspectors in areas such as production and engineering test results; manufacturing problems and field failures; and proposals for engineering changes, deviations, and waivers. The material management function also has significant exposure in this area, with about 15% of the total compliance costs. Procurement personnel interact extensively with DCMAO personnel during the preparation for, conduct of, and follow-up to the annual Contractor Purchasing System Review (CPSR).

Industry Comments: Attitudes toward DCAA and DCMAO personnel varied widely among the ten companies. At some sites, DCMAO's on-site quality personnel were viewed as integral members of the contractor's quality team, dedicated to helping the firm resolve problems. One contractor praised DCAA for its willingness to adopt an innovative approach to monitoring travel expenses, thereby reducing the firm's record keeping costs in this area. In general, however, industry's relations with DCAA/DCMAO remain strongly adversarial. Contractors universally argue that DCAA/DCMAO staffing levels have not declined commensurately with their reduction in DoD sales, and claim that oversight has become more intrusive in recent years as on-site personnel look for new issues to explore to offset the decline in contracting activity. Contractors also report shortcomings in the technical capabilities and product knowledge of some DCMAO quality inspectors, and there is a general concern that the overall quality of oversight personnel appears to be deteriorating.

DCAA / DCMAO Interaction

In some facilities, DoD on-site personnel are viewed as partners committed to helping the contractor resolve problems. In others, the relationship remains adversarial. Several contractors claim that oversight has become more intrusive as defense sales decline.



Coopers &Lybrand

TASC

Cost Accounting Standards (CAS)

Relevant Provisions

Title 48 CFR 99 (Appendix B, FAR loose-leaf edition)

Description: DoD CAS requirements are based on 19 cost accounting standards established by the Cost Accounting Standards Board (CASB) to ensure the consistent and equitable allocation of costs, as well as requirements for the disclosure of accounting practices and contractor interpretation of certain standards. Supporters of CAS claim that the establishment of a uniform set of accounting principles helps to ensure fair and consistent treatment for DoD in the pricing and performance of defense contracts.

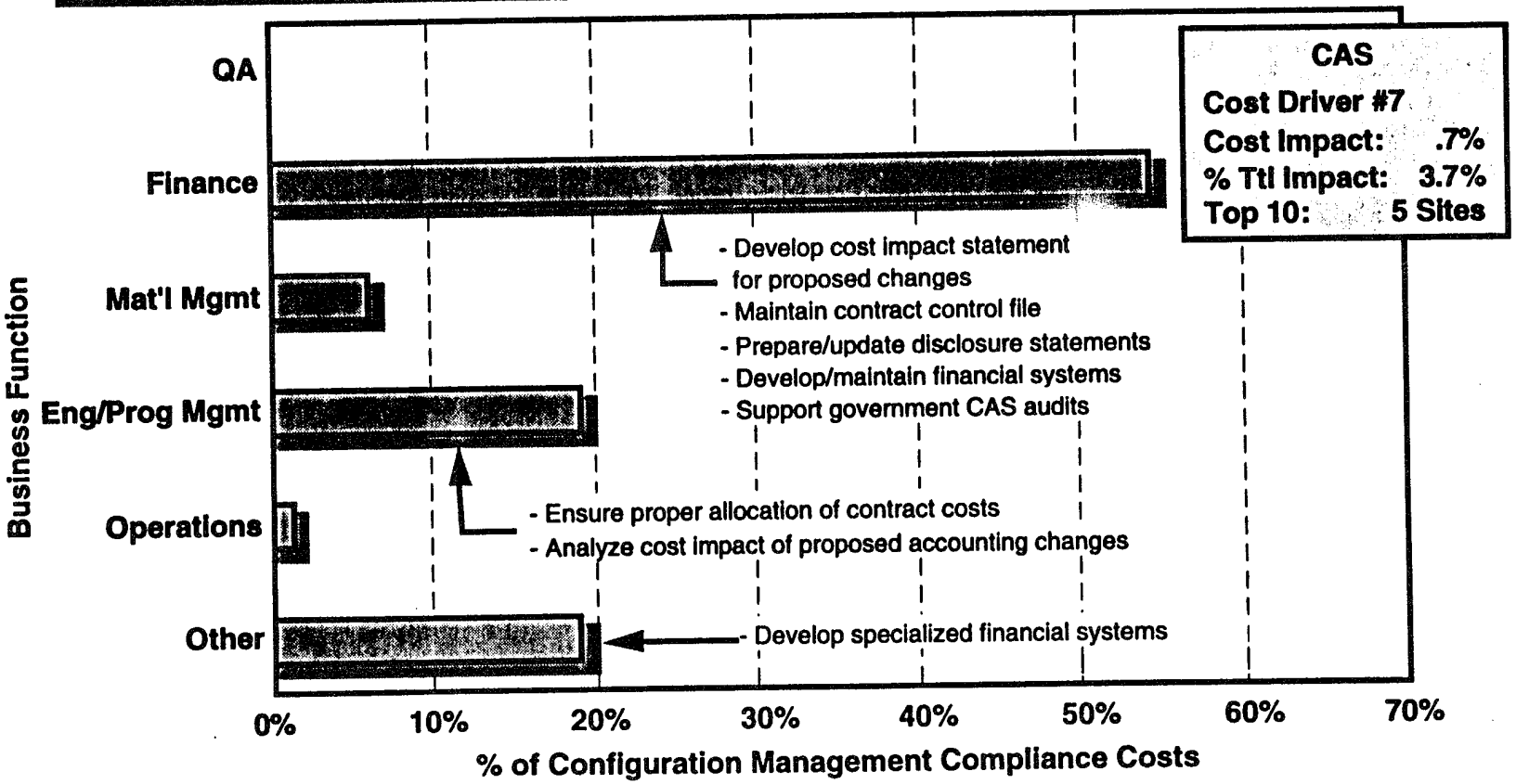
Impact on Business Processes: DoD CAS requirements impose certain cost measurement and allocation criteria that are not fully consistent with generally-accepted accounting practices. Accordingly, contractors must develop and maintain specialized and presumably more expensive cost accounting procedures and financial systems to comply with CAS requirements. Other CAS obligations include the requirement to prepare and file a CAS disclosure statement; prepare cost impact studies of proposed changes in accounting practices; maintain a current listing of all CAS-covered contracts; and maintain a CAS-compliant accounting system. The distribution of CAS compliance costs reflects these impacts, as CAS-related costs are concentrated in finance and information systems (incorporated in the "Other" category).

CAS requirements appear to result in the greatest compliance costs when contractors maintain both commercial and military operations in the same business unit and when reorganization, mergers, or other changes compel broad changes in accounting practices. Contractors with integrated operations require complex, highly detailed accounting procedures and financial systems to ensure that costs are appropriately allocated between military and commercial contracts.

Industry Comments: As an alternative to CAS, many contractors argue that DoD should accept auditable financial statements prepared in accordance with generally-accepted accounting practices. In particular, several firms noted the effort and expense associated with the preparation of comprehensive cost impact studies for every proposed accounting change, and suggested that DoD pursue less costly methods of addressing modifications in accounting practices. Moreover, there was strong support for any changes in CAS requirements that would reduce barriers to consolidating military and commercial operations in contractor's facilities. (One contractor reorganized recently in order to create a non-CAS compliant "island" dedicated to pursuing commercial business; however, the changes in accounting practices required by this reorganization have embroiled the contractor in several CAS-related controversies with DCAA.) Unless there are significant changes in the current rules, CAS issues are likely to become more contentious from industry's perspective as defense contractors downsize, consolidate, and reorganize to pursue new opportunities in the commercial sector.

Cost Accounting Standards (CAS)

One surveyed firm refuses to bid on CAS-covered contracts; another reorganized to isolate its commercial operations in a non-CAS environment. CAS is a growing problem for contractors that seek to supplement declining DoD sales with new commercial business.



Coopers &Lybrand

TASC

Material Management Accounting System (MMAS)

Relevant Provisions

DFARS 242.72

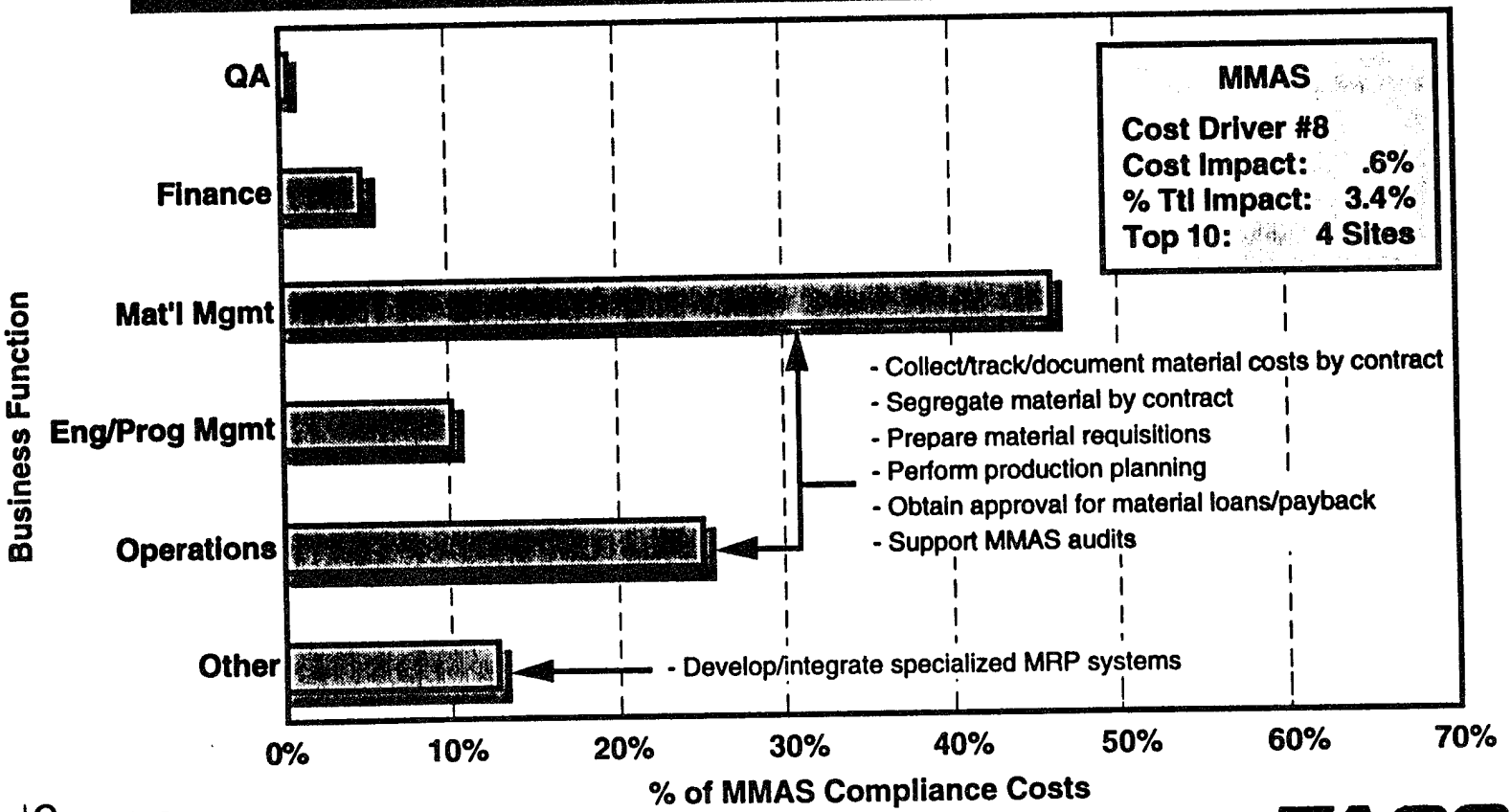
Description: MMAS requires certain defense contractors to establish and maintain a material requirements planning system that accurately forecasts material usage and ensures that costs of purchased and fabricated materials are allocated in an appropriate manner to specific contracts. Key MMAS elements include the requirement for contractors to maintain detailed inventory records; document material transfers between contracts; ensure an equitable and consistent approach to the costing of material transactions; and ensure appropriate allocation of costs associated with common inventory. MMAS also requires that contractors be subject to both internal and external audits on a periodic basis.

Impact on Business Processes: The MMAS requirement to track material costs by contracts primarily impacts production planning and scheduling, inventory control operations, and information systems. (While planning/scheduling and inventory control are usually included in the material management function, some contractors consider these activities to be part of the operations function. Information systems are included in the "Other" category.) In the planning/scheduling area, MMAS complicates the task of developing master schedules and production floor schedules, since only those materials purchased under a given contract may be utilized in the production of the contracted item. Accordingly, these schedules must be highly detailed, particularly when a single production line is involved in the manufacture of similar items utilizing similar parts for more than one DoD contract. MMAS documentation requirements for material transfers among contracts (loans and paybacks) are extensive and contribute significantly to compliance costs in this area. Inventory control centers are also impacted significantly, as contractor personnel must maintain accurate records identifying stocked parts to specific contracts. While MMAS does not explicitly require contractors to physically segregate material (except government-furnished material), several firms in the study sample nevertheless are engaged in the practice of storing parts in separate bins by contract. MMAS is also a significant driver in the information systems area, as contractors must develop, integrate, and maintain specialized material requirements planning (MRP) systems to ensure adequate tracking of material costs.

Industry Comments: Several contractors suggested that DoD allow greater industry flexibility to "commingle" commodity parts and components across contracts to facilitate the purchase of such materials in more economical lot sizes, simplify master/production scheduling, and reduce inventory control costs. There was broad agreement that DoD requires excessive documentation of material transfers and that, in general, MMAS compels contractors to maintain unnecessary records. Most contractors indicated that they had implemented specialized and more costly MRP systems which would be replaced, in the absence of MMAS requirements, with simpler commercial systems.

Material Management Accounting System

MMAS requires collection of material costs by contract. To ensure compliance, contractors maintain/verify extensive material-related records; implement specialized MRP systems; and in some cases maintain separate part bins.



Coopers &Lybrand

TASC

DoD Technical Drawing Requirements

Relevant Provisions

MIL-T-31000, "Technical Data Packages, General Specification"
MIL-STD-100E, "Engineering Drawing Practices"

Description: MIL-T-31000 is the general specification that identifies the requirements for preparing a technical data package, including engineering drawings and associated lists. MIL-STD-100E establishes the guidelines for preparation of conceptual, developmental design, and product drawings. This standard also provides detailed formatting instructions relating to drawing titles, technical notes, and other items, and establishes the procedure for correcting or revising existing drawings.

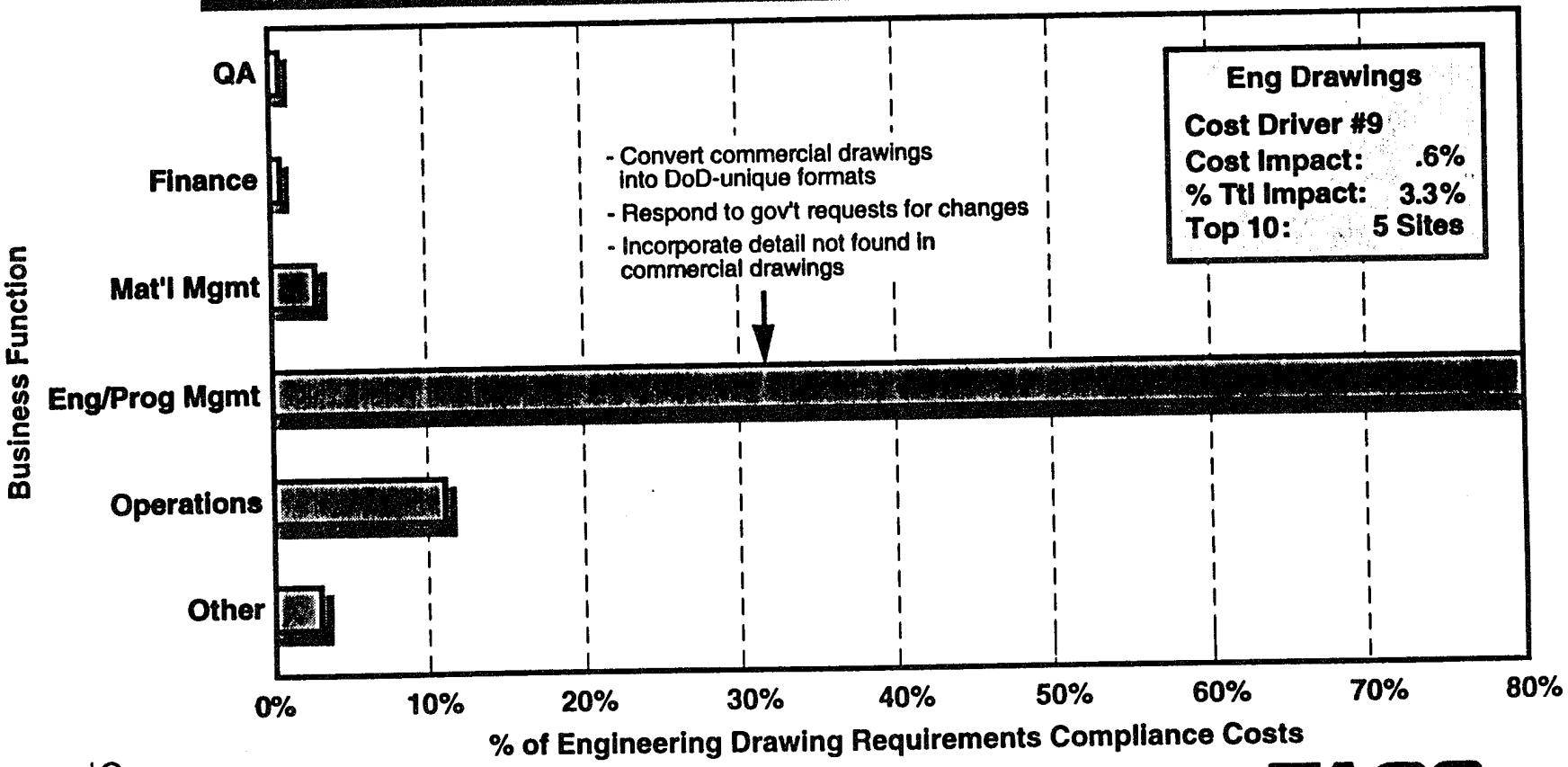
Impact on Business Processes: Compliance costs associated with DoD technical drawing requirements are concentrated largely in the technical drawing departments in the engineering function, with some involvement of design and product support engineering in a supporting role. According to industry, contractors devote on average about 50 to 100 percent more time to the preparation of a military drawing than that required for a comparable commercial drawing. One reason is that MIL-STD-100E imposes detailed and defense-unique formats and symbology which are largely incompatible with commercial practices. Moreover, military drawings must provide virtually complete information on the design and production of the item, leaving nothing unstated or unexplained. Finally, DoD does not accept commercial drawings for commercial parts used in military items, forcing contractors to develop new military drawings even when the part in question is of a proprietary design. (Such drawings include information on form, fit, and function only, along with a reference to the original proprietary drawing.) On some occasions, DoD buying commands return drawings submitted by the contractors for format corrections or other minor deviations from the standard.

This regulatory driver has a particularly strong impact among those firms that produce a broad range of products; the cost impact is less significant for those contractors that produce only a few products whose designs are relatively stable.

Industry Comments: Most of the ten contractors suggest that DoD modify its drawing requirements to fully embrace commercial standards for drawing formats, symbology, markings, etc. This change would streamline the preparation of military drawings, allow the use commercial part drawings when appropriate, and prevent DoD officials from rejecting drawings for failure to fully comply with DoD format requirements. Many also feel that the level of detail required in military drawings is unnecessary. One contractor suggests that DoD even rethink its traditional practice of controlling technical data packages for most systems. According to this view, DoD is unlikely to consider the establishment of a second production source (a primary reason for DoD's desire to control technical data packages) for most systems because of the downsizing of the industrial base — in many market segments, there may be only one credible producer.

DoD Drawing Requirements

DoD drawing requirements are largely incompatible with commercial practice. Commercial part drawings are not acceptable and must be converted using unique DoD formats and symbology. Industry urges acceptance of contractor format.



Coopers &Lybrand

TASC

Government Property Administration

Relevant Provisions

FAR Part 45

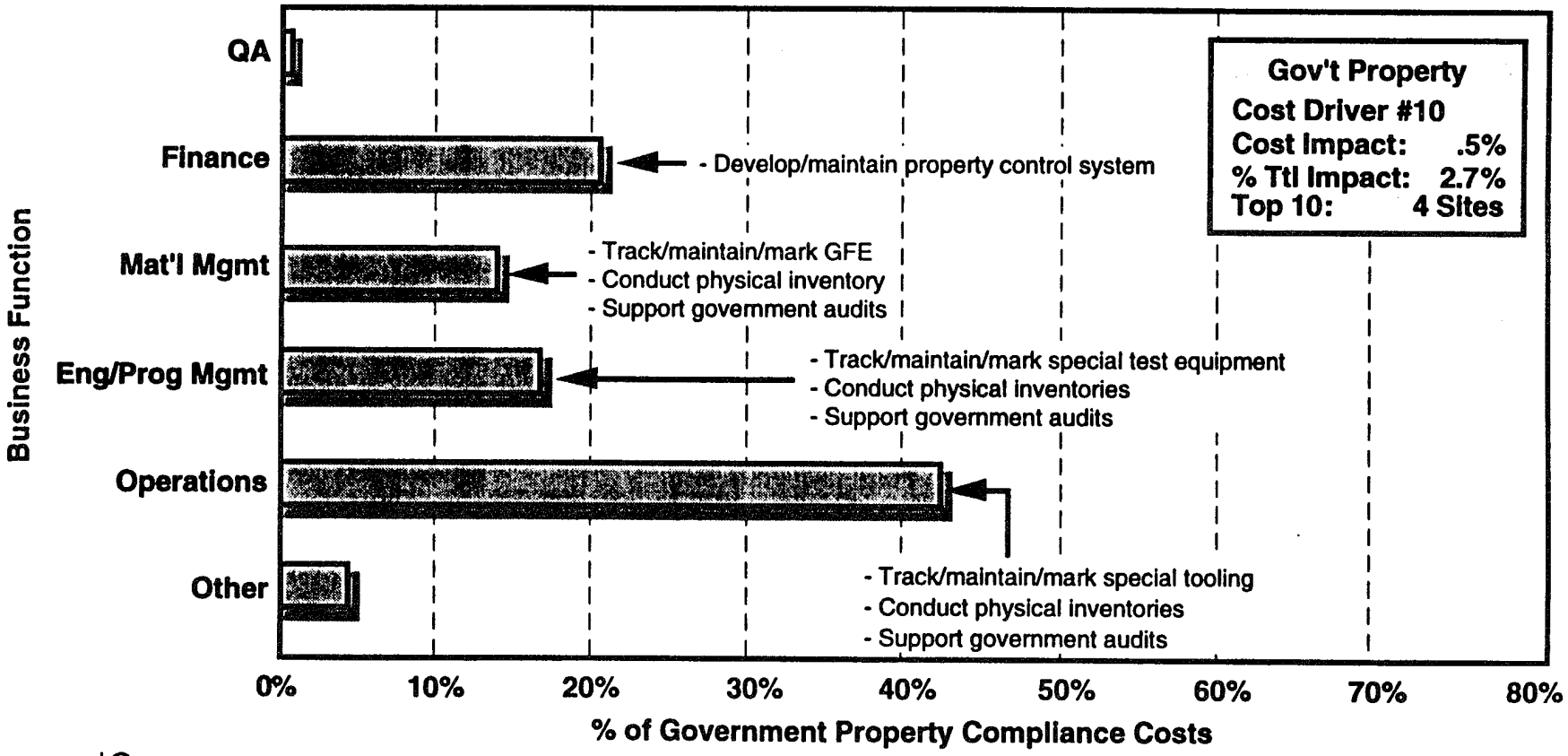
Description: FAR Part 45 requires that contractors assume responsibility for maintaining and accounting for government-owned property. Government property may include real property, material, plant equipment, special tooling and test equipment, and scrap or salvage material. Compliance costs documented in this regulatory area exclude consideration of benefits resulting from contractors' access to the government-owned item, and reflect the difference between the costs associated with administering government-owned and other (non-government) customer property.

Impact on Business Processes: While more than 40 percent of the compliance costs associated with government property requirements were found in the operations area, this regulatory area is a significant factor in most major business functions except quality assurance. Special tooling, special test equipment, specialized machine tools, and calibration equipment account for most of the government property in the operations area. Frequently, the engineering function also uses government-owned test equipment in developmental testing. The material management function administers government-furnished equipment (GFE) destined for incorporation into the production item, and is involved in the procurement of spare parts or services relating to the maintenance of government-owned equipment throughout the contractor's facility. Finance tracks government-owned real property and maintains the government-owned property control system. FAR Part 45 imposes many special requirements on contractors, including maintenance of detailed property records that track equipment use by contract; marking of all government property; compliance with routine and preventive maintenance schedules; performance of annual physical inventories; and the preparation of an annual report. Contractors also devote considerable time and effort to obtaining government instructions on the disposal of government-owned equipment at the conclusion of a contract, including permission to use the equipment on another DoD contract.

Industry Views: In the view of industry, DoD's approach to government property administration involves excessive documentation and oversight. A major problem is the lack of flexibility in the use of government-owned equipment: contractors complain that they experience protracted delays when attempting to shift government items to new contracts — frequently they decide to purchase a new item rather than wait for DoD approval. The annual physical inventories often are not cost effective, as the cost of conducting the inventory sometimes exceeds the intrinsic value of the government-owned items. Contractors that operate government-owned facilities argue that DCMAO safety inspections frequently represent an unnecessary duplication of OSHA oversight. Several firms complained that routine maintenance requirements do not take into consideration real usage rates. Finally, several contractors observed that DoD's approach to establishing rental prices (based on acquisition costs rather than depreciated value) discourages contractors from using such equipment for commercial purposes, thus constituting a barrier to defense conversion.

Government Property Administration

In the view of industry, DoD requirements to document, maintain, and inventory gov't-owned equipment are cumbersome and result in unnecessary costs.



Coopers &Lybrand

TASC

Key Cost Drivers By Industry Sector

This slide compares the key cost drivers for firms in the electronics/communications, aerospace, and land/mechanical sectors. The shaded areas represent those regulations or oversight practices that are not on the overall list of top ten cost drivers.

While total compliance costs vary markedly among the three sectors, there is a high degree of commonality regarding those drivers with the greatest cost impact. For example, TINA and MIL-Q-9858A are among the top five cost drivers in each industry, and both C/SCS and DoD configuration management requirements are in top five in two out of the three sectors.

There are some notable sector-specific drivers. For example, DoD soldering requirements as expressed in MIL-STD-2000A are a major cost driver in those electronics-oriented firms that are involved in circuit board assembly. In fact, this standard was the leading cost driver at one electronics firm where circuit board assembly operations accounted for a large portion of the facility's entire manufacturing activity.

In the aerospace industry, where contractors' use of government facilities and equipment appears greatest, issues associated with government property administration were more prevalent. One aerospace site (a GOCO facility) reported considerable regulatory costs associated with DoD oversight of the contractor's facility modernization program.

Key Cost Drivers by Industry Sector

	Electronics / Comm			Aerospace			Land / Mechanical		
	Cost Driver	Reg Cost	%Ttl	Driver	Reg Cost	%Ttl	Driver	Reg Cost	%Ttl
1	TINA	1.6%	6.7%	MIL-Q-9858A	2.5%	16.1%	MIL-Q-9858A	1.2%	11.3%
2	MIL-Q-9858A	1.6%	6.6%	TINA	1.5%	9.6%	Config Mgmt	.9%	8.6%
3	C/SCS	1.3%	5.4%	C/SCS	1.0%	6.6%	Shipping Docs	.8%	7.2%
4	Contract/SOW	1.3%	5.3%	Config Mgmt	.9%	5.6%	CAS	.8%	7.0%
5	Soldering	1.1%	4.5%	Prgm Reviews	.7%	4.3%	TINA	.7%	6.5%
6	DCAA/DCMAO	1.0%	4.2%	DCAA/DCMAO	.7%	4.3%	Prgm Reviews	.6%	5.3%
7	CDRLs	.9%	4.1%	Gov't Property	.6%	3.9%	Non-Conf Mat'l	.5%	4.8%
8	Non-Conf Mat'l	.9%	3.7%	Facility Mods	.6%	3.7%	MMAS	.5%	4.4%
9	Drawings	.8%	3.5%	CPSR	.5%	3.3%	Custmr Interaction	.5%	4.2%
10	Config Mgmt	.8%	3.4%	Contract/SOW	.5%	3.3%	CICA	.4%	3.5%
	SUBTOTALS	**11.3%**	**47.4%**		**9.5%**	**60.7%**		**6.9%**	**62.8%**
		(25% Ttl)			**(16% Ttl)**			**(11% Ttl)**	

Coopers &Lybrand

TASC

Key Cost Drivers — Change Agents

This slide identifies the source of legislative and/or regulatory authority for each of the top ten cost drivers, and highlights the institution or institutions with the primary responsibility or capability to implement reforms. In the view of the Project Team, DoD is the primary change agent for eight of the ten top regulatory cost drivers. DoD can even play an important role in reducing compliance costs associated with those measures in which Congress has significant involvement — TINA and CAS — by developing and carrying out streamlined, less instrusive oversight practices.

In recent years, DoD policymakers have demonstrated strong leadership in emphasizing the need for defense acquisition reform and for beginning the task of eliminating unnecessary regulation. However, in the view of the industry, this fundamental cultural change is filtering down to the field only slowly, and at an uneven pace. While some DoD contracting officials, program managers, and oversight personnel have been enthusiastic in embracing innovative approaches to streamlining the acquisition system and reducing regulatory compliance costs, in other quarters DoD acquisition personnel have been reluctant to abandon established practices and procedures. In some cases, this resistance may reflect job insecurity or simply an unwillingness to change; however, most contractors believe that DoD field personnel often are not fully aware of Pentagon decisions or do not fully understand how to put these decisions into practice.

Finally, it is important to note that eliminating regulations or military specifications may not always be the complete solution: the quality, experience, and training of DoD personnel have important impacts on regulatory compliance costs. Some DoD regulations or specifications may be appropriate in some circumstances and unnecessary in others. In such cases, what is needed is a government contracting official with the ability to draw such distinctions, as well as the institutional support and incentives to act upon his or her good judgment.

Key Cost Drivers — Change Agents

Cost Driver	Source	Primary Change Agent
MIL-Q-9858A	Cited by Contract	DoD
Truth in Negotiations Act	10 U.S.C.~ 2306a; FAR/DFARS	Congress/DoD
Cost/Sched Control System	DoDI 5000.2	DoD
Config Mgmt (MIL-STD-973)	Cited By Contract	DoD
Contract Specific Rqmnts	Cited By Contract	DoD
DCAA/DCMAO	Various Authorities	DoD
Cost Accounting Standards	41 U.S.C.~422; FAR Part 30	Congress/CASB
Mat'l Mgmt Acct'g System	48 CFR, Part 242	DoD
Drawings (MIL-STD-100)	Cited By Contract	DoD
Gov't Property Admin	FAR Part 45	DoD

DoD has the authority to substantially reduce compliance costs. Further progress requires continued strong executive leadership AND field level implementation.

Report Outline: Site Assessment Results — Regulatory Categories

In previous subsections, we identified the total DoD regulatory/oversight compliance costs and analyzed the impact of key cost drivers. Here, we group our 100+ drivers cited by contractor personnel into seven broad categories: quality assurance; accounting and finance; contracting and purchasing; engineering; material management, logistics, and property administration; program management; and data management. The objective is to use these categories to determine the compliance cost impacts of general areas of regulations, as opposed to specific cost drivers.

It should be noted that the creation of these categories and the grouping of the individual cost drivers within them involve a certain element of subjectivity. For example, one could choose to group purchasing-related provisions with material management rather than with contracting, or to combine the engineering and quality categories. While our "DCAA/DCMAO Interaction" clearly relates both to finance and quality assurance, we decided to place this cost driver in the finance area. Overall, however, we believe that the analysis presented in the following slides provides a fair representation of the general impact of primary areas of regulation and oversight on contractors' value added costs.

Report Outline

- **Background**
- **Site Assessment Results**
  - Top Level Results
  - Key Cost Drivers
  - Regulatory Categories
  - Business Functions
- **Conclusions**
- **Appendices**
  - Appendix A - Cost Driver Glossary
  - Appendix B - Project Team
  - Appendix C - Industry Contacts

Coopers &Lybrand

TASC

Compliance Costs By Regulatory Category

This slide shows the compliance cost impact of the seven regulatory categories. According to our ABC data, quality assurance accounts for one fourth of all regulatory/oversight compliance costs, followed by accounting- and finance-related drivers at 20 percent.

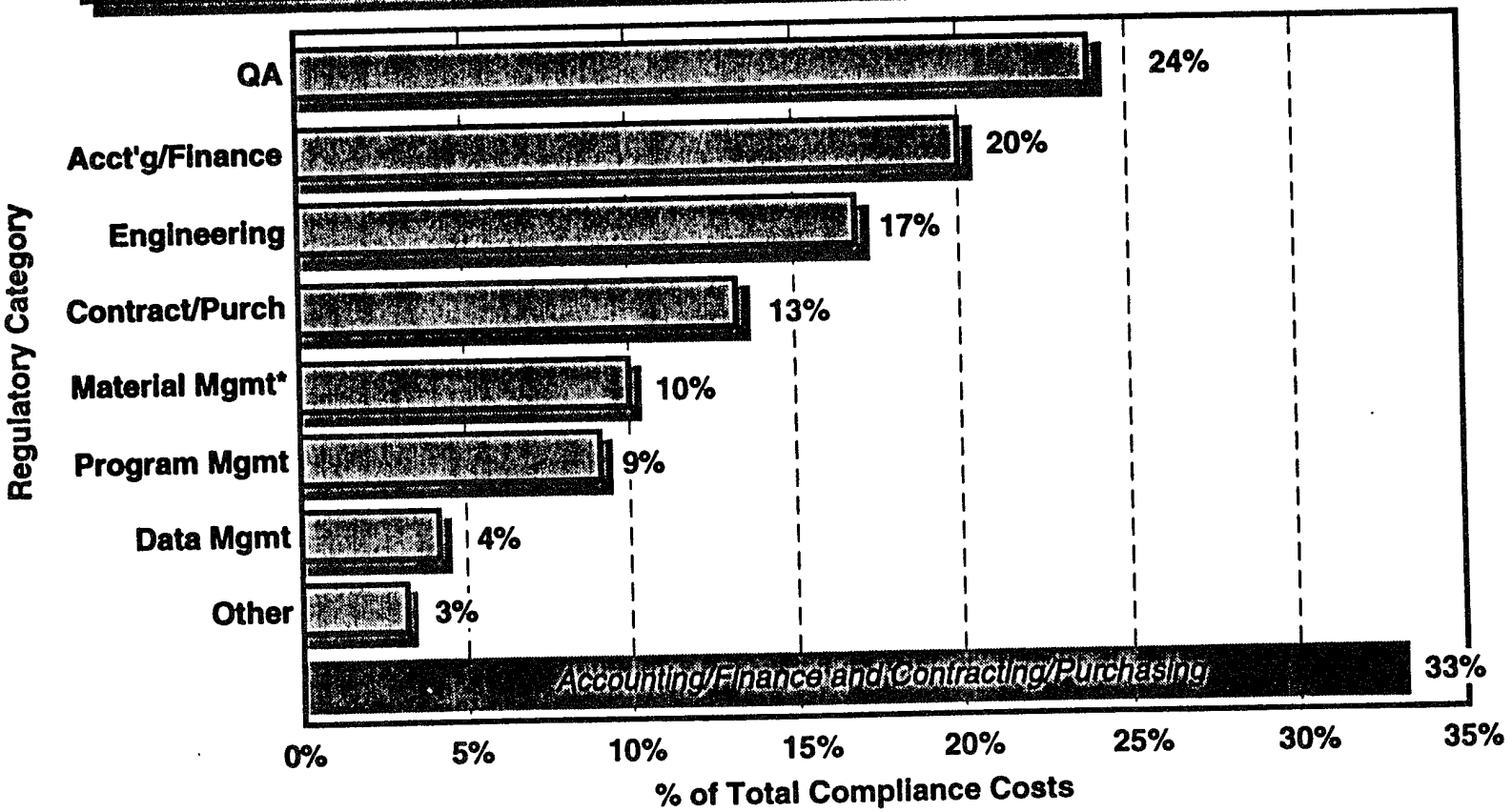
The position of quality assurance as the primary cost driver category is one of the more surprising results of this study. Traditionally, both DoD and industry circles have tended to place relatively more emphasis on the cost impact of accounting/finance regulations and the need for regulatory reform in these areas. Possibly, this tendency reflects the high visibility of these regulatory issues within the contractor's organization. Frequently, chief financial officers must certify cost and pricing data, are directly involved in the negotiation of overhead rates and forward pricing agreements, and serve as the primary industry point of contact for a variety of DCAA audits. Quality assurance issues, on the other hand, are often handled further down in the organization — on the factory floor, engineering test laboratory, receiving dock, etc.

As noted on the previous slide, this analysis is strongly influenced by the approach used in establishing the groupings. For example, if one were to combine accounting/finance with contracting/purchasing — which, in some ways, are mutually reinforcing areas of regulation — the consolidated group accounts for one third of total industry compliance costs.

The following slides identify and discuss the primary cost drivers in each regulatory category.

Compliance Costs by *Regulatory Category*

QA provisions have the greatest impact on contractors, accounting for one quarter of total compliance costs. If viewed as a single area, Accounting/Finance and Contracting/Purchasing represent one third of the cost premium.



Coopers &Lybrand

*Includes Logistics, Material Management, and Government Property Administration

TASC

Quality Assurance

This slide shows the cost impact distribution of quality assurance-related regulations and oversight practices. As noted previously, this regulatory category accounts for 4.1 percent of value added costs, or about 25 percent of total compliance costs.

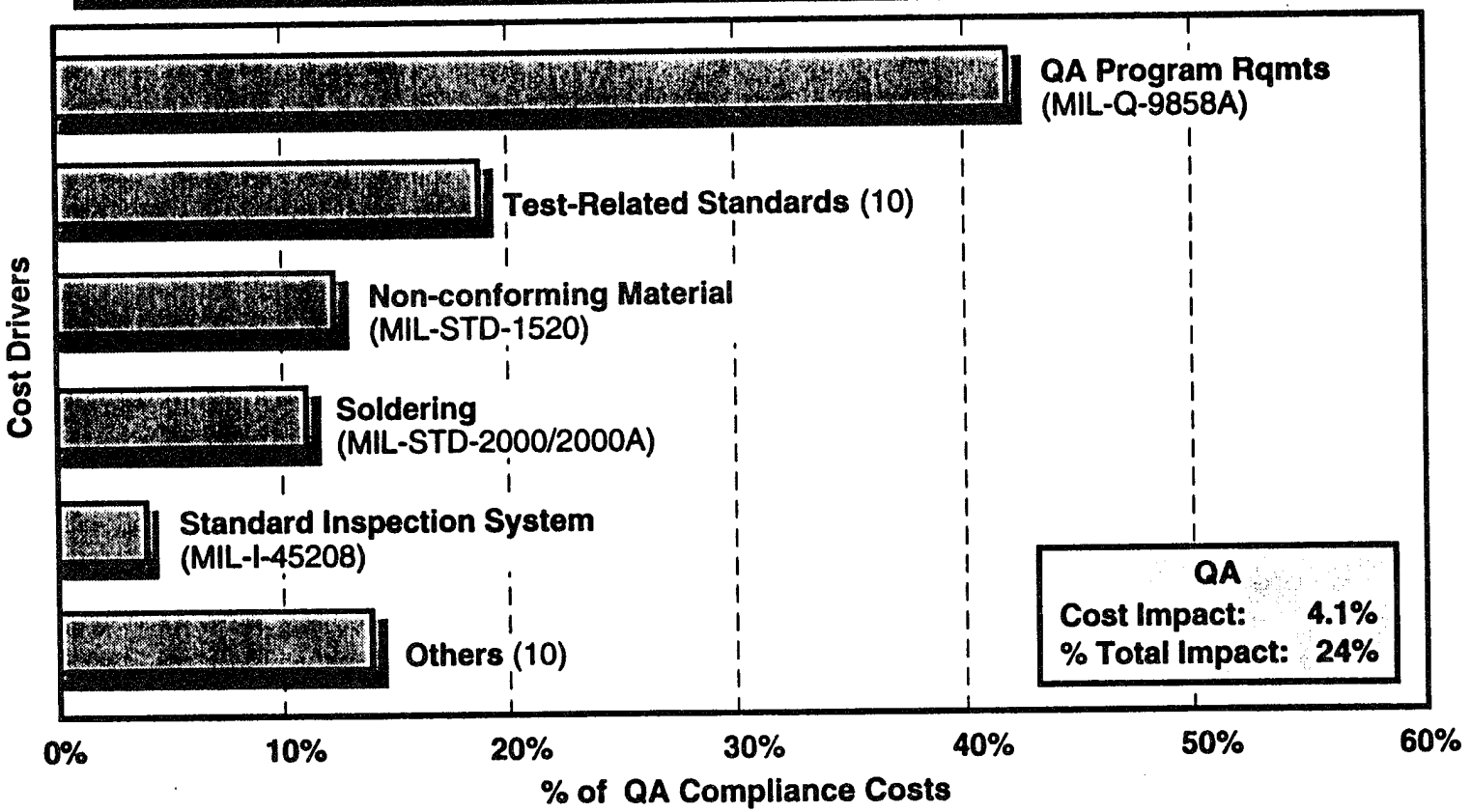
MIL-Q-9858A is the leading regulatory cost driver in this area accounting for over 40 percent of compliance costs in this quality assurance regulatory category. Taken together, ten different testing specifications account for almost 20 percent of QA compliance costs. If we had considered these specifications as a single driver, testing would have been among the five leading cost drivers in terms of total compliance cost impact.

MIL-STD-2000A, the general specification on soldering for circuit board assemblies, is a major cost driver for electronics firms heavily involved in the manufacture of circuit boards. This specification imposes intensive inspection procedures, and even establishes requirements for the solder finish which, in the view of industry, provides little or no value added to the performance or reliability of the final product. At the four electronics-oriented company sites included in the study sample, the costs of complying with MIL-STD-2000A alone accounted for more than 1 percent of value added costs. However, since this specification had no impact in the six sites that are not involved in electronics manufacturing, the ten site average for MIL-STD-2000A is only about 0.5 percent of value added costs, twelfth on the list of leading cost drivers.

The DoD quality assurance program uses a two-tiered system. MIL-Q-9858A is the umbrella quality assurance specification that applies to most major contractors. However, some small DoD contracts refer only to the specification for the Standard Inspection System (MIL-I-45208). Contractors subject to MIL-Q-9858A must also comply with MIL-I-45208. (In fact, MIL-I-45208 is cited in the MIL-Q-9858A specification.) Thus, inspection-related compliance costs normally were captured under MIL-Q-9858A. However, for contracts subject to MIL-I-45208 outside of the MIL-Q-9858A umbrella, these costs were collected under MIL-I-45208.

Quality Assurance

MIL-STD 2000/2000A is a major driver in the four electronics-oriented firms surveyed, with average compliance costs exceeding 1% of total value added at those sites.



Coopers &Lybrand

TASC

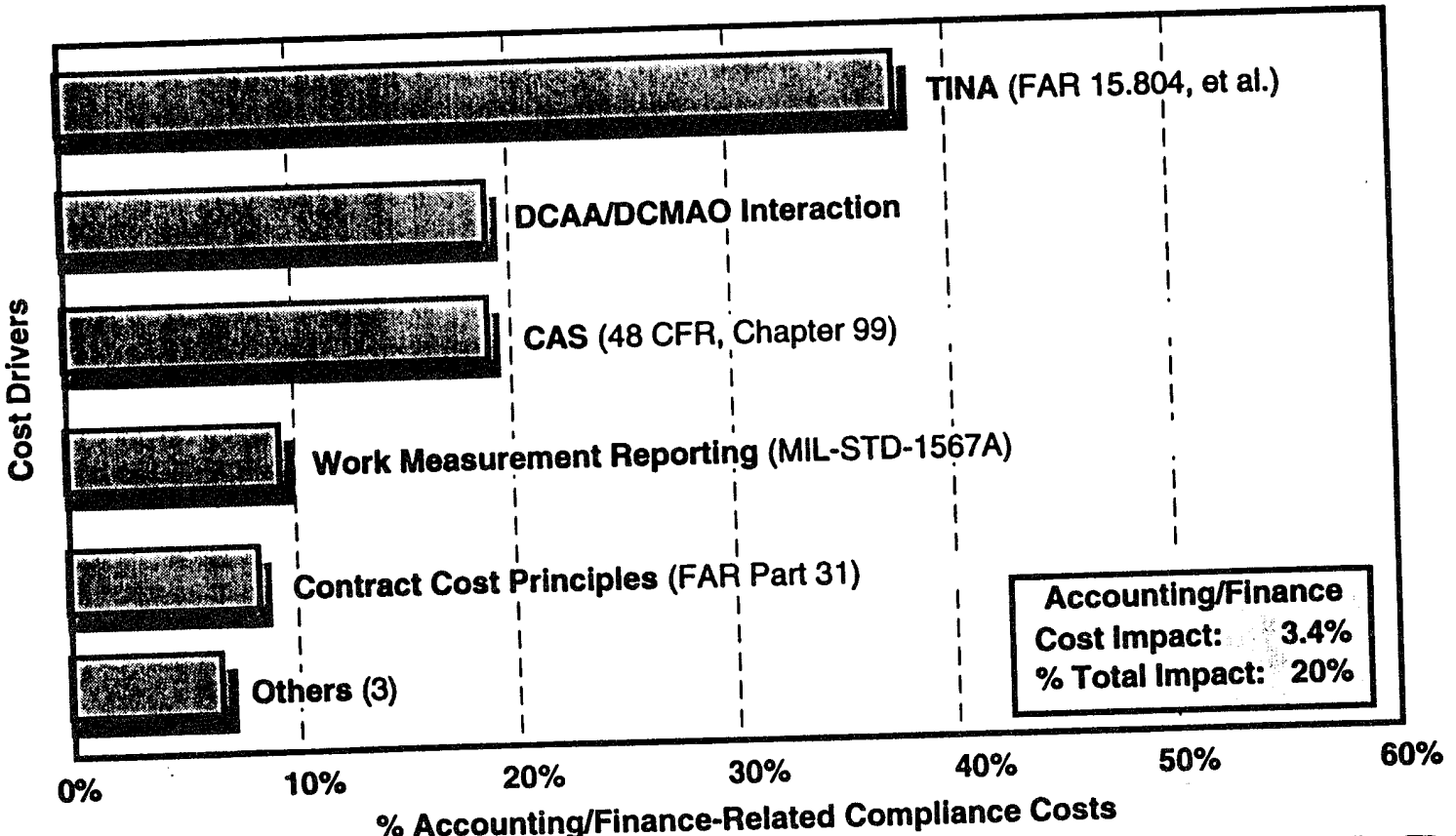
Accounting/Finance

For the ten firms in the study sample, accounting/finance-related regulations represent 3.4 percent of value added costs, or about 20 percent of the total DoD cost premium. Three cost drivers — TINA, DCAA/DCMAO interaction, and CAS — account for more than three quarters of the compliance costs in this regulatory category. Each of these drivers is on the "top ten" list and accordingly is addressed in detail in a previous section of this report. The Project Team found relatively few programs impacted by MIL-STD-1567A, Work Measurement Reporting.

The Project Team recognizes that the placement of DCAA/DCMAO interaction in this category is somewhat unfortunate, since DCMAO oversight clearly relates to quality assurance, not accounting/finance. In retrospect, we should have established two codes — one for on-site DCAA, one for DCMAO interaction — and collected those costs separately. With moderate effort, it may be possible at a later date to extract the DCMAO costs through the review of individual worksheets.

Accounting / Finance

Three drivers — TINA, DCAA/DCMAO interaction, CAS — account for over 75% of the compliance costs in this category.



Coopers &Lybrand

TASC

Engineering

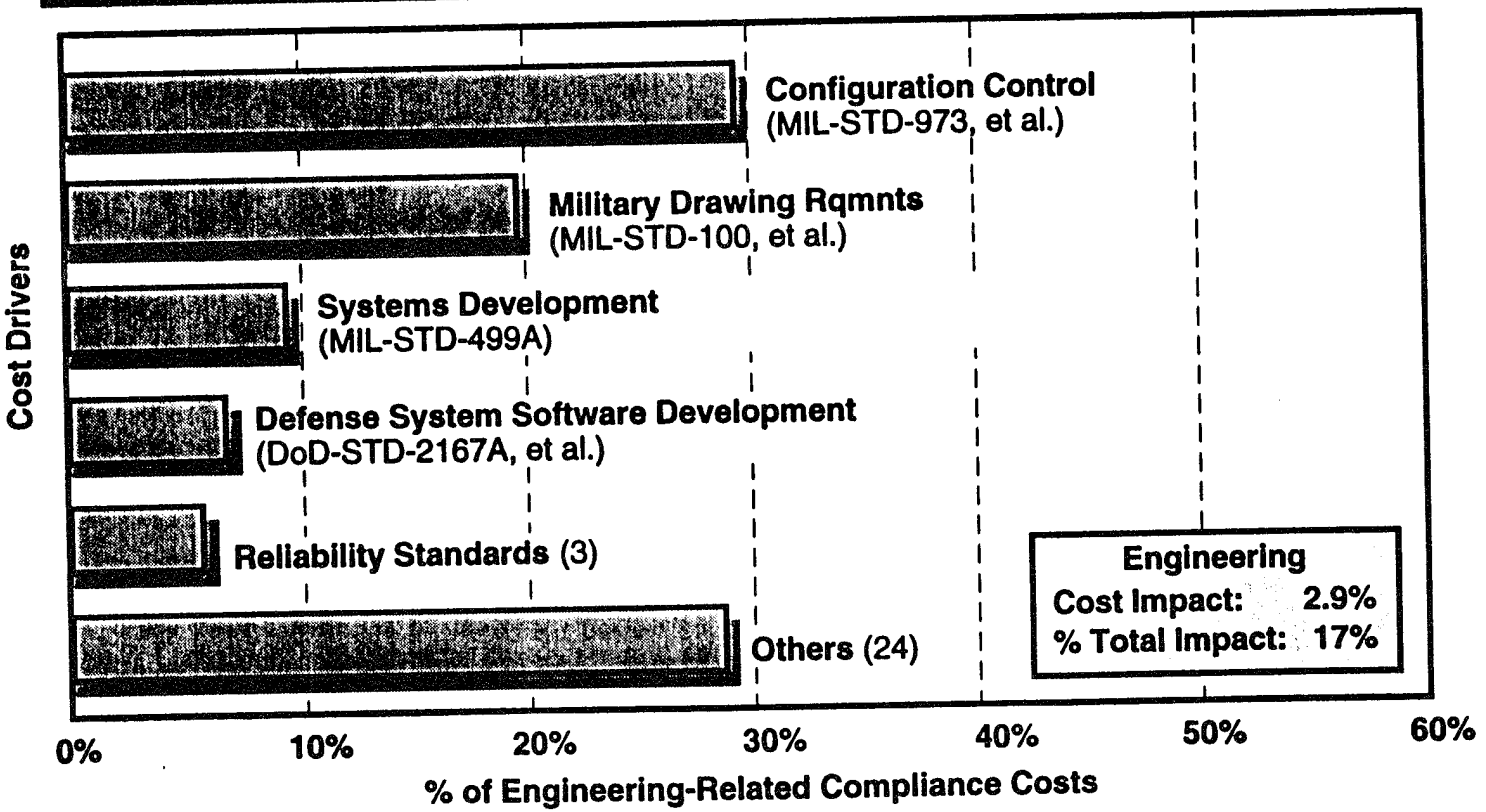
The engineering regulatory category accounts for an average of 2.9 percent of contractors' value added, or 17 percent of all compliance costs. Approximately half of all engineering-related compliance costs are associated with configuration control and military drawing requirements, which rank fourth and ninth respectively in the list of "top ten" cost drivers.

The remainder of engineering-related compliance costs are spread among approximately 30 DoD standards and specifications. Some contractor personnel argued that MIL-STD-499A (the systems development specification) and DoD-STD-2167A (the software development standard) require a highly structured, sequential approach to system/software development, and discourages rapid prototyping — a practice gaining increasing favor in the commercial sector. Others maintained that these specifications provide a logical framework that is necessary for successful execution of complex DoD programs (although even the advocates complain about the extensive documentation requirements).

The bar labelled "Other" represents the compliance costs associated with a range of 24 DoD standards and specifications. Most of these requirements apply to specific military products, and have little impact on other product areas.

Engineering

Half of all engineering-related compliance costs are associated with configuration control and military drawings.



Coopers &Lybrand

TASC

Contracting/Purchasing

For the ten site sample, contracting/purchasing regulations and oversight increase contractors' value added costs by 2.3%, or about 13 percent of the total DoD cost premium. As noted above, contract-specific requirements are a major cost driver, representing one third of the regulatory costs in this category.

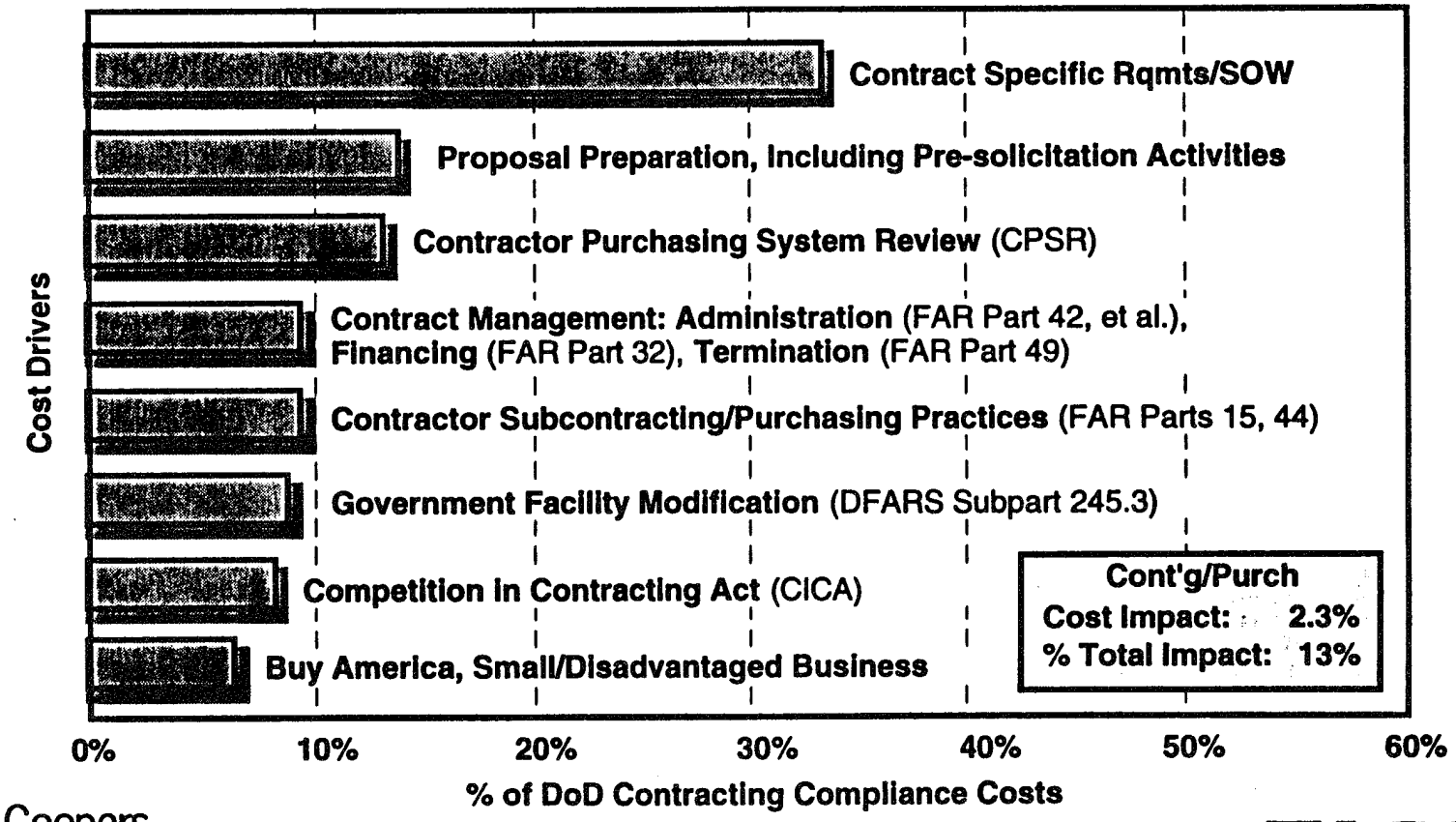
Proposal preparation, including attendance at bidder's conferences and other pre-solicitation activities, is the second largest cost driver in the contracting/purchasing area. In the view of industry, DoD requests for proposal (RFPs) compel contractors to develop proposals that are far more detailed and voluminous than those required in the commercial sector. There was also broad agreement that government RFPs are often unclear or contradictory, complicating the task of developing the proposal.

The Contractor Purchasing System Review (CPSR) appears to have a major impact on most procurement departments in the defense industry. This review is conducted on an annual basis by DCMAO personnel, and involves a comprehensive examination of the contractor's subcontract/purchase order award process, its procedures for ensuring that suppliers comply with DoD quality requirements, and other procurement procedures. Many contractors questioned whether DoD obtains significant benefits from CPSR, and urges at the very least the CPSR be made less frequent.

While the Competition in Contracting Act, the Buy American Act, and small/disadvantaged business programs have relatively little impact on contractors' value added costs, several firms emphasized that these provisions have a major impact on material cost, quality, and availability. Moreover, industry argues that these requirements (particularly CICA) inhibit the development of strategic alliances with suppliers, despite DoD rhetoric embracing the need for closer relationships among prime contractors, subcontractors, and suppliers.

Contracting / Purchasing

Several contractors emphasized that CICA, the Buy America Act, and small/disadvantaged business programs have major impacts on material costs/quality and inhibit the development of strategic alliances with suppliers.



Coopers &Lybrand

TASC

Logistics, Material Management, & Government Property

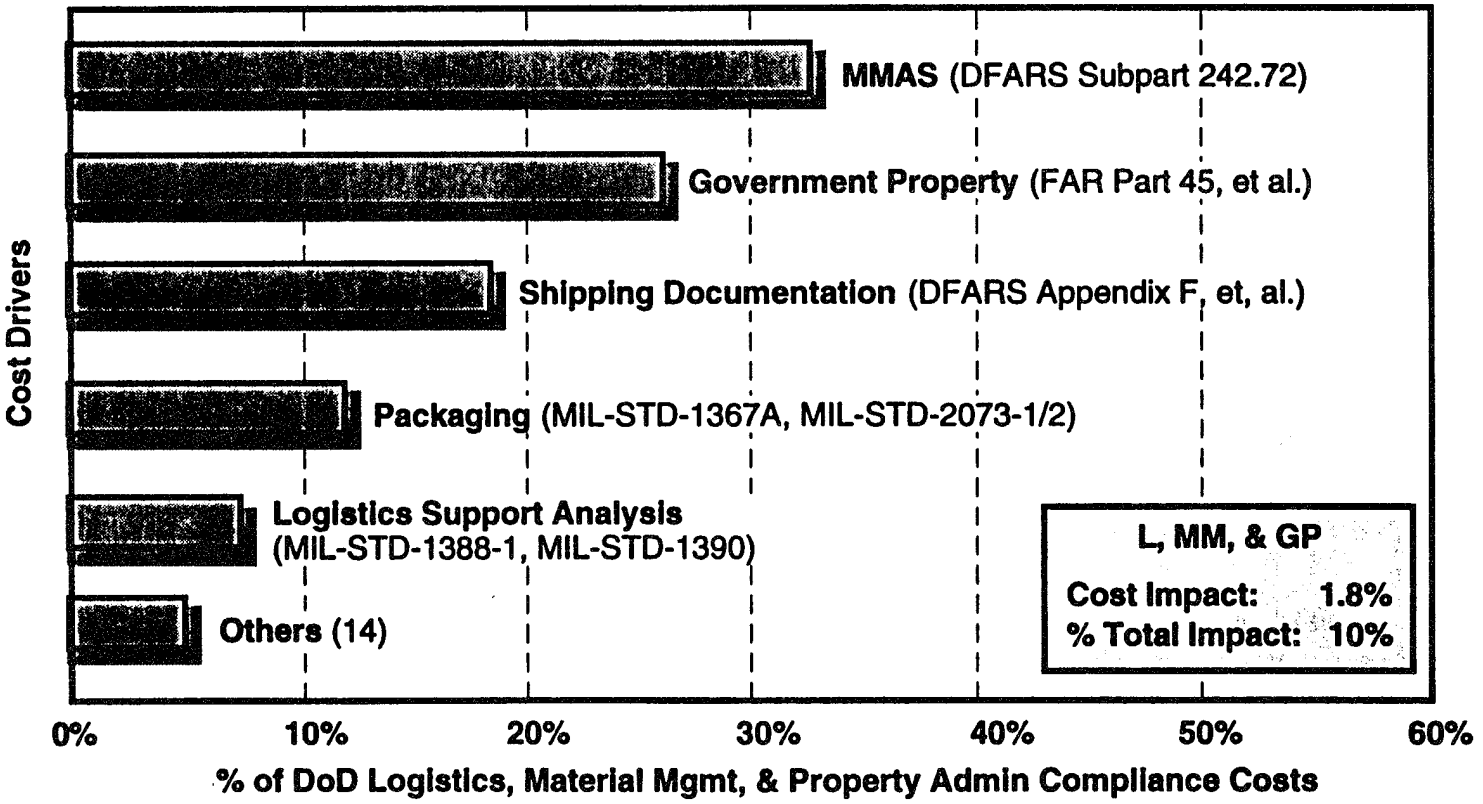
Cost drivers in the logistics, material management, and government property category represent 1.8 percent of value added, or about 10 percent of total compliance costs. The material management accounting system (MMAS) and government property administration account for about half of the impact of this regulatory category. These cost drivers are discussed in detail in a previous section of this report.

Shipping documentation appears to be a significant cost driver for contractors that ship a wide variety of products to DoD customers, usually in small lots. Compliance costs in this area were particularly high at sites that are strongly oriented toward the commercial market. Contractors note that DoD requires completion of various government-unique forms such as the Government Bill of Lading (GBL) and DD Form 250, which are more extensive than the documentation required for the shipment of products to commercial customers.

There was widespread agreement among contractor personnel involved in the packaging of defense items that DoD packaging requirements are frequently excessive. Packaging for defense items undergo the same contracting and oversight process that is imposed on the items themselves. Contractors must submit a packaging plan (conforming to MIL-STD-1367A, MIL-STD-2073-1/2, or other DoD packaging standards) with the original proposal along with a detailed cost estimate for its implementation. Packaging materials purchased from suppliers must go through receiving inspection. Finished packages are also subject to inspection prior to shipment. In many cases, packaging materials are extremely expensive (since our ABC assessments addressed only value added costs, these material costs were not captured). Several company representatives noted that DoD packaging requirements compel contractors to design packages for the most severe conditions, even when in practice the package is unlikely to be exposed to such conditions.

Logistics, Material Management & Government Property

DoD shipping documentation is particularly onerous for commercial-oriented suppliers; most contractors agree that DoD packaging requirements are often excessive.



Coopers &Lybrand

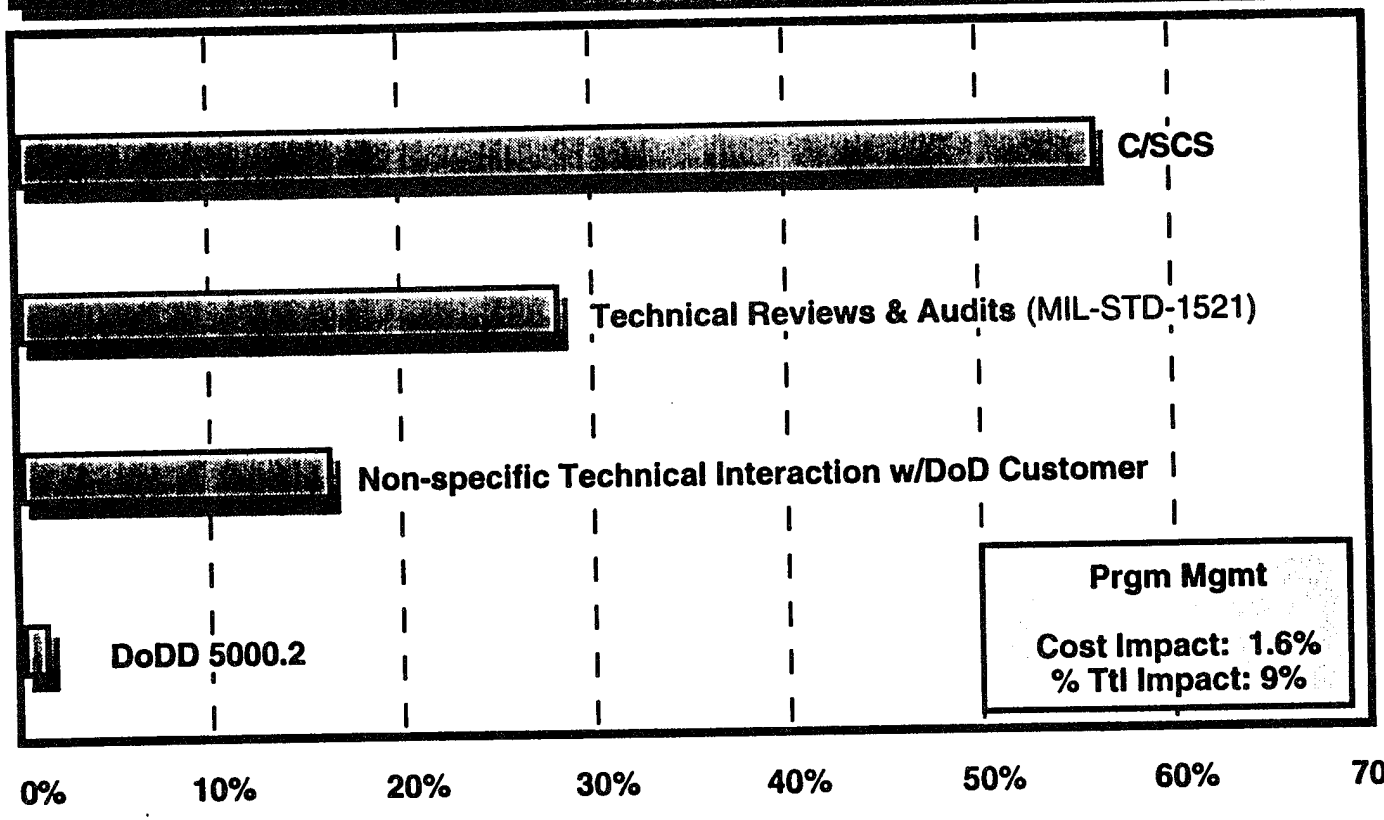
TASC

Program Management

Compliance costs associated with this regulatory category account on average for 1.6% of value added, or about 9 percent of the total regulatory cost impact. C/SCS, the leading driver in the program management category, is discussed in detail on pages 22-22a. Technical Reviews and Audits (MIL-STD-1521) refers to program reviews and other technical interaction between the contractor and the DoD program office. Several contractors indicate that they devote considerable time and attention to preparing status briefings for their DoD customers. According to some industry representatives, those program offices that place the greatest emphasis on frequent formal reviews tend to have the least understanding of and substantive involvement in the technical issues facing the contractor.

Program Management

Taken together, C/SCS and MIL-STD-1521 account for over 80 percent of compliance costs associated with this regulatory category.



Coopers &Lybrand

TASC

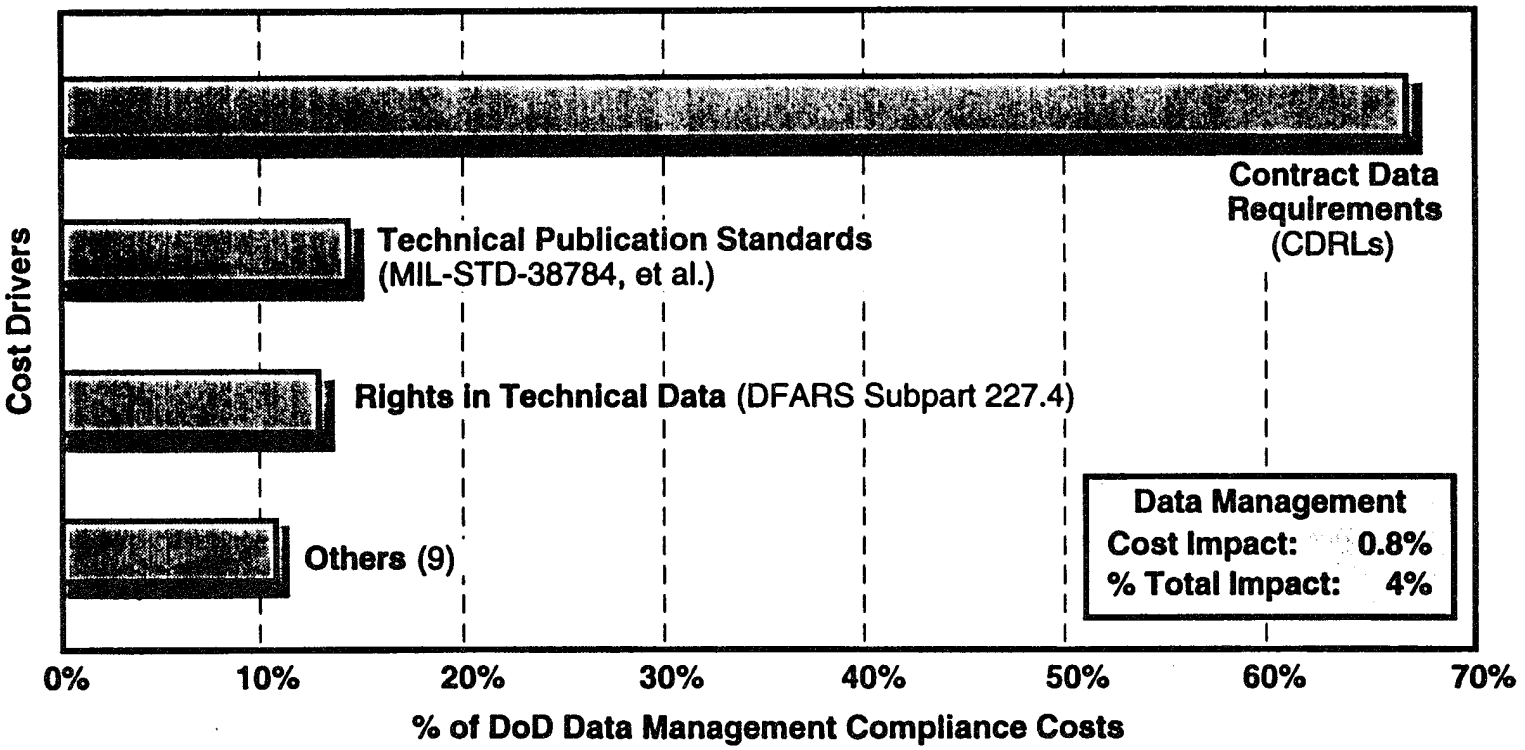
Data Management

The data management regulatory category accounts on average for 0.8 percent of contractors' value added costs, or about 4 percent of total compliance costs. Contract Data Requirement List (CDRL) items account for two thirds of these costs. According to industry, DoD contracting officials often impose a range of CDRLs that provide little or no benefit to DoD. Several contractors observed that CDRLs are sometimes "lifted" mechanically from old contracts and transferred to follow-on contracts with little effort on the part of the contracting official to determine whether the previous requirements are appropriate to current circumstances.

Technical publication standards also represent a significant problem, particularly for contractors which have a range of DoD customers. Company representatives indicate that technical publication standards vary significantly among the Armed Services, and even buying commands of the same Service sometimes have different technical publication standards.

Data Management

The key problem in this area is the tendency for government contracting officers to routinely impose myriad CDRL requirements, even when such deliverables provide little or no value added to DoD.



Coopers &Lybrand

TASC

Report Outline: Site Assessment Results — Business Functions

In previous sections of this report, we examined the site assessment data from three perspectives. First, from the top-level perspective, we identified the average regulatory impact for the 10 site sample, as well as for several subsets of that sample. Second, we highlighted the key regulatory cost drivers and analyzed their impact on contractors' activities. Finally, we assessed the cost impact of various categories of regulatory cost drivers and examined the composition of these categories.

Here, we focus on the impact of DoD regulations and oversight on contractors' major business functions. This analysis contributes to a fuller understanding of factors that contribute to high compliance costs, and to an appreciation of the pervasive impacts of many regulatory cost drivers on contractors' organization.

Report Outline

- **Background**
- **Site Assessment Results**
  - Top Level Results
  - Key Cost Drivers
  - Regulatory Categories
  - Business Functions
- **Conclusions**
- **Appendices**
  - Appendix A - Cost Driver Glossary
  - Appendix B - Project Team
  - Appendix C - Industry Contacts

Coopers &Lybrand

TASC

Compliance Costs as a Percentage of Function Costs

This slide shows the cost impact of DoD regulation/oversight on major business functions (quality assurance, finance, material management, engineering/program management, and operations) for the eight sites at which the Project Team collected function cost data. (Function-specific data was not collected at two sites. One site conducts business with DoD on a catalogue basis only, and thus had no means for isolating costs associated with the production of items purchased by DoD. At another, the collection of function-specific data was infeasible because of the complex and highly-matrixed nature of the contractor's organization.)

To the extent possible, the Project Team normalized function costs across the eight site sample by employing a standard approach to incorporating cost centers in functional groupings. The cost centers that in general make up each function are identified below. It should be noted, however, that differences in the contractors' organizational structure sometimes made it difficult for the Project Team to ensure perfect uniformity across the eight sites. Nevertheless, we believe that the accompanying slide accurately represents the relative impact of DoD regulations/oversight on contractors' major business functions.

Quality assurance is the most heavily impacted of the major business functions. Regulatory compliance costs account on average for 34 percent of total quality assurance function expenses. The quality assurance function includes the contractors' quality policies and procedures organization, as well as receiving, intermediate and final inspection cost centers.

Finance is also a high impact function, with 32 percent of contractors' resources in this area devoted to regulatory compliance. The finance function includes accounting, contracts, pricing/cost estimating, internal control, and (at some sites) the financial systems organizations. At those sites where it was possible to isolate cost impacts at this level, compliance costs accounted on average for more than half of the total expenses of contracts and pricing/cost estimating — the most heavily impacted on average of all cost centers. The material management function, where compliance costs also represent 32 percent of the total, is made up primarily of contractors' procurement, inventory control, and production scheduling departments.

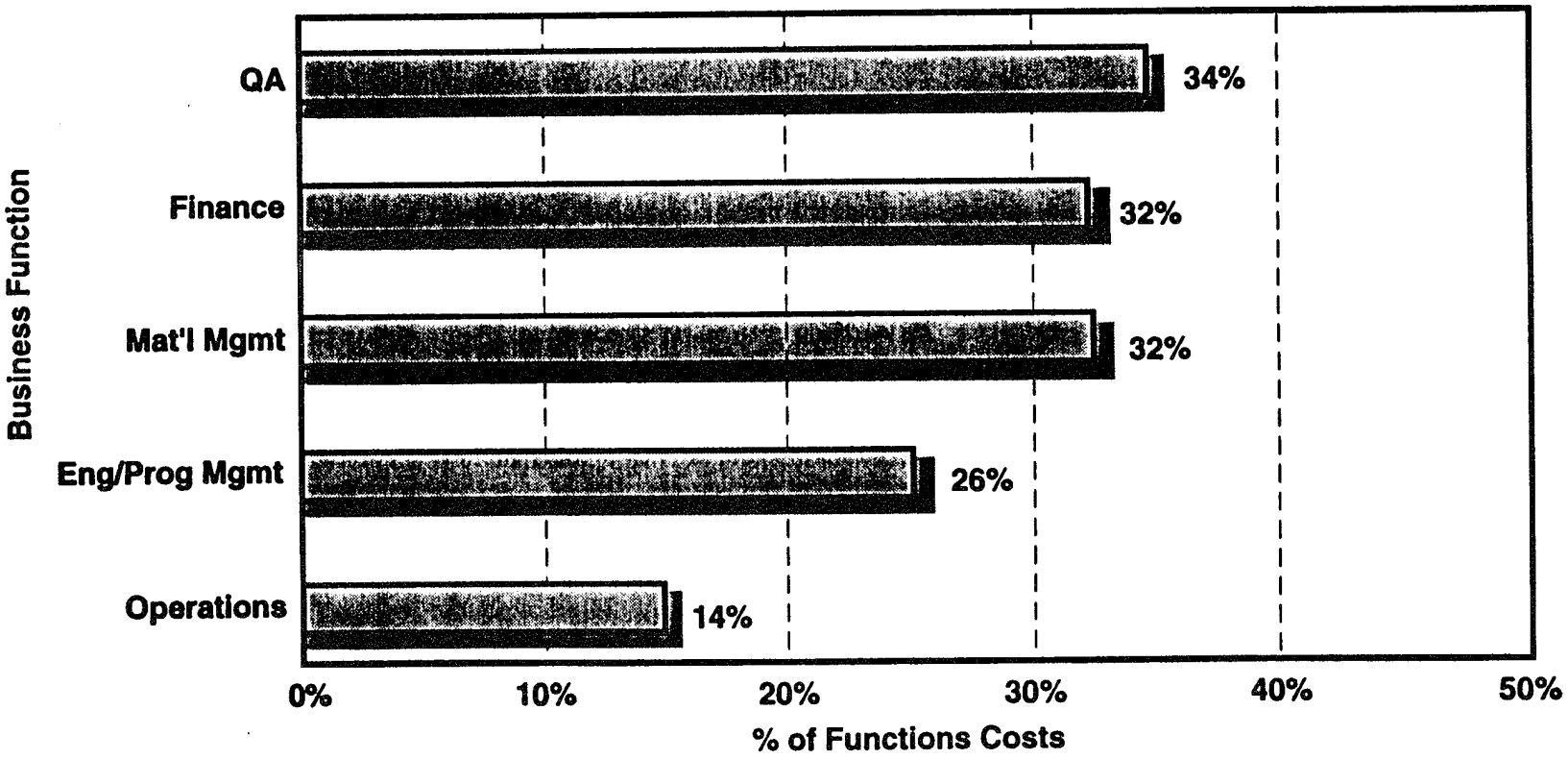
At 26 percent cost impact, engineering/program management is somewhat less affected by DoD regulation and oversight than the high impact areas discussed above. This function includes the design engineering, product support engineering, engineering testing, technical drawing, and logistics support cost centers. The Project Team decided to group the engineering and program management functions together because at most sites the two functions were highly integrated. At some firms, program management subsumed most of the engineering organizations; at others, program management was subordinate to the engineering manager and contained most of the engineering staff.

Operations is the least impacted of all of the major business functions, with compliance costs accounting for only 14 percent of total function expenses. Operations includes fabrication, assembly, production testing, industrial engineering, and facility support and maintenance. Compliance costs represent a small fraction of the total expenses in the fabrication and assembly area, except in electronics-oriented firms, where DoD soldering requirements (MIL-STD-2000A) generate significant compliance costs.

The Project Team found few regulatory/oversight impacts in the human resources and business development functions (not shown in this slide). The information systems function had moderate regulatory cost impacts, but was difficult to isolate: responsibility for information system development frequently was buried in other functions.

Compliance Costs as a Percentage of Function Costs

DoD regulatory compliance costs are greatest in the quality assurance, finance, and material management/procurement departments. Cost impacts are relatively small in operations, particularly in the fabrication and assembly areas.



Coopers &Lybrand

TASC

Distribution of Value Added Costs

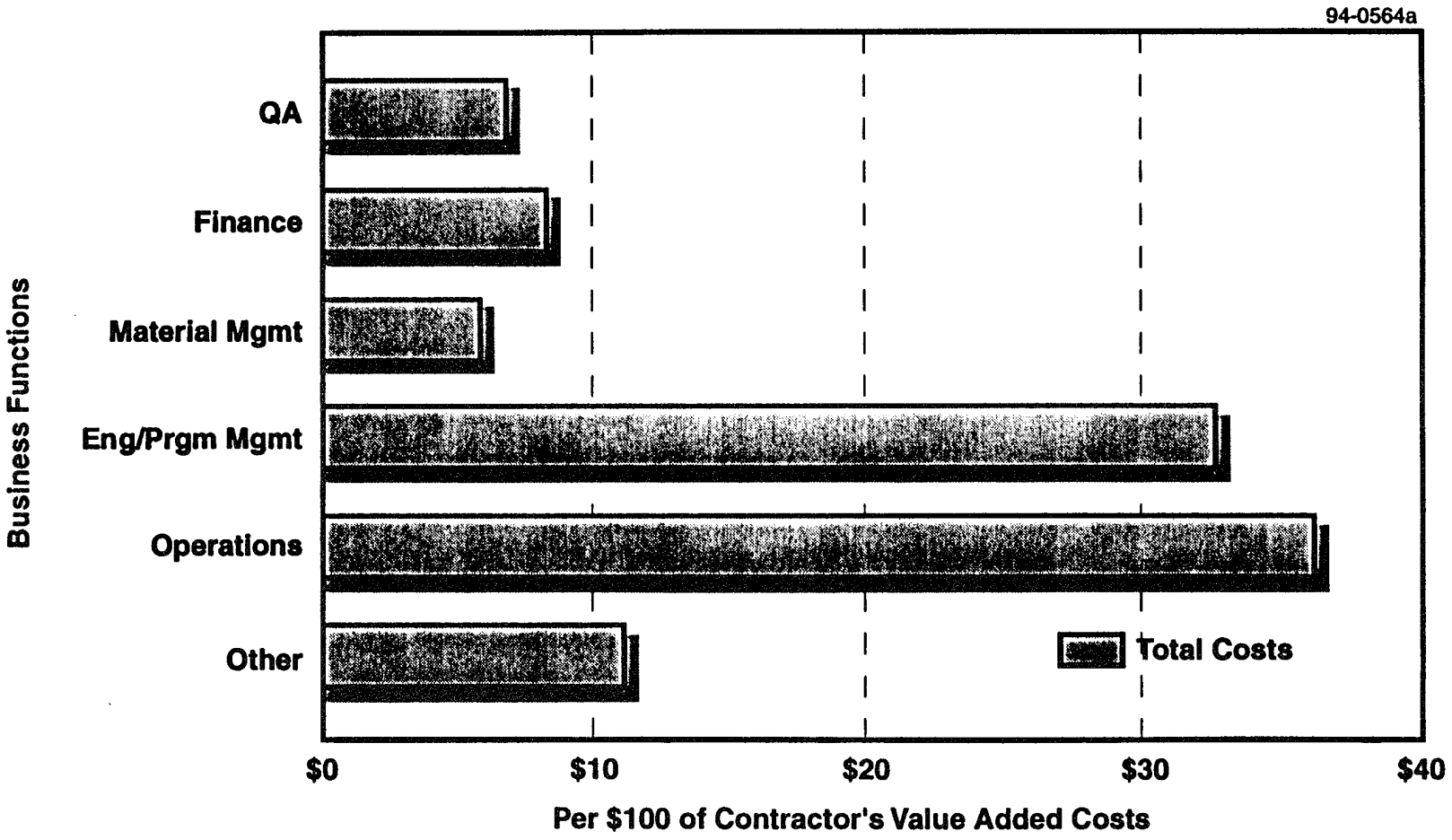
This slide shows the distribution of value added costs across the major business functions for the eight sites at which function-specific cost data was collected.

The slide indicates that operations and engineering/program management are the predominant functions at the eight sites. For every $100 in value added costs, the eight contractors spend on average about $37 on operations and $33 on engineering/program management. Quality assurance, finance, material management, and other business functions are considerably smaller, sharing the remaining $30.

It is interesting to note that, among the eight sites, there is considerable variation in the relative size of the engineering/program management and operations functions — the slide indicates the average only. Those contractors engaged in the development and production of technologically sophisticated products — for example, in the electronic systems — have a much higher proportion of their costs in the engineering/program management. These high technology firms have relatively small operations functions. In contrast, lower technology "metal-bending" contractors have little engineering but a high concentration of value added costs in operations.

Although it does not by itself address the issue of compliance costs, this slide is important because it shows how cost distribution can play an important role in determining contractors' regulatory cost burden. Large functions like engineering have potential to drive compliance costs even if regulatory impacts in these areas are somewhat less pronounced than found in considerably smaller functions like quality assurance — a concept highlighted in the following slide.

Distribution of Value Added Costs



Coopers &Lybrand

TASC

Business Functions and Compliance Costs

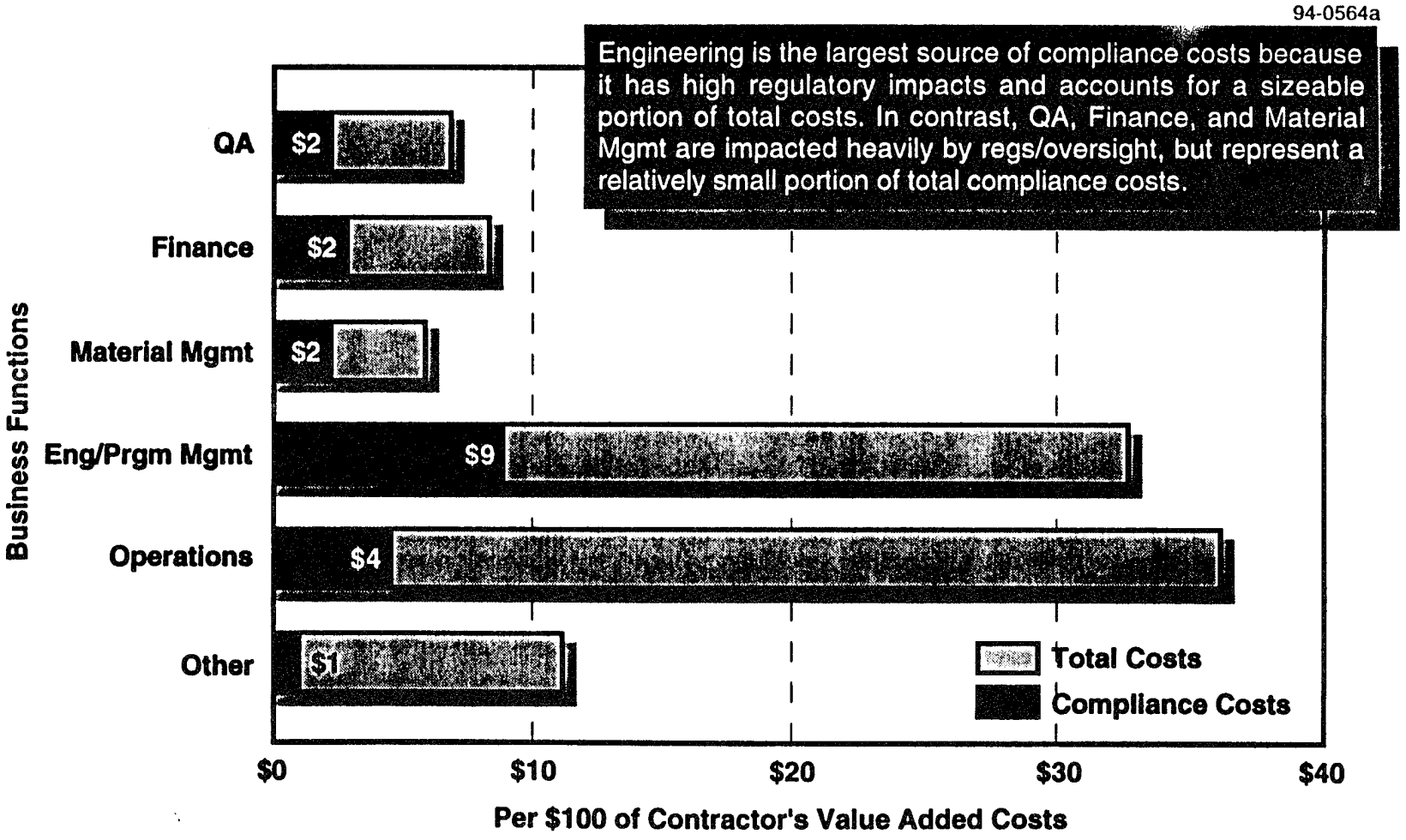
This slide adds a shaded overlay to the previous chart, with the dark shaded areas representing compliance costs for each function.

Function compliance costs are the product of function-specific regulatory impacts and function costs. For example, regulatory compliance costs account on average for 34 percent of total quality assurance costs (see page 42). The previous slide shows that, on average, contractors in the eight site sample devote about $7 out of every $100 in value added costs to the quality assurance function. Accordingly, the contractors spend about $2 dollars out of $100 on regulatory compliance in the quality assurance area.

While quality assurance, finance, and material management are the most heavily-impacted business functions, compliance costs in these individual areas account for a relatively small share of the total impact because these functions are a small part of contractors' total organization. In contrast, engineering/program management account for $9 in compliance costs for every $100 in value added — or 43 percent of the total regulatory impact in the eight sites for which we have function-specific data.

Our data indicate that engineering orientation is a primary determinant of total regulatory cost impact: those contractors with the highest engineering content tend to have the greatest regulatory compliance costs.

Business Functions and *Compliance Costs*



Coopers &Lybrand

TASC

Business Functions and Regulatory Categories

Here, we isolate the function compliance costs identified in the previous slide, and break out these costs by regulatory category.

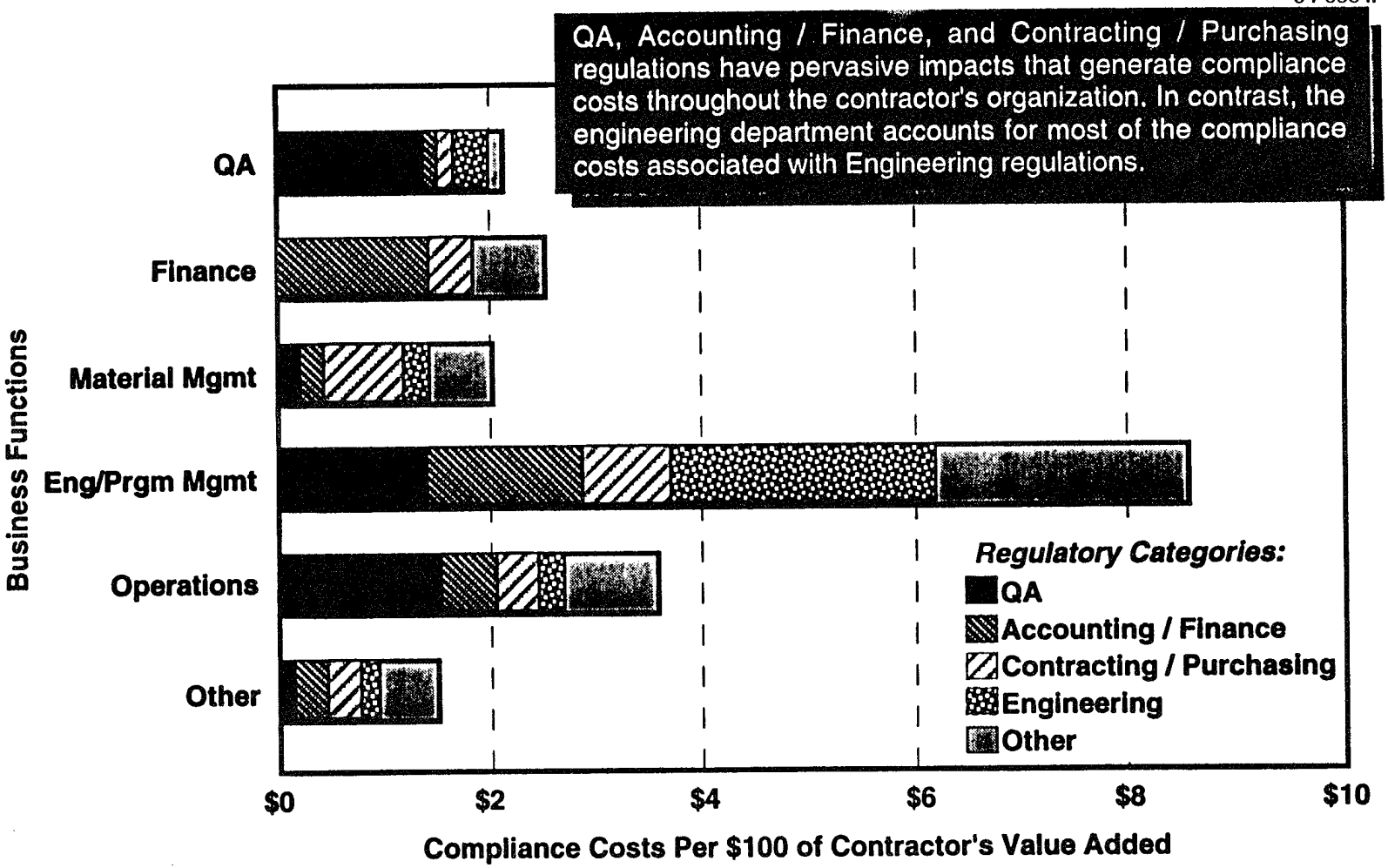
For example, compliance costs in the quality assurance function are about $2 per $100 of contractors' value added. Quality assurance-related regulations and oversight practices account for more than half of these compliance costs, with most of the remainder resulting from the accounting/finance, contracting/purchasing, and engineering regulatory categories.

This slide shows that quality assurance-, accounting/finance-, and contracting/purchasing-related regulations have a pervasive impact across the contractor's organization, generating significant compliance costs in several functional areas. The quality assurance regulatory category results in substantial added costs in the quality assurance, engineering/program management, and operations functions. Accounting/finance regulations have significant impacts in the engineering/program management as well as finance functions. Compliance costs associated with contracting/purchasing-related regulations are distributed relatively evenly throughout all of the major functions. In contrast, compliance costs associated with engineering-related regulations are concentrated primarily in the engineering function.

Finally, it is interesting to note that most business functions are primarily impacted by one or perhaps two categories of regulations. However, engineering/program management feels the brunt of all regulatory areas.

Business Functions and *Regulatory Categories*

94-0564i



Coopers &Lybrand

TASC

Report Outline — Conclusions

This section provides the high-level study conclusions of the Project Team.

Report Outline

- **Background**
- **Site Assessment Results**
  - Top Level Results
  - Key Cost Drivers
  - Regulatory Categories
  - Business Functions
- **Conclusions**
- **Appendices**
  - Appendix A - Cost Driver Glossary
  - Appendix B - Project Team
  - Appendix C - Industry Contacts

Coopers &Lybrand

TASC

Conclusions

This slide summarizes the high-level conclusions of the Project Team.

First, the site assessment results demonstrate beyond a reasonable doubt that DoD acquisition regulation and oversight impose significant costs on defense contractors. The ten study sites represent a diverse cross-section of the defense industry, and our detailed ABC methodology provides a strong empirical basis for the study results. Nevertheless, since compliance costs vary according to the individual circumstances of a given site, a similar study conducted at ten other contractor facilities might yield a somewhat different result — average compliance costs may be either a little higher or a little lower than the 18 percent of value added found here. Regardless, it is clear that the DoD regulatory cost premium is considerable and should be reduced to the extent possible while maintaining adequate accountability of public expenditures.

Second, we believe that this study is largely consistent with the findings of previous studies in this field. While some analyses estimate a DoD cost premium of 40 percent or more, to a certain extent such discrepancies reflect scope differences. (For example, we focused solely on value added costs, ADPA included the estimated cost savings associated with increased purchases of commercial parts.) In our view, the debate should no longer center around whether the DoD regulatory cost premium is 15, 18, or even 25 percent of industry costs, but focus instead on developing and implementing effective corrective action.

Third, our analysis indicates that ten key regulatory cost drivers account for almost one-half of all regulatory compliance costs. This result suggests that DoD may achieve significant industry cost reductions by concentrating reform efforts on a relatively small number of high leverage areas such as MIL-Q-9859A, TINA, and DoD configuration management.

Fourth, DoD appears to have sufficient authority without further legislative action to address most of the key regulatory problem areas. In our view, DoD has the primary responsibility for implementing reforms with respect to eight out of the top ten cost drivers, and shares primary responsibility for the ninth (TINA). Only CAS seems to a great extent out of DoD's hands — although even in this area DCAA may be able to exercise some flexibility on oversight practices. With the FASTA 94 changes in hand, we believe that DoD has most of the tools it needs to greatly reduce the industry costs associated with DoD regulation and oversight.

Finally, it is important to realize that the compliance costs identified in this report will not be eliminated overnight, even if regulatory reform is implemented immediately. Restructuring the day-to-day interaction between contractors and DoD program managers, contracting officials, and oversight personnel is key to reducing these costs. Even with strong executive leadership from both DoD and industry, the culture and attitudes developed on both sides over decades of regulation and mutual suspicion may take some years to fully evolve to a more positive relationship based on commercial practices and incentives. However, this transformation must begin soon to ensure that the industrial base remains viable and responsive to the nation's national security requirements.

Conclusions

- The DoD Regulatory Cost Premium is Significant
- Study Results are Largely Consistent With Previous Analyses, Policy Statements
- Compliance Costs are Concentrated in a Small Number of Regulatory/Oversight Areas
- With Passage of FASTA 94, Many Corrective Actions can be Achieved Without Further Statutory Changes
- Reductions in Compliance Costs can be Achieved Over Several Years

Report Outline: Appendix A — Cost Driver Glossary

Report Outline

- **Background**
- **Site Assessment Results**
  - Top Level Results
  - Key Cost Drivers
  - Regulatory Categories
  - Business Functions
- **Conclusions**
- **Appendices**
  - Appendix A - Cost Driver Glossary
  - Appendix B - Project Team
  - Appendix C - Industry Contacts

Appendix A — Cost Driver Glossary

This appendix identifies all of the regulatory cost drivers cited by contractor personnel during the ten ABC site assessments. In many cases, the Project Team grouped related specifications, regulations, and statutes under a single cost driver. For example, the "Quality Program Requirements" cost driver includes both the relevant military specification as well as the appropriate Federal Acquisition Regulation (FAR) reference. As noted in previous sections of this report, we also grouped the individual cost drivers into the following eight broad regulatory categories:

- Quality Assurance
- Accounting/Finance
- Engineering
- Contracting/Purchasing
- Logistics, Material Management, and Property Administration
- Program Management
- Data Management
- Other

The selection of these particular categories involves an element of subjectivity; other approaches may also be valid. For example, it may have been reasonable to establish categories for testing- or audit-related regulatory provisions. Similarly, the assignment of individual cost drivers to these categories is also somewhat subjective. However, we believe that the categorization scheme documented in this appendix provides a fair representation of the general impact of primary areas of regulations and oversight on contractors' value added costs.

This appendix expresses regulatory cost impacts in two ways. The "Reg Cost Premium (% Value Added)" column identifies the average cost impact of the individual cost driver for the ten sites, expressed as a percentage of value added costs. The Project Team used straight (not weighted) averages in this calculation. In other words, DoD quality program requirements accounted for an average cost differential of 1.7 percent of value added costs at the ten company sites.

The second column, entitled "% Total DoD Cost Premium," expresses cost driver impacts as a percentage of total allocated compliance costs. Allocated compliance costs are those cost impacts associated with specific cost drivers. Such costs exclude unallocated compliance costs or those compliance costs associated with secondary impacts. Unallocated/secondary compliance costs are those regulatory impacts cited by contractor personnel which could not be tied to specific regulatory cost drivers. At the ten sites, unallocated/secondary compliance costs accounted for an average of 0.5 percent of contractors' value added costs (page 66a).

Throughout this report, allocated compliance costs are used as the basis for calculating the cost premium share of individual regulatory cost drivers.

Appendix A — Cost Driver Glossary

Quality Assurance	Reg Cost Premium (% Value Added)	% Total DoD Cost Premium
Standard Inspection System MIL-I-45208	0.2%	1.0%
Quality Program Requirements Mil-Q-9858A (Quality Program Requirements) FAR Part 46 (Quality Assurance)	1.7%	10.0%
Corrective Action/Disposition System for Nonconforming Mater MIL-STD-1520	0.5%	2.7%
Supplier Quality Assurance Program Requirements MIL-STD-1535	0.1%	0.5%
Procurements Limited to QPL Vendors MIL-STD-38510 (Procurements Limited to QPL Vendors) MIL-H-38534 (General Specification for Hybrid Microcircuits)	0.1%	0.6%
Test Methods and Procedures for Microelectronics MIL-STD-883 (Test Methods and Procedures for Microelectronics) MIL-STD-202 (Test Methods for Electronic and Electrical Components)	0.2%	1.1%
Standard Requirements for Soldered Electrical & Electronic Assemblies MIL-STD-2000/2000A (Standard Rqmts for Soldered Assemblies) MIL-STD-454N (Standard General Requirements for Electronic Equipment)	0.4%	2.5%

Appendix A — Cost Driver Glossary

Appendix A — Cost Driver Glossary

Quality Assurance (Cont.)	Reg Cost Premium (% Value Added)	% Total DoD Cost Premium
Reliability Design Qualification Acceptance Test MIL-STD-781	**0.1%**	**0.5%**
Parts Control/Evaluation MIL-STD-965	**0.1%**	**0.6%**
Test Data Requests for Nonstandard Parts DI-E-7030	**0.1%**	**0.5%**
Test Provisions for Electronic Systems & Associated Equipment MIL-STD-415	**0.1%**	**0.6%**
Preparation of Test Requirement Document MIL-STD-1519	**0.1%**	**0.4%**
Testability Program for Electronics Systems & Equipment MIL-STD-2165	**0.1%**	**0.4%**
Environmental Test Methods and Engineering Guidelines MIL-STD-810C	**0.1%**	**0.5%**
Military Specification Test Equip for Use w/Electrical and Electronic Equipment MIL-T-28800	**0.0%**	**0.2%**
Defense System Software Quality Program MIL-STD-2168 (Defense System Software Quality Program) MIL-STD-210C (Climatic Information to Determine Design/Test Rqmts)	**0.0%**	**0.2%**

Appendix A — Cost Driver Glossary

Appendix A — Cost Driver Glossary

Quality Assurance (Cont.)	Reg Cost Premium (% Value Added)	% Total DoD Cost Premium
Calibration Systems Requirements MIL-STD-45662 MIL-STD-1472	**0.1%**	**0.4%**
Welder Qualification MIL-STD-1595	**0.0%**	**0.0%**
Preparation of Test Requirements Document MIL-STD-1345	**0.1%**	**0.8%**
General Requirements for Test Program Sets MIL-STD-2077	**0.0%**	**0.0%**
Tests for Construction, Industrial, and Material Handling Equipment MIL-STD-488	**0.0%**	**0.0%**
Sampling Procedures and Tables for Inspection by Attributes MIL-STD-105	**0.0%**	**0.0%**
Quality Program Requirements for Space and Launch Vehicles MIL-STD-1586A MIL-STD-1540B (Test Requirements for Space Vehicles)	**0.1%**	**0.3%**
Subtotal - Quality Assurance	***4.1%***	***23.8%***

Coopers &Lybrand

TASC

Appendix A — Cost Driver Glossary

Appendix A — Cost Driver Glossary

Accounting / Finance	Reg Cost Premium (% Value Added)	% Total DoD Cost Premium
Cost Accounting Standards Disclosure & Consistency in Cost Accounting Practices Title 48 CFR, Chapter 99 (Appendix B, FAR loose-leaf edition)	**0.7%**	**3.8%**
Contract Cost Principles & Procedures FAR Part 31 (i.e. allowability, reasonableness, allocability of costs)	**0.3%**	**1.8%**
Supplemental Cost Principles, Penalties, & Procedures DFARS PART 231 (Contract Cost Principles and Procedures)	**0.1%**	**0.3%**
DCAA Audits/DCMAO Interface	**0.7%**	**3.9%**
Truth in Negotiations Act FAR 15.804-2 (Certified Cost or Pricing Data Requirement) FAR 52.215-22 (Price Reduction for Contract Modifications) DFARS 215.811 (Estimating Systems) FAR 15.106.1(Examination of Records) FAR 15.106.2 (Audit Negotiation) FAR 15.804 (Cost or Pricing Data) FAR 15.805 (Proposal Analysis)	**1.3%**	**7.5%**
Work Measurement Reporting MIL-STD-1567A (Work Measurement Reporting)	**0.3%**	**1.9%**
Separate Accounting for Contract Modifications FAR Part 43 (Contract Modifications)	**0.1%**	**0.6%**
IR&D Program FAR 31.205-18 DFARS 231.205-18	**0.0%**	**0.2%**
Subtotal - Accounting/Finance	***3.4%***	***20.0%***

Coopers &Lybrand

TASC

Appendix A — Cost Driver Glossary

Appendix A — Cost Driver Glossary

Engineering	Reg Cost Premium (% Value Added)	% Total DoD Cost Premium
Human Engineering Design Criteria MIL-STD-1472 (Human Engineering Design Criteria) MIL-STD-1474C (Noise Limits for Military Material (Metric)) MIL-HNBK-763 (Human Engineering Procedures Guide) MIL-H-46855 (Human Engineering Requirement for Military Systems)	**0.1%**	**0.5%**
Maintainability Program Requirements MIL-STD-470	**0.0%**	**0.2%**
Configuration Control MIL-STD-973 (Configuration Management Practices DFARS 243.205-70 (Engineering Change Proposals)	**0.9%**	**5.0%**
Specification Practices MIL-STD-490 (Specification Practices) MIL-S-83490 (Specifications, Types and Forms)	**0.2%**	**1.0%**
Reliability Program for Systems and Equipment Development and Production MIL-STD-785	**0.1%**	**0.4%**
Printed Wiring MIL-C-28809 (Printed Wiring Assemblies) MIL-STD-275E (Printed Wiring for Electronic Equipment) MIL-P-55110 (General Specification for Rigid Printed Wiring Board)	**0.1%**	**0.5%**

Appendix A — Cost Driver Glossary

Appendix A — Cost Driver Glossary

Engineering (Cont.)	Reg Cost Premium (% Value Added)	% Total DoD Cost Premium
Military Drawings MIL-T-31000 (Technial Data Packages, General Specification) MIL-STD-100E (Engineering Drawing Packages)	0.6%	3.3%
Value Engineering FAR Part 48	0.0%	0.1%
Safety MIL-STD-882	0.1%	0.3%
Production Management MIL-STD-1528	0.1%	0.4%
Defense Systems Software Development DoD-STD-2167A (Defense Systems Software Development) MIL-STD-1803 (Software Development Integrity Program) MIL-STD-1467 (Software Support Environment)	0.2%	1.1%
Electromagnetic Emission and Susceptibility for Control of EMI MIL-STD-461	0.1%	0.5%
Systems Development MIL-STD-499A	0.3%	1.5%
Electromagnetic Interference Characteristics, Measurement of MIL-STD-462	0.0%	0.2%

Appendix A — Cost Driver Glossary

Appendix A — Cost Driver Glossary

Engineering (Cont.)	Reg Cost Premium (% Value Added)	% Total DoD Cost Premium
General Specification for Semiconductor Device MIL-S-19500	**0.0%**	**0.2%**
Reliability Predictions of Electronic Equipment MIL-HNBK-217E MIL-HNBK-3 (Electronic Reliability Design Handbook)	**0.1%**	**0.4%**
Circuit Card Assemblies MIL-C-28809	**0.0%**	**0.2%**
Electro Static Discharge Control MIL-STD-1686	**0.0%**	**0.2%**
Standardization Program Requirements for Defense Acquisitions - Application of S MIL-STD-680 (Task 3)	**0.0%**	**0.0%**
Maintainability of Avionics and Electronic Systems and Equipment MIL-STD-2084	**0.0%**	**0.0%**
Maintainability Verification/Demonstration/Evaluation MIL-STD-471	**0.0%**	**0.0%**
Design to Cost MIl-STD-337	**0.0%**	**0.0%**

Appendix A — Cost Driver Glossary

Appendix A — Cost Driver Glossary

Engineering (Cont.)	Reg Cost Premium (% Value Added)	% Total DoD Cost Premium
General Specification for Integrated Circuits MIL-I-38535	**0.0%**	**0.0%**
General Specifications for Microcircuits MIL-M-38510	**0.0%**	**0.0%**
Electronic Parts MIL-STD-1547A (Navigation Display, Multicolor Microchart) MIL-STD-1547B (Electronic Parts, Materials, and Processes)	**0.1%**	**0.6%**
System Security Engineering Program Management Requirements MIL-STD-1785	**0.0%**	**0.2%**
Subtotal - Engineering	***2.8%***	***16.5%***

Appendix A — Cost Driver Glossary

Appendix A — Cost Driver Glossary

Contracting / Purchasing	Reg Cost Premium (% Value Added)	% Total DoD Cost Premium
Buy American Act and Balance of Payments Program FAR Subpart 25.1 (Buy American Act) DFARS Subpart 225.1 (Buy American Act/Balance of Payments)	0.0%	0.3%
Competition in Contracting Act (CICA)	0.2%	0.9%
Contract Administration and Reporting FAR Part 42 (Contract Administration) DFARS Subpart 242.7 (Indirect Cost Rates) DODD 4161.2M (DOD Manual)	0.1%	0.7%
Contract Financing FAR Subpart 32.5 (Progress Payments) FAR Subpart 32.9 (Prompt Payment)	0.1%	0.5%
Contractor Purchasing System Review (CPSR) DFARS Appendix C (Contractor Purchasing System Reviews)	0.3%	1.7%
Defense Priority & Allocation Requirements FAR Subpart 12.3 (Priorities and Allocations) Defense Production Act	0.0%	0.0%

Appendix A — Cost Driver Glossary

Appendix A — Cost Driver Glossary

Contracting / Purchasing (Cont.)	Reg Cost Premium (% Value Added)	% Total DoD Cost Premium
Socioeconomic Programs DFARS Part 219 FAR Parts 19-20	**0.1%**	**0.5%**
Contractor Purchasing Practices FAR Part 44 (Subcontracting Policies and Procedure FAR Part 15 (Contracting by Negotiation)	**0.2%**	**1.2%**
Support CRAG (Contractor Risk Assessment Guide) Actions/PROCAS	**0.0%**	**0.1%**
Specifications Standards/Purchase Descriptions FAR Part 10 (Specifications Standards, and Other Purchase Descriptions)	**0.0%**	**0.0%**
Non-specific Pre-solicitation Interaction w/Gov't (eg. bidders conferences)	**0.1%**	**0.5%**
Non-specific Solicitation Phase Reviews, Proposal Preparation, Negotiation	**0.2%**	**1.2%**
Contract Specific Requirements/Statement of Work	**0.8%**	**4.3%**
Contract Termination FAR Part 49 (Termination of Contracts)	**0.0%**	**0.1%**

Appendix A — Cost Driver Glossary

Appendix A — Cost Driver Glossary

Contracting / Purchasing (Cont.)	Reg Cost Premium (% Value Added)	% Total DoD Cost Premium
Government Facility Modification FAR Subpart 36.2 (Special Aspects of Contracting for Construction) FAR Subpart 36.3 (Special Aspects of Sealed Bidding in Construction Contracting) FAR Subpart 36.6 (Architect-Engineer Services) FAR 52.232 (Contract Financing) FAR 52.236 (Construction and Architect-Engineer Contracts) FAR 52.237 (Service Contracting)	**0.2%**	**1.0%**
Availability of Contractor Records DFARS 215.804-8	**0.0%**	**0.0%**
Bonds and Insurance DFARS Part 228	**0.0%**	**0.0%**
Subtotal - Contracting/Purchasing	***2.2%***	***13.1%***

Appendix A — Cost Driver Glossary

Appendix A — Cost Driver Glossary

Logistics / Material Management / Property Administration	Reg Cost Premium (% Value Added)	% Total DoD Cost Premium
Government Property	**0.5%**	**2.7%**
FAR Part 45		
DODI 4161.2M		
Shipping Documentation	**0.3%**	**1.9%**
DFARS, Appendix F (Material Inspection and Receiving Repor		
FAR 46.302 (Inspection of Supplies - Fixed Price)		
MIL-STD-129M		
Material Management Accounting System (MMAS)	**0.6%**	**3.4%**
DFARS Subpart 242.72		
Special Tooling Administration/Special Test Equipment	**0.0%**	**0.1%**
FAR 45.306 (Special Tooling)		
FAR 45.307 (Special Test Equipment)		
Identification	**0.0%**	**0.1%**
MIL-STD-130 (Identification Marking of U.S. Military Proper		
MIL-P-514 (Plates, Identification, Instruction, and Marking, Blank(		
Packaging, Handling, Storage and Transportability Program	**0.2%**	**0.9%**
MIL-STD-1367A		
MIL-STD-2073-1/2		

Appendix A — Cost Driver Glossary

Appendix A — Cost Driver Glossary

Logistics / Material Management / Property Administration (Cont.)	Reg Cost Premium (% Value Added)	% Total DoD Cost Premium
Logistics Support Analysis MIL-STD-1388-1 (Logistics Support Analysis) MIL-STD-1390 (Level of Repair Analysis)	**0.1%**	**0.7%**
Equipment Standardization Requirements MIL-E-5400	**0.0%**	**0.0%**
Slinging and Tiedown Provisions for Lifting and Tying Down Military Eqpt MIL-STD-209	**0.0%**	**0.0%**
Transportability Criteria MIL-STD-1366	**0.0%**	**0.0%**
Test Equipment for Internal Combustion Engines MIL-STD-62314	**0.0%**	**0.0%**
Transportation Documentation and Audit Regulation FAR 47.103 (Standard Delivery Terms and Contract Clauses)	**0.0%**	**0.1%**
Procedures for Performing a Failure Mode Effects and Criticality Analysis MIL-STD-1629	**0.0%**	**0.1%**
Computer-Aided Logistics Support (CALS) Requirements	**0.0%**	**0.0%**
Uniform DoD Requirement for Provisioning Technical Documentation MIL-STD-1552A	**0.0%**	**0.0%**

Appendix A — Cost Driver Glossary

Appendix A — Cost Driver Glossary

Logistics / Material Management / Property Administration (Cont.)	Reg Cost Premium (% Value Added)	% Total DoD Cost Premium
Uniform Procedures for Provisioning MIL-STD-1561	**0.0%**	**0.0%**
Methods of Preservation MIL-P-116	**0.0%**	**0.0%**
Requirements for Identification Plates MIL-E-21981B	**0.0%**	**0.0%**
Subtotal - Logistics, Material Management, Property Administration	*1.7%*	*10.1%*

Appendix A — Cost Driver Glossary

Appendix A — Cost Driver Glossary

Program Management	Reg Cost Premium (% Value Added)	% Total DoD Cost Premium
Cost Schedule Control System (C/SCS) CSSR (DODI 5000.2 - Cost/Schedule Status Report) DFARS 252.234-7001 (Cost/Schedule Control System Criteria) MIL-STD-881 (Contract Work Breakdown Structure)	**0.9%**	**5.1%**
Technical Reviews and Audits MIL-STD-1521	**0.5%**	**2.6%**
Non-Specific Technical Customer Interface	**0.2%**	**1.4%**
Defense Acquisition Management Policies and Procedures DODD 5000.2	**0.0%**	**0.1%**
Subtotal - Program Management	**1.6%**	**9.1%**

Coopers &Lybrand

TASC

Appendix A — Cost Driver Glossary

Appendix A — Cost Driver Glossary

Data Management	Reg Cost Premium (% Value Added)	% Total DoD Cost Premium
Government/Industry Data Exchange Program	**0.0%**	**0.1%**
- Contractor Participation Requirements		
MIL-STD-1556		
Longer/More Detailed Retention of Records	**0.0%**	**0.1%**
FAR Subpart 4.7 (Contractor Records Retention)		
Rights in Technical Data & Computer Software	**0.1%**	**0.3%**
DFARS Part 227 (Patents, Data, and Copyrights)		
Management & Control of Information Requirements	**0.0%**	**0.0%**
DODD 7750.5		
Miscellaneous Technical Publication Specifications	**0.1%**	**0.5%**
MIL-STD-38784 (General Style and Format of Technical Manuals)		
MIL-STD-38807 (Preparation of Technical Manuals; Illustrated Parts Breakdown)		
MIL-M-63036 (Manuals, Technical; Operator's, Preparation of)		
Microfilming of Engineering Data	**0.0%**	**0.1%**
MIL-M-9868-D/E		
MIL-M-38761 (Microfilming/Photographing of Engineering/Technical Data)		
Formats and Coding of Aperture Camera Copy and Tab Cards	**0.0%**	**0.0%**
MIL-STD-804C		

Appendix A — Cost Driver Glossary

Appendix A — Cost Driver Glossary

Data Management (Cont.)	Reg Cost Premium (% Value Added)	% Total DoD Cost Premium
Formats and Coding of Aperture Camera Copy and Tab Cards MIL-STD-804C	0.0%	0.0%
Contract Data Requirements List (CDRL/Various Data Items)	0.4%	2.5%
Aperture Cards MIL-C-9877		
Test, Measurement and Diagnostic Equipment Data Sheets MIL-STD-1421	0.0%	0.0%
Certification of Technical Data Conformity DFARS 227.403 (Data Rights-General)	0.0%	0.0%
Marking Technical Data Prepared by/for DoD MIL-STD-1806	0.0%	0.0%
Automated Interchange of Technical Information MIL-STD-1840	0.0%	0.0%
Subtotal - Data Management	***0.7%***	***3.8%***

Appendix A — Cost Driver Glossary

Appendix A — Cost Driver Glossary

Other	Reg Cost Premium (% Value Added)	% Total DoD Cost Premium
Affirmative Action Compliance FAR Subpart 22.8 (Equal Employment Opportunity)	0.0%	0.0%
DoD Industrial Modernization Incentive Program (IMIP) DFARS 215.870	0.1%	0.5%
Defense Industrial Security Program DoDM 5220.22M	0.2%	1.4%
Business Ethics/Procurement Integrity Administration DFARS 203.7 104	0.1%	0.8%
Training MIL-STD-1379	0.0%	0.2%
DoD Environmental Rqmnts/DoD Pollution Plan Requirements	0.0%	0.0%
Restrictions Against Foreign Control of DoD Technology	0.0%	0.1%
Drug Free Work Place FAR Subpart 23.5 DFARS Subpart 223.5	0.0%	0.0%
Unallocated or Secondary Cost Impact	0.5%	N/A
Subtotal - Other	***1.0%***	***3.1%***

Coopers &Lybrand

TASC

Report Outline: Appendix B — Project Team

Report Outline

- **Background**
- **Site Assessment Results**
  - Top Level Results
  - Key Cost Drivers
  - Regulatory Categories
  - Business Functions
- **Conclusions**
- **Appendices**
  - Appendix A - Cost Driver Glossary
  - Appendix B - Project Team
  - Appendix C - Industry Contacts

Coopers &Lybrand

TASC

Appendix B — Project Team

This appendix identifies the key members of the Project Team.

Appendix B — Project Team

Project Management

C. Michael Mayer
Partner-in-Charge
Coopers & Lybrand

James J. Lindenfelser
Vice President
TASC

DoD Sponsors

Colleen Preston
Deputy Under Secretary of Defense
for Acquisition Reform

I.N. Blickstein
Director
Acquisition Program Integration

Project Team Members

Michael Bennett, Coopers & Lybrand
James C. Cheney, Coopers & Lybrand
Brian Dickson, TASC
William Dodson, Coopers & Lybrand
Dennis J. Fish, Coopers & Lybrand
Herbert Klein, Coopers & Lybrand
Robert T. Marlow, TASC
Lawrence Paccone, TASC
Jayme T. Smith, TASC

DoD Project Director

Jay Dutcher
Office of Acquisition Program
Integration

Coopers
&Lybrand

TASC

Report Outline: Appendix C — Industry Contacts

Appendix C — Industry Contacts

Company Site	Site Sponsor	Facilitators
Allison Transmission	Mark Schnell Assistant Divisional Comptroller	Fawn Mount John Duell
Beech Aircraft	Jim Gray Controller	Bob Fiola Jim Miller
Boeing Defense & Space	Lee Hesler Vice President, Finance	Ray Nichols Larry Tracht
Hughes Space & Comm.	Keith Nochet General Counsel	Jim Mutton Chris Chrisman
Motorola GSTG	James R. Baum Assistant General Manager	Jim Muehleisen Rick Travis
Oshkosh Truck	Dan Lanzdorf Director, OTC Defense Group	Tom Johnson James Zwickie
Rockwell Collins CACD	Larry Erickson Controller	Dave Mather Justin Huber
Timken	J. DeCocker Director, Government Sales	J. DeCocker
Teledyne Ryan Turbine Engines	Mike Rudy Plant Manager	Frank Wood
Texas Instruments DSEG	Bill Wilkinson Manger, Control Services	C.L. Norred Phillip Williamson

Report Outline

- **Background**
- **Site Assessment Results**
  - Top Level Results
  - Key Cost Drivers
  - Regulatory Categories
  - Business Functions
- **Conclusions**
- **Appendices**
  - Appendix A - Cost Driver Glossary
  - Appendix B - Project Team
  - Appendix C - Industry Contacts

Coopers &Lybrand

TASC

Appendix C — Industry Contacts

This appendix identifies the Project Team's key contacts at the ten company sites. The site sponsor ensured that the Project Team members obtained the needed resources and access to conduct the detailed ABC assessments. The facilitators assisted the Project Team in gathering the needed financial data, arranging the interviews, and providing liaison to the firm's senior management. This study could not have been completed without the generous assistance of the individuals identified here.