JS-96-001

AUDIT REPORT

RAPID ACTION

BOEING INDIRECT COST ALLOCATIONS TO SPACE STATION CONTRACT

JOHNSON SPACE CENTER

DECEMBER 12, 1995

National Aeronautics and Space Administration

OFFICE OF INSPECTOR GENERAL

National Aeronautics and
Space Administration
Headquarters
Washington, DC 20546-0001

Reply to Attn of W

DEC 12 1995

TO: H/Associate Administrator for Procurement
M/Associate Administrator for Space Flight

FROM: W/Acting Deputy Assistant Inspector General for Auditing

SUBJECT: Final Rapid Action Report
Boeing Indirect Cost Allocations to Space Station Contract
Assignment No. A-JS-95-005
Report No. JS-96-001

The NASA Office of Inspector General has completed an audit of the Boeing Defense and Space Group's (Boeing) indirect cost allocations to the Space Station contract. The overall objective was to determine whether NASA is being fairly charged overhead costs on contract NAS15-10000. Our audit revealed that Boeing is in noncompliance with Cost Accounting Standard (CAS) 418, Allocation of Direct and Indirect Costs. If not corrected, NASA could reimburse Boeing about $33 million over the life of the contract for activities that will not benefit the Agency.

The Defense Contract Audit Agency (DCAA) issued a report to the Divisional Administrative Contracting Officer (DACO) on May 31, 1995, and cited Boeing for noncompliance with CAS 418 due to Boeing's methods for indirect cost allocations to the Space Station contract. In response to the DCAA's report, the DACO issued an initial finding of noncompliance to Boeing on June 6, 1995. Boeing nonconcurred with the initial notification of noncompliance on August 8, 1995. We are issuing this rapid action report because we believe that timely coordination with the DACO and the Defense Logistics Agency is needed to ensure a fair resolution of this matter.

We issued a draft of this report to the Associate Administrator for Procurement and Associate Administrator for Space Flight on September 25, 1995, and a written response was received on October 30, 1995. That response is summarized in the recommendation section of this report and is included in its entirety as Appendix 2. Because the proposed actions are not complete, please include our office in the concurrence cycle for closing recommendation 1 in accordance with NMI 9910.1B.

The NASA Office of Inspector General staff members associated with this audit express their appreciation to the JSC procurement officials, DoD officials, and contractor personnel for their courtesy, assistance, and cooperation.

If you have any questions, please contact Robert Wesolowski, Director, Audit Field Operations Division, or me at 202-358-1232.

Carroll S. Little

Enclosure

cc:
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INTRODUCTION

The NASA Office of Inspector General has completed an audit of the Boeing indirect cost allocations to the Space Station contract. During the audit, we identified a condition related to the Boeing Defense and Space Group noncompliance with Cost Accounting Standard (CAS) 418, Allocation of Direct and Indirect Costs, which requires immediate management attention. Due to the significance and time sensitivity of this issue, we are providing this rapid action report containing a recommendation for your immediate attention.

NASA's Space Station Redesign Team issued a report on June 7, 1993, to the President's Advisory Committee on the Redesign of the Space Station. The team recommended having a single Space Station management team that combines project and program levels into a dedicated program office, and locating this core management team at a "Host Center." The team also recommended consolidating all Space Station prime contracts within the program office under a single prime contractor.

The President concurred with the recommendations and on June 24, 1993, encouraged their implementation. NASA implemented the recommendations and on August 17, 1993, announced that the Johnson Space Center had been selected as "Host Center" and Boeing Defense and Space Group as the prime contractor.

NASA signed a letter contract with Boeing on November 15, 1993, and began the transition effort to a new management and technical approach. On January 13, 1995, NASA and Boeing signed contract NAS15-10000 for the International Space Station. The agreement with Boeing is for total target cost and fee of $5.6 billion. Contract performance is over the ten-year period that ends June 30, 2003.

Due to time constraints, agreement was not reached on Boeing's proposed indirect cost allocations to the Space Station contract. To expedite the signing of the contract, NASA included a clause in the contract which allows adjustment of the target cost and fee. The adjustment will be based on the final determination of whether a full allocation of Boeing indirect cost to the Space Station contract is reasonable.

The Space Station Program Office's (SSPO) concern stems from a Space Station Freedom related Boeing CAS 418 non-compliance that has not been resolved. The Divisional Administrative Contracting Officer (DACO) issued the initial determination of noncompliance with CAS 418 on May 21, 1992. The DACO's initial determination of noncompliance was for Boeing's non-homogeneous resource pools. Even though the prior noncompliance is over three years old, the Defense Contract Agency (DCAA) is still awaiting an auditable cost impact proposal.

The SSPO is anxious to resolve the current CAS issue in a timely manner. After NASA signed a contract with Boeing, NASA requested a review of the indirect cost allocations by the DCAA. In hopes of expediting resolution of this issue, the SSPO requested, on February 17, 1995, our office to concurrently examine the overhead rate issue. Until this issue is resolved, NASA must pay Boeing for their current allocation of indirect costs.

OBJECTIVE, SCOPE, AND METHODOLOGY

OBJECTIVE

The objective was to determine whether NASA is being fairly charged overhead costs on the Space Station contract, NAS15-10000, with the Boeing Defense & Space Group.

SCOPE AND METHODOLOGY

The scope of the audit included discussions with:

- o Contracting Officer;
- o DCAA Resident Auditor, Boeing Company Resident Office;
- o DCAA auditors;
- o Defense Plant Representative Office (DPRO) Team Leader, Financial Services;
- o DPRO Cost/Price Analyst;
- o JSC's Assistant Chief Counsel for Procurement;
- o OIG Attorney-Advisor; and
- o Boeing management.

We relied upon DCAA's Audit Report No. 4381-95C19200004, dated May 31, 1995, Noncompliance with Cost Accounting Standard 418 Disclosed During Audit of Proposal to Definitize NASA Letter Contract NA15-10000 for verification of Boeing's noncompliance with CAS 418.

INTERNAL CONTROLS REVIEWED

Our audit work was limited to a review of NASA's efforts to resolve the CAS 418 noncompliance with Boeing. Accordingly, we express no opinion on NASA's system of internal controls.

AUDIT FIELD WORK

Audit field work was performed during the period of February 1995 through June 1995. Field work was performed at the Boeing Company in Seattle, Washington, and the Johnson Space Center. The audit was performed in accordance with generally accepted government auditing standards.

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OBSERVATION AND RECOMMENDATION

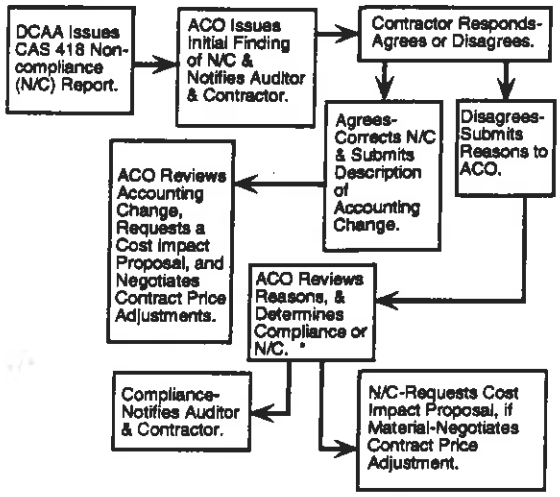
NONCOMPLIANCE WITH CAS 418 MAY INCREASE COST OF SPACE STATION BY $33 MILLION

NASA is reimbursing the Boeing Defense & Space Group for indirect costs on the Space Station contract that do not benefit NASA. A fundamental requirement of CAS 418 is that costs are allocated to cost objectives in reasonable proportion to the beneficial or causal relationship. However, Boeing is allocating certain indirect costs to the Space Station contract from the Engineering Resource and Engineering Computing Cost Centers that do not have the same or a similar beneficial relationship to all cost objectives. This practice causes an inequitable allocation to the Space Station contract. Consequently, NASA could reimburse Boeing about $33 million over the life of the contract for activities that do not benefit the Space Station contract.

BACKGROUND

The cognizant Administrative Contracting Officer (ACO) is responsible for all CAS Administration functions. This includes resolution of all CAS noncompliance issues. The following process, required by Federal Acquisition Regulation (FAR) 30.602-2, Noncompliance with CAS Requirements, is representative of how CAS issues are resolved.

Resolution of CAS Issues



* Boeing nonconcurred with the initial notification of noncompliance on August 8, 1995. The ACO asked DCAA for their comments on Boeing's response on August 9, 1995, and received DCAA's response on September 29, 1995. The ACO is evaluating DCAA's response before making a final determination.

CAS 418 REQUIREMENTS

A fundamental requirement of CAS 418 is that costs are allocated fairly to all projects. CAS 418-50(e) states that for indirect cost pools that do not include material amounts of management or supervision of activities involving direct labor or direct material costs:

"*The pooled costs shall be allocated using an appropriate measure of resource consumption . . . The best representation of the beneficial or causal relationship between an indirect cost pool and the benefiting cost objectives is a measure of resource consumption . . .* "

FAR 52.230-2, Cost Accounting Standards, is incorporated into the Space Station contract by reference. Accordingly, the contractor must comply with all Cost Accounting Standards. CAS 418 requires:

"*Pooled cost shall be allocated to cost objectives in reasonable proportion to the beneficial or causal relationship of the pooled costs to cost objectives. . .*"

NONCOMPLIANCE WITH CAS 418

NASA is reimbursing the Boeing Defense & Space Group for indirect costs on the Space Station contract that do not benefit NASA. The DCAA, in Audit Report No. 4381-95C19200004, dated May 31, 1995, cited Boeing for noncompliance with CAS 418, Allocation of Direct and Indirect Costs. In response, the DACO issued an initial determination of noncompliance with CAS 418 on June 6, 1995. DCAA's report is included as Appendix 1 to this report.

INEQUITABLE ALLOCATIONS

As reported by DCAA, Boeing is allocating indirect costs to the Space Station contract from the Engineering Resource and Engineering Computing Cost Centers that do not have the same or a similar beneficial relationship to cost objectives. Accordingly, these pools are not homogeneous. The inequitable allocations are for the following activities:

- o Laboratories
- o Taxes
- o General Services
- o Computing and Automation
- o Computing Development

For example, Boeing laboratories do not benefit all contracts equally. Boeing Defense & Space Group has 98 laboratories in Puget Sound and Huntsville. A joint review by DPRO and NASA technical advisors found that 74 of the 98 laboratories are similar to NASA's own laboratories that would perform comparable work. The team found that 21 of the remaining 24 laboratories do not have any potential to support the Space Station contract. However, the costs associated with operating these laboratories are being allocated to the Space Station contract as indirect expenses.

After these indirect costs are allocated to the various cost objectives (contracts), Boeing charges NASA for an inequitable share of these costs when they submit public vouchers to NASA for payment on contract NAS15-10000. Until this matter is resolved, NASA continues to pay the public vouchers.

EQUITABLE ALLOCATION OF INDIRECT COSTS COULD SAVE NASA $33 MILLION

Due to the inequitable allocations, NASA could reimburse Boeing about $33 million for activities that will not benefit the Space Station contract. DCAA estimates the extra cost to the Space Station contract is about $5 million in 1994. If not corrected, we believe Boeing's current practice could cost NASA about $33 million over the life of the Space Station contract that could be avoided.

Potential savings are calculated as follows: ($ in thousands)

CY 94 Overallocation	$ 5,326
Divided by CY 94 Cost (billed)	$910,991
Equals Percentage Overallocated	.58
Times Contract Price	$5,638,000
Total Potential Savings	$32,962

RECOMMENDATION 1

We recommend the Associate Administrators for Procurement and Space Flight work with the DACO and Defense Logistics Agency to ensure an equitable allocation of Boeing indirect costs to the Space Station contract in accordance with CAS 418.

MANAGEMENT'S RESPONSE

Concur. The Office of Procurement has been actively involved with the CAS 418 allocation issue since it arose during the review and negotiation of the Boeing Space Station proposal last year. It is directly as a result of our intervention that the Headquarters, Defense Contract Management Command has become sensitized to NASA's concerns and has taken steps with the DACO to ensure that they are addressed. We will continue to stay actively involved and will keep program officials apprised of any changes in

status. Additionally, we will ensure that the DACO meets with NASA management to outline his proposed actions before any final decision is made and implemented. The International Space Station Program Office (ISSPO) is sending Boeing a letter indicating their concurrence with the draft rapid action report. ISSPO is also reviewing the feasibility of suspending payment of the excess allocation of cost.

EVALUATION OF MANAGEMENT'S RESPONSE

Actions taken or planned by NASA management are responsive to the recommendation.

DEFENSE CONTRACT AUDIT AGENCY
AUDIT REPORT NO. 4381-95C19200004

31 May 1995

Prepared For: Divisional Administrative Contracting Officer
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Subject: Noncompliance with Cost Accounting Standard 418 Disclosed During Audit of Proposal to Definitize NASA Letter Contract NAS15-10000

References: DCAA: Chron No. 95-0158

Contractor: Boeing Defense & Space Group
Seattle, Washington

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SUBJECT OF AUDIT

The audit of Boeing Defense & Space Group's (BD&SG) cost accounting practices during the proposal evaluation to definitize NASA Letter Contract NAS15-10000 included evaluating whether the contractor has complied with the CAS Board's rules, regulations, and standards and FAR Part 31. BD&SG is responsible for compliance with those requirements. We are responsible for expressing an opinion on compliance based on our audit.

EXECUTIVE SUMMARY

Our review disclosed that BD&SG is noncompliant with CAS 418 because its Engineering Resource (ER) and Engineering Computing Cost Center (CCC) pools include nonhomogeneous costs that do not have the same or a similar beneficial relationship to cost objectives as the other costs allocated through these pools. This has resulted in a significant misallocation of $9,161,000 between government contracts and misallocation of $1,502,000 between government and commercial contracts. The cost of the nonhomogeneous activities total 64 percent of the costs in the ER and CCC pools. The inequitable allocations relate to the following portions of the ER and CCC pools.

- Laboratories. BD&SG's 1994 engineering study disclosed that the Space Station contract required significantly less laboratory support than the amount allocated using BD&SG's established allocation practice. This conclusion was also supported by a NASA/DPRO technical review which determined that, in most cases, NASA either had laboratories which would perform comparable work to that performed in the BD&SG laboratories or that the BD&SG laboratories did not have any potential to support the Space Station contract. BD&SG's study also disclosed that IR&D required significantly more laboratory support than the amount allocated using BD&SG's established allocation practice.

- Taxes. The tax allocation from the ER and CCC pools based on a combined Huntsville/Houston and Puget Sound tax rate results in an overallocation of costs to Huntsville/Houston and an underallocation of cost to Puget Sound cost objectives. This results because the tax costs as related to direct engineering base dollars or hours are significantly higher in Puget Sound than in Huntsville/Houston. The amount of taxes for the Huntsville/Houston area are significantly less than for the Puget Sound area because (i) NASA is providing the facilities and equipment for the Space Station contract resulting in a minimal amount of real and personal property taxes and (ii) there is not a gross receipts tax in Huntsville/Houston area.

- General Services. General Services (GS) costs, as a rate per employee, are significantly higher for the Huntsville/Houston area than for the Puget Sound area. The GS allocation from the ER and CCC pool based on a combined Huntsville/Houston GS rate results in an underallocation of costs to Huntsville/Houston and an overallocation of cost to Puget Sound cost objectives.

- Computing & Automation and Computing Development. A major portion of the costs for Computing and Automation and Computing Development activities do not benefit the Space Station contract as determined by the NASA/DPRO technical review. Therefore, there is a significant difference between the costs allocated to the Space Station contract based on the NASA/DPRO technical review and the costs allocated using BD&SG's established allocation practices.

SCOPE OF AUDIT

We conducted our audit in accordance with generally accepted government auditing standards. Those standards require we plan and perform the audit to obtain reasonable assurance about whether BD&SG has complied with the requirements referred to above. An audit includes examining, on a test basis, evidence about BD&SG's compliance with those requirements. We believe that our audit provides a reasonable basis for our opinion.

RESULTS OF AUDIT

AUDITOR'S OPINION

In our opinion, BD&SG's Engineering Resource (ER) and Engineering Computing Cost Center (CCC) pools are not homogeneous because they include significant amounts of costs for activities that do not have the same or a similar beneficial or causal relationship to cost objectives as the other costs allocated through these pools. Costs of significant activities included in the ER and CCC pools in 1994 which (i) do not have the same or a similar beneficial or causal relationship to cost objectives, and (ii) do have the same or a similar beneficial or causal relationship to cost objectives are summarized as follows:

	ER Pool		CCC Pool	
	Cost ($000)	%	Cost ($000)	%
Costs which do not have the same or a similar beneficial or causal relationship to cost objectives:				
Laboratories	$ 47,788	28.1%	$ 6,054	19.4%
Taxes	15,235	9.0	578	1.9
General Services	47,480	27.9		
Computing and Automation			11,907	38.2
Computing Development			3,554	11.4
Less Taxes and General Services in-				
Laboratories	(1,867)	(1.1)	(262)	(.8)
Computing and Automation			(1,004)	(3.2)
Computing Development			(352)	(1.1)
Total	$ 108,636	63.9%	$ 20,475	65.8%

	ER Pool		CCC Pool	
	Cost ($000)	%	Cost ($000)	%
Costs which have the same or a similar beneficial or causal relationship to cost objectives	61,365	36.1	10,671	34.2
Total	$ 170,001	100.0%	$ 31,146	100.0%

The ER pool is allocated using an engineering direct labor dollars base. The CCC pool is allocated to cost objectives using engineering direct labor hours. Pursuant to CAS 9904.418-40(c)(1), cost pools which include a material amount of the costs of management or supervision of activities involving direct labor or direct material costs shall be allocated using a base that represents the activity being managed or supervised. CAS 9904.418-50(d)(2)(i) further provides that for these types of costs, a direct labor hour base or direct labor cost base shall be used. However, CAS 418-50(e) provides that indirect cost pools which do not include a material amount of the costs of management or supervision of activities involving direct labor or direct material costs "shall be allocated using an appropriate measure of resource consumption."

As explained in detail below, our audit of the ER and CCC pools found that approximately 64 percent of the categories listed above were nonhomogeneous because these costs do not have the same or a similar beneficial or causal relationship to the cost objectives in the allocation base. These costs also do not represent costs of management or supervision of activities involving direct labor or direct material costs. Therefore, the standard requires that these costs be allocated over a base that represents resource consumption rather than a direct labor hour base or a direct labor cost base. We determined that the use of engineering labor dollars and engineering labor hours to allocate these costs results in an allocation that does not represent the causal or beneficial relationship between the cost categories and the cost objectives receiving such costs. Therefore, these costs are not homogeneous and are being allocated using a methodology that is noncompliant with CAS 418.

We also identified cost categories amounting to about 34 to 36 percent of the costs charged to the pools which have a material amount of the costs of management or supervision of activities involving direct labor or direct material costs. Our review of BD&SG's allocations of these costs using the bases for either the ER pool or the CCC pool did not disclose any noncompliances with CAS 418 and these costs are not an issue in this report.

Applicable CAS Provisions

The fundamental requirement in CAS 9904.418-40(b) provides that:

> Indirect costs shall be accumulated in indirect cost pools which are homogeneous.

The definition of a nonhomogeneous pool is provided by CAS 9904.418-50(b)(2):

> "An indirect cost pool is not homogeneous if the cost of all significant activities in the cost pool do not have the same or a similar beneficial or causal relationship to cost objectives and, if the costs were allocated separately, the resulting allocation would be materially different...."

For indirect costs which do not include material amounts of the costs of management or supervision of activities involving direct labor or direct material costs, CAS 9904.418-50(e) states the following:

> "...Homogeneous indirect cost pools of this type have a direct and definitive relationship between the activities in the pool and benefiting cost objectives. The pooled costs shall be allocated using an appropriate measure of resource consumption."

The following discussion will demonstrate that the noncompliant costs:

- Are significant activities;
- Do not have a similar beneficial or causal relationship to the cost objectives; and
- Result in a materially different cost allocation if allocated separately.

Laboratory and Computing Engineering Support Costs:

Significant Activity

In 1994, the ER pool included $47,788,131 of laboratory costs, or 28.1 percent of the $170,000,717 recorded in this pool. The CCC pool included $6,054,300 of laboratory engineering computer support costs or 19.4 percent of the $31,145,657 recorded in this pool. Government contracts were allocated $31,339,000 of the laboratory costs in the ER pool and $3,997,000 of the laboratory support costs in the CCC pool. The remaining costs were allocated to IR&D, commercial contracts, and capital assets. These two cost categories are significant parts of their respective pools based on their relative contribution to the pool totals.

Do Not Have A Similar Beneficial Or
Causal Relationship To The Cost Objectives

In 1994, BD&SG had central laboratories in the Puget Sound area, Huntsville, Philadelphia, and Wichita. However, BD&SG did not have any laboratories in Houston. Laboratory support for the work at Houston was provided in NASA laboratories and BD&SG laboratories in Puget Sound and Huntsville. The laboratory costs for the Puget Sound and the Huntsville laboratories were included in the ER Pool and allocated to cost objectives using engineering direct labor dollars from Puget Sound and Huntsville/Houston. The costs for the Philadelphia and Wichita laboratories were included in separate pools and allocated only to Philadelphia and Wichita cost objectives, respectively, and are not an issue in this audit.

The NASA Space Station contract was allocated $6.7 million of the laboratory costs included in the ER pool. NASA's Space Station effort is primarily located in Houston and Huntsville. However, BD&SG has no laboratories in Houston and just nine laboratories in Huntsville. NASA has contractual commitments to provide the laboratories for the Space Station and does not need significant support from BD&SG's laboratories at Houston. The joint report from the DPRO and NASA technical advisors, which we requested in connection with this review, determined that for 74 of the 98 BD&SG laboratories in Puget Sound and Huntsville, NASA had laboratories which would perform comparable work. That report also determined that 21 of the 24 remaining laboratories did not have any potential to support the Space Station contract. Also, our interviews of BD&SG employees in Houston and Puget Sound disclosed that the laboratory support furnished the NASA Space Station contract at Houston was minimal.

As illustrated below, IR&D activities should be allocated significantly more laboratory costs based on usage than is presently allocated using BD&SG's established allocation practice. This is due to a greater amount of IR&D effort being performed in the laboratories than BD&SG's allocation methodology reflects.

Factors which we understand contribute to the lower relative use of the laboratories by the Space Station contract include:

- NASA has laboratories which perform comparable work for 74 of the 98 BD&SG laboratories in Puget Sound and Huntsville and 21 of the 24 remaining laboratories do not have any potential to support the Space Station contract;

- NASA is providing laboratory support in its facilities at Huntsville and Houston;

- Most of the laboratories are located in the Puget Sound area while the Space Station work is being performed in Houston and Huntsville;
- BD&SG does not have any laboratories at Houston; and
- BD&SG's effort in Houston is predominately oriented toward integration and does not relate to the predominant nature of laboratories in Puget Sound (technology research and sub-element certification).

CAS 418 requires that all indirect costs shall be accumulated in indirect cost pools which are homogeneous. The computer costs in the CCC pool are required to support the work performed in the laboratories. Therefore, these costs should be charged to the individual laboratory and allocated based on usage.

Based on the findings presented in the joint technical report and our analysis of the differences between BD&SG's allocation methodology and the allocation of costs which would result from an allocation based on usage, we determined that BD&SG's allocation methods for laboratory and computer engineering support costs do not reflect a causal or beneficial relationship to the cost objectives receiving the allocated costs.

A Separate Allocation Results In A Material Difference

CAS 418-40(c)(2) provides that "the pooled cost shall be allocated based on the specific identifiability of resource consumption with cost objectives" if "the cost pool does not contain a material amount of the costs of management or supervision of activities involving direct labor or direct material". We made a rough order magnitude (ROM) estimate of the laboratory costs that would have been allocated separately to cost objectives based on laboratory usage, which measures the laboratory resources consumed, and compared it to the amount allocated using BD&SG's disclosed cost accounting practice summarized as follows:

Cost Objectives	1994 Lab Costs Allocated Using Established Practice (000)	1994 Lab Costs Allocated Using Separately Identified (000)	Difference Inc./(Dec.) (000)
ER Pool			
Puget Sound			
Government Contracts	$ 24,184	$ 24,402	$ 218
New Business (IR&D)	4,489	7,446	2,957
Commercial	11,156	11,257	101
Capital Assets	320	323	3
Total	$ 40,149	$ 43,428	$ 3,279

Cost Objectives	1994 Lab Costs Allocated Using Established Practice (000)	1994 Lab Costs Allocated Using Separately Identified (000)	Difference Inc./(Dec.) (000)
Huntsville/Houston			
Government Contracts			
Space Station			
Houston	$ 2,477	$ 287	$ (2,190)
Huntsville	4,236	2,896	(1,340)
Other	442	1,030	588
Total Govt Contracts	$ 7,155	$ 4,213	(2,942)
New Business (IR&D)	338	0	(338)
Commercial	6	6	
Capital Assets	140	141	1
Total	$ 7,639	$ 4,360	$(3,279)
Total	$ 47,788	$ 47,788	$ 0

Cost Objectives	1994 Lab Costs Allocated Using Established Practice (000)	1994 Lab Costs Allocated Using Separately Identified (000)	Difference Inc./(Dec.) (000)
CCC Pool			
Puget Sound			
Government Contracts	$ 3,072	$ 3,060	$ (12)
New Business (IR&D)	504	1,348	844
Commercial	1,457	1,452	(5)
Capital Assets	37	37	
Total	$ 5,070	$ 5,897	$ 827

Cost Objectives	1994 Lab Costs Allocated Using Established Practice (000)	1994 Lab Costs Allocated Using Separately Identified (000)	Difference Inc./(Dec.) (000)
Huntsville/Houston			
Government Contracts			
Space Station			
Houston	$ 256	$ 15	$ (241)
Huntsville	610	64	(546)
Other	59	59	
Total Govt Contracts	$ 925	$ 138	$ (787)
New Business (IR&D)	39		(39)
Commercial	1	1	
Capital Assets	19	18	(1)
Total	$ 984	$ 157	$ (827)
Total	$ 6,054	$ 6,054	$ 0

NOTE: Our ROM estimate of the laboratory costs that would have been allocated to the Space Station contract and IR&D in 1994 used information in BD&SG's 16 December 1994 laboratory operations study. We requested detailed information on the usage of the central laboratories for 1994. However, the contractor informed us that it did not have the information in its accounting records. Since BD&SG was unable to provide us with this information, we used the information in the 16 December 1994 laboratory operations study to estimate usage for the Space Station contract and for IR&D. Our ROM estimate of the laboratory cost allocation based on laboratory usage is detailed in Appendix 1. The above computations are qualified because:

(i) The laboratory usage estimates are based on BD&SG Engineering's 1994 study. BD&SG represented this as a "best guess to support an internal budget exercise", which was "extremely subjective and only represent six months of activity" in 1994. The percentages developed were represented to be "an assessment of the number of tasks performed within the laboratories. It did not measure the number of tools/test equipment used to accomplish the task." To resolve this qualification, BD&SG needs to provide data for each laboratory showing the usage for all of 1994.

(ii) BD&SG provided depreciation cost only to the functional laboratory category and not to the individual laboratory. We allocated depreciation costs based on usage for the various functional laboratory categories. Depreciation is a significant portion of the laboratory and computing support to laboratory costs as it totaled $19.1 million, or 35.6 percent of the total laboratory cost in 1994. The $19.1 of depreciation costs are shown for each functional laboratory category in Appendix 1-A. To resolve this qualification, BD&SG needs to provide the 1994 depreciation costs for each laboratory.

(iii) We allocated an additional $4.9 million of laboratory support costs, or 9 percent of the total costs, on an overall basis as these costs were not identified to specific laboratories or functional laboratory category. The $4.9 of laboratory support costs are shown for each functional laboratory category in Appendix 1-A. To resolve this qualification, BD&SG needs to provide the 1994 laboratory costs for each laboratory.

(iv) We were not provided any usage data for indirect activities such as Engineering Standards which would permit us to determine the amount of laboratory cost that should remain in the ER and CCC indirect cost pools. To resolve this qualification, BD&SG needs to provide data for each laboratory showing the usage for indirect activities for 1994.

If BD&SG provides any additional usage or cost data by laboratory, we will adjust our computation. However, we believe that this data shows that the laboratory and computing support costs to the laboratories do not have the same or a similar beneficial or causal relationship to the Space Station contract and to IR&D as they do to the other cost objectives in the allocation base and, if the costs were allocated separately based on usage, the resulting allocation would be materially different. As previously explained, this usage and cost data by laboratory is required to determine the laboratory resources consumed by cost objectives in accordance with CAS 418-40(c)(2).

Conclusion

We have shown that the laboratory and computer engineering support costs:

- Are significant cost activities;
- Should be allocated on a consumption of resource base (i.e., usage); and
- Allocation using a usage base, results in a material difference.

Therefore, BD&SG is in noncompliance with CAS 9904.418-40(b). The ER and CCC pools will remain nonhomogeneous as long as laboratory costs and computer engineering support costs remain in these pools and are allocated over the established direct labor dollar or hour base.

BD&SG's responses to our Issue/Resolution request followed by our comments are shown below:

BD&SG's Response

BD&SG stated that "The audit's attempt at allocating engineering lab and CCC costs is seriously flawed." Its rationale for reaching this conclusion was based on the qualifications we previously explained relative to the basis for the estimates used in our determination of the actual costs and usage for each laboratory.

DCAA's Comments

Our allocation of laboratory and computer support costs was based on the cost data obtained from BD&SG's records and the laboratory usage from BD&SG's engineering estimate of laboratory usage based on a study of 6 months usage in 1994. We requested, but were not furnished, additional cost data to identify depreciation and laboratory support costs to the individual laboratory and laboratory usage data for each laboratory for the entire year. If BD&SG can provide additional data, we will consider it in our computation. It should also be noted that we provided several additional reasons why we believe that the Space Station contract used significantly less laboratory and computer support costs than other cost objectives in our comments as to why laboratory and computer support costs do not have a similar beneficial relationship to the cost objectives.

BD&SG's Response

"..DCAA approach fails to take into account the life cycle phases of a program or project that benefits from the activities being performed in these labs. For example, NASA's Space Station contract is currently receiving benefit from many technologies and processes that were developed by our technologists, in our laboratories, years before the current contract was awarded."

DCAA's Comments

If BD&SG would allocate costs to the users of the laboratories, the program would be charged for the use of the laboratory when it occurred during the life cycle phases of a program or project. To the extent that contracts benefit from laboratory usage performed for other contracts or IR&D projects in prior periods, we do not believe that these costs should be allocable to current contracts. BD&SG's argument fails to consider that the government has been funding BD&SG's IR&D in prior years. To the extent that laboratory costs were allocated to IR&D, these costs were allocated to contracts using the G&A base. If laboratory costs were allocated based on usage as recommended in this report, all of the laboratory costs required for IR&D would have been allocated to contracts through the IR&D allocation.

BD&SG's Response

"...The audit analysis also did not acknowledge any benefit to NASA contracts from the Other category nor from IR&D."

DCAA's Comments

We adjusted our calculation to include the usage identified in the Other category for the Space Station contract. Our computation of the laboratory costs allocable to the Space Station contract now includes all the usage

identified in the BD&SG budget exercise. As discussed in the comments to the previous BD&SG resporse, we did not specifically identify any benefit to the NASA contract from IR&D as this is allocated and recovered through the IR&D allocation.

BD&SG's Resporse

The DCAA analysis does not measure "the intangible benefits because lab test results can be shared by all programs. For example, lab test results are shared by the D&SG engineering community on all programs."

DCAA's Comments

We believe laboratory costs should be allocated to the users of the laboratory. Other than to capitalize the research, we know of no practical way to charge potential future benefits to other programs.

Taxes

Significant Activity

The tax costs in 1994, as a percent of the allocation base, were significantly higher (3.041 percent) for the Puget Sound Tax Pool than the Huntsville/Houston Tax Pool (.360 percent). Major reasons for this are:

- Huntsville/Houston does not have real and personal property taxes as does Puget Sound because NASA owned facilities and equipment are being used in Huntsville/Houston; and
- Huntsville/Houston does not have a gross receipts tax as does Puget Sound.

Tax cost, as a percent of the value added allocation base, for the Puget Sound Tax Pool (TX) and for the Huntsville/Houston Tax Pool (TS) in 1994 is shown below:

	1994 Tax Expenses			
	Puget Sound Tax Pool TX		Huntsville/Houston Tax Pool TS	
Account	Cost ($000)	Rate	Cost ($000)	Rate
Out of State, Bus/Property/ Excise	$ 0	0%	$ 86	.045%
Miscellaneous Taxes	349	.026	0	0
Sales & Use Taxes	12,657	.942	582	.303
Real & Personal Property Tax	12,970	.964	0	0
Gross Receipts Tax	15,211	1.131	0	0
Corporate Tax Allocation	(303)	(.023)	24	.012
Leasehold Excise Tax	11	.001	0	0
Total	$ 40,895	3.041%	$ 692	.360%
Value Added Allocation Base	$1,345,048		$ 191,925	

The costs allocated from the Puget Sound and Huntsville/Houston Tax Pools to the ER and CCC Pools in 1994 are computed as follows:

	Tax Pools			
	Base ($000)	Rate	ER Pool ($000)	CCC Pool ($000)
Tax Pool				
Puget Sound				
ER Pool	$ 491,078	3.041%	$ 14,932	
CCC Pool	$ 18,864	3.041%		$ 574
Huntsville/Houston				
ER Pool	$ 84,175	.360%	303	
CCC Pool	$ 1,074	.360%		4
Total Allocated			$ 15,235	$ 578

Do Not Have A Similar Beneficial Or Causal Relationship To The Cost Objectives

In accordance with section 4.5.0 of BD&SG's Disclosure Statement, tax costs are recorded in Tax Pool TX in Puget Sound and Tax Pool TS in Huntsville/Houston based on how the "assessable (taxable) property, transaction, revenue, etc. is related in the working papers which support the applicable tax returns or other supporting documentation such as accountability records, invoices, etc." The tax costs in these pools are allocated to various overhead pools (including the ER and CCC pools) using the surrogate value added base described in Section 4.6.0 of the Disclosure Statement.

Because the Houston/Huntsville taxes are merged in the ER and CCC pools with the Puget Sound area taxes, they are allocated to all three areas using a base that has no relationship to the vicinity that generated the taxes or the factors that were used to calculate the taxes. For 1994, $303,000 of the Huntsville/Houston taxes were allocated to the ER pool and $4,000 were allocated to the CCC pool and merged with the tax allocation from the Puget Sound Tax Pool ($14,932,000 to the ER pool and $574,000 to the CCC pool). These taxes were then allocated to Puget Sound, Houston, and Huntsville cost objectives using the direct engineering labor dollar base for the ER pool and the direct engineering labor hour base for the CCC pool.

However, as mentioned above, Huntsville/Houston does not have:

- Real and personal property taxes because it is using NASA facilities and equipment; or
- A gross receipts tax.

Furthermore, the Houston/Huntsville cost objectives:

- Have little or nothing to do with generating the Puget Sound area taxes (i.e., being a factor in calculating the taxes); and
- Receive little or no benefit from the Puget Sound area taxes.

Conversely, the Puget Sound cost objectives:

- Have little or nothing to do with generating the Houston/Huntsville area taxes (i.e., being a factor in calculating the taxes); and
- Receive little or no benefit from the Houston/Huntsville area taxes.

A Separate Allocation Results In A Material Difference

We estimated the cost impact to the government from this noncompliance by comparing the costs allocated to Puget Sound and Huntsville/Houston government cost objectives (including IR&D) using BD&SG's established allocation procedures to the amounts allocated to these cost objectives using separate allocation rates for Puget Sound and Huntsville/Houston. The results are detailed below:

Cost Objectives	1994 Taxes Allocated Using Established Practice (000)	1994 Taxes Allocated Using Separately Identified (000)	Difference Inc./(Dec.) (000)
ER Pool			
Puget Sound			
Govt Contracts	$ 7,710	$ 8,894	$ 1,184
New Business	1,431	1,651	220
Commercial	3,557	4,103	546
Capital Assets	102	118	16
Total	$ 12,800	$ 14,766	$ 1,966
Huntsville/Houston			
Government Contracts			
Space Station			
Houston	$ 790	$ 152	$ (638)
Huntsville	1,350	260	(1,090)
Other	141	27	(114)
Total	2,281	439	(1,842)
New Business	108	21	(87)
Commercial	2	1	(1)
Capital Assets	44	8	(36)
Total	$ 2,435	$ 469	$ (1,966)
Total	$ 15,235	$ 15,235	$ 0

Cost Objectives	1994 Taxes Allocated Using Established Practice (000)	1994 Taxes Allocated Using Separately Identified (000)	Difference Inc./(Dec.) (000)
CCC Pool			
Puget Sound			
Government Contracts	$ 293	$ 311	$ 18
New Business (IR&D)	48	51	3
Commercial	139	148	9
Capital Assets	4	4	0
Total	$ 484	$ 514	$ 30
Huntsville/Houston			
Government Contracts			
Space Station			
Houston	$ 24	$ 17	$ (7)
Huntsville	58	39	(19)
Other	6	4	(2)
Total Govt Contracts	$ 88	$ 60	$ (28)
New Business (IR&D)	4	3	(1)
Commercial			
Capital Assets	2	1	(1)
Total	$ 94	$ 64	$ (30)
Total	$ 578	$ 578	$ 0

Conclusion

BD&SG's current methodology of allocating taxes via the ER and CCC pools in 1994 results in a $2 million overallocation of tax costs to the Houston/Huntsville cost objectives and a $2 million underallocation of tax costs to Puget Sound Cost objectives as shown below;

Cost Objectives	1994 (Over)/Under Tax Cost Allocation ER Pool (000)	CCC Pool (000)	Total (000)
Puget Sound			
Government Contracts	$ 1,184	$ 18	$ 1,202
New Business (IR&D)	220	3	223
Commercial	546	9	555
Capital Assets	16	0	16
Total	$ 1,966	$ 30	$ 1,996

Cost Objectives	1994 (Over)/Under Tax Cost Allocation ER Pool (000)	CCC Pool (000)	Total (000)
Huntsville/Houston			
Government Contracts			
Space Station			
Houston	$ (638)	$ (7)	$ (645)
Huntsville	(1,090)	(19)	(1,109)
Total Space Station	(1,728)	(26)	(1,754)
Other	(114)	(2)	(116)
Total Govt Contracts	$ (1,842)	$ (28)	$ (1,870)
New Business (IR&D)	(87)	(1)	(88)
Commercial	(1)		(1)
Capital Assets	(36)	(1)	(37)
Total	$ (1,966)	$ (30)	$ (1,996)

As shown above, the Space Station contract received $1,754,000 more in taxes than if it was allocated tax costs from only the Huntsville/Houston tax pool. These costs plus the additional costs allocated to other government work, IR&D, and capital assets at Houston/Huntsville were offset by an underallocation of tax costs to Puget Sound cost objectives. As shown above, the commercial work at Puget Sound was underallocated $555,000 of tax costs with a corresponding overallocation to government contracts and other cost objectives. We believe that this results in a significant overallocation of tax costs to government contracts.

BD&SG's comments and our responses to our Issue Resolution Request follows:

BD&SG's Response

The established tax allocation procedures comply with the first requirement in CAS 418.50(b)(1) that "each significant activity whose costs are included in the cost pool has the same or similar beneficial or causal relationship to cost objectives as the other activities whose costs are included in the cost pool."

DCAA's Comments

We have demonstrated that the contractor's procedures for allocating taxes does not comply with the requirement that each significant activity whose costs are included in the cost pool has the same or similar beneficial or causal relationship to cost objectives as the other activities whose cost are included in the cost pool. The contractor did not address the fact that:

- Houston/Huntsville cost objectives do not generate the materially larger amount of tax assessed in the Puget Sound area; and
- Houston/Huntsville cost objectives receive little or no benefit from the Puget Sound taxes.

Therefore, the contractor is in error as to its assertion that its method groups costs with the same or similar beneficial or causal relationship to cost objectives as the other activities whose cost are included in the cost pool.

BD&SG's Response

The DCAA audit test was not properly performed to determine if the established tax allocation procedures met the second requirement in CAS 418.50(b)(1) that "if the allocation of the costs of the activities included in the pool result in an allocation to cost objectives which is not materially different from the allocation that would result if the costs of the activities were allocated separately."

DCAA's Comments

We disagree with the contractor's assertion that the test was not properly performed. We have demonstrated that the contractor's procedure for allocating taxes results in materially different allocation than would result if the costs of the taxes were allocated separately. We demonstrated above that commercial work at Puget Sound was underallocated $555,000 of tax costs and that the Space Station contract was overallocated $1,754,00 of tax cost.

BD&SG's Response

Only one of the criteria needs to be met for the pool to be deemed homogeneous.

BD&SG explained that it was compliant with the first requirement of CAS 418.50(b)(1) for both the tax and general services (see below) issues as follows:

> The comments you are inquiring about were made in our response to statements made in Issue/Resolution forms No. 2 and 3, that stated that DCAA "found significant differences in the nature and amount of taxes recorded." CAS 418 uses the terms "activity" and "allocation" in determining homogeneity. If the tax or general services pool is homogeneous then an allocation of that pool to its cost objectives is homogeneous. With that understanding, it is logical deduction to state that the allocation of taxes (or general services) to the Engineering pool, as stated in CAS 418.50(b)(1), "has the same or similar beneficial or causal relationship to cost objectives as the other activities whose costs are included in the cost pool" is a homogeneous activity of the Engineering pool because CAS 418 uses the terms activity and allocation in determining homogeneity. If the tax pool is homogeneous then an allocation of that pool to its cost objectives is homogeneous.

BD&SG believes it is compliant with the first requirement because the costs in both the Puget Sound and Huntsville/Houston Tax pools are for State and Local taxes at Puget Sound and Huntsville/Houston and allocated over a value added base for these respective locations. The response also states that BD&SG considers the nature and allocation of costs must be addressed in the tax pools where the costs are initially incurred.

DCAA's Comments

We did not find any requirement in CAS 418 to support BD&SG's assertion that, in accordance with the first requirement in CAS 418.50(b)(1), the nature and allocation of costs must be addressed in the tax pools where the costs are initially incurred.

As previously explained, we take exception to the tax costs that are included in the ER and CCC pools and allocated to all cost objectives without consideration for the vicinity and factors that produce the tax.

The "activities" that are included in these pools are the engineering functions to support cost objectives at both the Puget Sound and Huntsville/Houston locations. The tax and general services costs for the Huntsville/Houston engineering support "activities" included in the ER and CCC pools do not have the same or similar beneficial or causal relationship to cost objectives as the tax and general services costs for the Puget Sound and Huntsville/Houston engineering support "activities" whose costs are included in the pools. Therefore, we do not agree with BD&SG's statement that "the nature and allocation of costs must be addressed in the tax pools where the costs are initially incurred."

In addition, the standard requires that the cost have the same or similar beneficial or causal relationship to cost objectives as the other activities whose cost are included in the cost pool. Cost objectives are defined in CAS 410-30(a)(4) and FAR 31.001 as follows:

> Cost objective means a function, organizational subdivision, contract or other work unit for which cost data are desired and for which provision is made to accumulate and measure the cost of processes, products, jobs, capitalized projects, etc.

In accordance with this definition, the tax costs are measured when they are allocated to cost objectives included in the allocation base for the ER and CCC pools. When BD&SG's allocation of taxes is measured against the causal or beneficial relationship to the cost objective, there is no correlation to either the generation of the tax or cost objective's benefit from the tax.

General Services (GS) Costs

Significant Activity

Although the nature of the services recorded in the Puget Sound and Huntsville/Houston general services pools are similar, we found that the rates for these services per hour were significantly different between Puget Sound and Huntsville/Houston general services pools as shown below.

Puget Sound and Huntsville/Houston
1994 General Services Pool Costs

	Puget Sound (Pool GS)	Huntsville/ Houston (Pool 9E)
Pool Expenses	$82,772,250	$14,704,308
Base (Hours)	23,950,580	3,254,295
Rate/Hour	$3.46	$ 4.52

Because of the large dollar amounts and the disproportional rates, we consider the GS cost to be a significant activity.

Do Not Have A Similar Beneficial Or Causal Relationship To The Cost Objectives

As shown by our analysis below, we determined that the general services costs allocated to Puget Sound and Huntsville/Houston cost objectives are significantly different when the general services costs are allocated on a consolidated basis (established practice) than when allocated separately (separate rates).

Because the Huntsville/Houston general services costs are merged with the Puget Sound general services costs in the ER and CCC pools, they are allocated to cost objectives that have no beneficial or causal relationship to the cost of the general services provided to BD&SG employees in the two geographic locations. The general services costs are allocated to the ER and CCC pools using a labor hour base while the ER and CCC pools allocate the merged general services costs to final cost objectives using a engineering labor dollar base. In 1994, the Huntsville/Houston and Puget Sound general services pool and engineering labor rates were as follows:

	Huntsville/Houston	Puget Sound
General Services Rate	$ 4.52/Hour	$ 3.46/Hour
Engineering Labor Rate	$ 26.76/Hour	$ 27.28/Hour

The cost of Huntsville/Houston general services allocated to the ER and CCC pools was $1.06 higher per hour than the cost of Puget Sound general services. However, since the Huntsville/Houston engineering labor rate was $ .52 an hour lower than the Puget Sound engineering labor rate, Huntsville/Houston cost objectives were allocated less of the general service costs than they contributed to the ER and CCC on a rate per hour. This resulted in the Puget Sound cost objectives being allocated more general services costs than they contributed to the ER and CCC pools. Consequently, the general services costs in the ER and CCC pools are not being allocated on a beneficial or causal relationship to the cost objectives they are supporting.

The differences in the allocation of general services costs which result from using BD&SG's consolidated engineering pool/established practice and from using separate rates are caused by differences in the Puget Sound and Huntsville/Houston (i) general services rates (as shown above) and (ii) engineering labor rates.

We computed our cost impact based on D&SG's established accounting practice which provides for separate GS pools for the Puget Sound and Huntsville/Houston geographic locations and for the costs in these GS pools to be allocated to the cost objectives they support. However, as previously discussed above, the Huntsville/Houston GS pool includes the costs of certain services which do not benefit the Houston Space Station contract because NASA is providing these services to D&SG employees working on the Space Station contract at NASA's Houston Johnson Space Center. We recommend that D&SG (i) identify the costs of any services recorded in the Huntsville/Houston GS pool which duplicate the services provided by NASA and (ii) remove the cost of such duplicate functions from the GS allocation to Houston. These costs should only be allocated to the Huntsville cost objectives.

A Separate Allocation Results In A Material Difference

We believe the differences between the Puget Sound and Huntsville/Houston GS rates are due to:

- The volume of the support required at each location; and
- The provider of the services.

Some general services are provided in the Puget Sound area by Boeing Support Services to all Boeing divisions/segments on a centralized basis and allocated to all Boeing Company divisions/segments located in the Puget Sound area based on Puget Sound headcount served. Examples of these services are fire/security protection, medical services, reproduction services/copy centers, payroll/timekeeping and travel accounting/services.

In contrast, the Missiles & Space Division (M&SD) organization in Huntsville provides these services for Huntsville/Houston activities. Because of the larger headcount served in Puget Sound, BSS can provide these services at a more economical rate than M&SD.

We also found some activities in the Huntsville/Houston GS pool which duplicate the support provided by NASA to BD&SG's employees located in NASA's Johnson Space Center. Examples of some of this support are fire protection, security, reproduction/copier services, and printing.

Contractor's Accounting Practice

In accordance with Section 4.5.0 of BD&SG's Disclosure Statement, general services costs are recorded in Pool GS for Puget Sound activities and Pool 9E for Huntsville/Houston activities. General services costs are for the following activities: copiers, BD&SG Home Office Human Resources and Proposal Resources Allocations, employee/employment services, food service costs/ proceeds, fire protection/Security-Centralized Services, homeowner relocation administration, Human Resources, mail service, medical, payroll/timekeeping, people transportation, travel accounting/services, personnel representatives, reproduction services/copy centers, Safety Health & Environmental Affairs, Video Teleconference Centers, and voice communications (nonlabor).

Section 4.6.0 of BD&SG's Disclosure Statement describes the allocation base for the GS and 9E pools as "all direct labor hours and all indirect labor hours (compensated or uncompensated) expended in BD&SG Home Office (Puget Sound only) and Segment service center, overhead and G&A pools."

General services pools GS and 9E are allocated to Engineering Subpools 50A-Puget Sound Engineering and 50J-Huntsville/Houston based on the applicable total direct and indirect engineering hours of the respective subpools. The Puget Sound and Huntsville/Houston general services costs along with other engineering expenses recorded in the Puget Sound and Huntsville/Houston Engineering subpools are combined and allocated to Puget Sound and Huntsville/ Houston final cost objectives using an allocation base comprised of Puget Sound and Huntsville/Houston engineering direct labor dollars, excluding fringe benefits.

Comparison of Contractor's Accounting Practice to Separate Allocation

The general services costs allocated to Puget Sound and Huntsville/Houston costs objectives using BD&SG's established allocation procedures and the amount allocable to these same cost objectives using separate allocation rates for Puget Sound and Huntsville/Houston are detailed below:

Cost Objectives	1994 General Services Cost Allocated Using Established Practice (000)	1994 General Services Cost Allocated Using Separately Identified (000)	Difference Inc./(Dec.) (000)
ER Pool			
Puget Sound			
Government Contracts	$ 24,028	$ 22,997	$ (1,031)
New Business (IR&D)	4,460	3,807	(653)
Commercial	11,085	10,889	(196)
Capital Assets	318	278	(40)
Total	$ 39,891	$ 37,971	$ (1,920)
Huntsville/Houston			
Government Contracts			
Space Station			
Houston	$ 2,461	$ 2,505	$ 43
Huntsville	4,209	5,864	1,656
Other	439	574	135
Total Govt Contracts	$ 7,109	$ 8,943	$ 1,834
New Business (IR&D)	336	379	43
Commercial	6	7	1
Capital Assets	138	180	42
Total	$ 7,589	$ 9,509	$ 1,920
Total	$ 47,480	$ 47,480	$ 0

Conclusion

The contractor's current methodology of allocating general services costs results in the Houston/Huntsville cost objectives, including the Space Station contract, receiving approximately $1.7 million less in general services than if allocated from overhead pools which allocated costs to only Huntsville/Houston cost objectives. The $1.7 million underallocation to Houston/Huntsville cost objectives is material and results in a significant increased cost to the Puget Sound cost objectives.

BD&SG's Response

BD&SG's response to our Issue Resolution Request was the same as previously discussed for the tax costs. Our comments on the BD&SG's response for the tax costs also apply to general services costs.

Computing & Automation and Computing Development

Significant Activity

The general responsibilities of the Computing & Automation organization are to ensure that Computing & Automation goals and processes are in agreement with BD&SG's engineering goals and objectives; to authorize acquisitions and manage the development of computing tools used within engineering throughout BD&SG; and to supply labor and nonlabor resources as required by BD&SG programs. This organization includes Information Resource Management, CAD/CAE/CAM, ILS & Resource Administration, Electronics Computing Support, and Process Development and Validation.

We identified 23 Computing & Automation tasks/processes and 28 Computing Development projects that the Computing & Automation organization worked on in 1994. The costs related to the 24 Computing & Automation tasks/processes and the 28 Computing Development projects are recorded in the Engineering Computing Cost Center pool MP and allocated to cost objectives using an allocation base of Puget Sound and Huntsville/Houston engineering labor hours.

The costs recorded for these tasks/processes in 1994 are as follows:

Cost Elements	1994 Costs Computing & Automation (000)	Computing Development (000)	Total (000)
Labor	$ 5,390	$ 1,890	$ 7,280
Fringe	2,857	1,002	3,859
Non-labor	2,292	182	2,474
Taxes	259	90	349
Use & Occupancy	363	128	491
General Services	745	262	1,007
Total	$ 11,906	$ 3,554	$ 15,460

In our opinion, an activity with $15 million in costs is a significant activity.

Do Not Have A Similar Beneficial Or Causal Relationship To The Cost Objectives

NASA Space Station Program and DPRO engineers reviewed the 23 Computing & Automation tasks/processes performed by the Computing & Automation organization in 1994 and determined that 19 will not benefit the Space Station activity at Houston. This effort represents 89 percent of the Computing & Automation organization's recorded costs in 1994. Attachment J-7 to NASA Space Station contract NAS15-10000, lists the following tasks/processes as Government Furnished Equipment:

- All the computing hardware;
- All the computer software; and
- All the computing systems.

Furthermore, the NASA/DPRO technical team reviewed the 28 Computing Development projects performed by the Computing & Automation organization in 1994 and determined that 22 of the projects would not be applicable to the work performed on the Space Station contract at Houston. This effort represents 90 percent of the recorded Computing Development costs in 1994. Shown in Appendices 2 and 3 are the 1994 Computing Development Projects and their applicability/nonapplicability to the Space Station integration work at Houston as determined by the NASA/DPRO team.

A Separate Allocation Results In A Material Difference

The costs allocated to Puget Sound and Huntsville/Houston cost objectives using BD&SG's established allocation procedures and the amount allocable to these same cost objectives based on the NASA/DPRO technical review are detailed below:

	1994 Costs				
		NASA/DPRO Allocation			
Cost Objectives	Established Practice (000)	Comp & Auto. (000)	Comp. Dev. (000)	Total (000)	Difference Inc./(Dec.) (000)
CCC Pool					
Puget Sound					
Government Contracts	$ 7,846	$ 6,280	$ 1,875	$ 8,155	$ 309
New Business (IR&D)	1,288	1,031	308	1,339	51
Commercial	3,721	2,978	890	3,868	147
Capital Assets	94	75	22	97	3
Total	$ 12,949	$ 10,364	$ 3,095	$ 13,459	$ 510

Cost Objectives	1994 Costs: Established Practice (000)	NASA/DPRO Allocation: Comp & Auto. (000)	NASA/DPRO Allocation: Comp. Dev. (000)	NASA/DPRO Allocation: Total (000)	Difference Inc./(Dec.) (000)
Huntsville/Houston					
Government Contracts					
Space Station					
Houston	$ 653	$ 56	$ 15	$ 71	$ (582)
Huntsville	1,557	1,246	372	1,618	61
Other	152	121	36	157	5
Total Govt Contracts	$ 2,362	$ 1,423	$ 423	$ 1,846	$ (516)
New Business (IR&D)	99	80	24	104	5
Commercial	2	2		2	
Capital Assets	48	38	11	49	1
Total	$ 2,511	$ 1,543	$ 458	$ 2,001	$ (510)
Total	$ 15,460	$ 11,907	$ 3,553	$ 15,460	$ 0

The Puget Sound government contracts were underallocated $309,000 of Computing & Automation and Computing Development costs while the costs on government contracts at Huntsville/Houston were overallocated $516,000 or a net overallocation of $207,000 to government contracts. The Space Station was overallocated $582,000 for the work performed at Houston and underallocated $61,000 for the work performed at Huntsville resulting in a net $521,000 overallocation. This represents a significant difference between Computing and Automation and Computing Development costs allocated using BD&SG's established practice and the allocation resulting from the NASA/DPRO report.

Conclusion

The NASA/DPRO technical analyst found that only 17 percent of the Computing & Automation tasks/processes and 21 percent of the Computing Development projects performed in 1994 would be applicable to the Space Station activity at Houston. This represents 11 percent of the costs for Computing & Automation tasks/processes and 10 percent of the costs for Computing Development projects. This resulted in an overallocation of $521,000 to the Space Station contract and offsetting underallocations to government contracts and commercial work at Puget Sound in 1994.

BD&SG's Response

We requested BD&SG to state whether the Space Station contract work in Houston and Huntsville would benefit from the 24 Computing & Automation tasks/processes. BD&SG's response is as follows:

- BD&SG does not have the identification requested;

- The general nature of the tasks performed in these areas of responsibility meets the criteria for overhead and provides benefit to all of Engineering;
- Since they support computing systems that benefit all cost objectives supported by engineering by their general nature, they would benefit the Space Station contract; and
- This is not a CAS 418 issue because it addresses benefit to only one customer-NASA.

DCAA Comments

- BD&SG was not responsive to our request for information on the applicability of the computer costs to the Space Station;
- As the prime contractor, BD&SG should know what is required on the Space Station program;
- BD&SG should be able to determine from its task/process descriptions what would benefit the Space Station contract activity at Houston; and
- The allocation of Computing & Automation and Computing Development costs is a CAS 418 noncompliance because:
  - * The MP pool is allocating costs to cost objectives (Space Station program) which have little or no beneficial or causal relationship to the pooled costs;
  - * The NASA/DPRO technical review of the Computing & Automation tasks/processes found that only 25 percent of the Computing & Automation tasks/processes and 22 percent of the Computing Development projects would be applicable to the Space Station contract effort at Houston. Therefore, a significant portion of these costs do not have a beneficial or causal relationship to the Space Station contract.

Since the NASA/DPRO technical review determined that the Computing & Automation activities and Computing Development projects partially benefit the Space Station contract effort at Houston, we recommend that the Contracting Officer and D&SG agree to a special allocation from the Engineering Computing Cost Center Pool MP as provided for by CAS 418.50(f).

Overall Summary Of Cost Impact

In the previous sections of this report, we discussed and explained the net impact of separately allocating the costs for laboratory and supporting

computing costs, taxes, general services, and computing automation and development from the ER and CCC indirect expense pools as opposed to their current accounting practice. A summary of the net increase or decrease in costs between our separate allocation and the current accounting practice for these cost elements is shown below:

	1994 Costs				
	Labs ($000)	Taxes ($000)	General Services ($000)	Computing Automation & Develop. ($000)	Net Inc.(Dec.) ($000)
Puget Sound					
Govt Contracts	$ 207	$ 1,202	$ (1,031)	$ 309	$ 687
New Business	3,801	223	(653)	51	3,422
Commercial	95	555	(196)	147	601
Capital Assets	3	16	(40)	3	(18)
Subtotal	$ 4,106	$ 1,996	$ (1,920)	$ 510	$ 4,692
Huntsville/Houston					
Govt Contracts					
Space Station					
Houston	$ (2,432)	$ (645)	$ 44	$ (582)	$ (3,615)
Huntsville	(1,886)	(1,109)	1,655	61	(1,279)
Other	589	(116)	135	5	613
Total Cont.	$ (3,729)	$ (1,870)	$ 1,834	$ (516)	$ (4,281)
New Business	(376)	(88)	43	5	(416)
Commercial		(1)	1		
Capital Assets	(1)	(37)	42	1	5
Subtotal	$ (4,106)	$ (1,996)	$ 1,920	$ (510)	$ (4,692)
Total	$ 0	$ 0	$ 0	$ 0	$ 0

Our adjustment of this impact to reflect the allocation of G&A and New Business (IR&D) to final cost objectives is summarized below:

	Net Inc./(Dec.)	Adjustments For G&A	Adjustments For NB (IR&D)	Total
Government Contracts				
Space Station				
Houston	$ (3,615)	$ (250)	$ (163)	$ (4,028)
Huntsville	(1,279)	(80)	61	(1,298)
Other				
Puget Sound	687	126	1,212	2,025
Huntsville/Houston	613	112	1,086	1,811
Total	$ (3,594)	$ (92)	$ 2,196	$ (1,490)
New Business	3,006		(3,006)	
Commercial	601	92	810	1,503
Capital Assets	(13)			(13)
Total	$ 0	$ 0	$ 0	$ 0

We consider the distortions in allocations between Space Station cost objectives and other cost objectives to be significant. CAS 418-50(b)(2) requires that there be a material difference if the costs that are not homogeneous were allocated separately and that the determination of materiality shall be made using the criteria provided in 4 CFR 9903.305. As shown in the above impact for 1994, our separate allocation of costs in the ER and CCC pool shows that government contracts were over allocated $1.5 million of costs with a corresponding under allocation to commercial work. We determined that this meets the materiality criteria in CAS 9903.305.

For a cost pool to be considered not homogeneous, CAS 418-50(b)(2) requires that there be a material difference between the costs allocated to cost objectives using the established accounting practices and allocations which would result if the costs were allocated separately. The determination of materiality shall be made using the criteria provided in 4 CFR 9903.305. As shown in the above impact for 1994, our separate allocation of costs in the ER and CCC pool, which was previously discussed and explained in this report, shows that government contracts were over allocated $1.5 million of costs with a corresponding under allocation to commercial work. We determined that this meets the materiality criteria in CAS 9903.305.

Our computation of the net cost impact for this noncompliance with CAS 418 does not consider the impact for Cost of Money (COM) which is subject to CAS 414. Our Audit Report No. 4381-95C19200002, dated 3 March 1995, reported that BD&SG's cost accounting practices were noncompliant with CAS 414. The cost impact proposal you requested from BD&SG related to that issue should show the net overstated amount of COM allocated to government contracts, as well as the NASA Space Station contract because of this noncompliance.

Recommendation

- The ACO should determine BD&SG to be in noncompliance with CAS 418 because of its allocation of laboratory, taxes, general services, computing & automation and computing development costs in the ER and CCC pools on a basis which does not reflect the same or similar beneficial or causal relationship to cost objectives as other costs allocated through these pools.

- We recommend you require BD&SG to change its cost accounting practices to ensure that the costs in the Engineering Resource and Engineering CCC pools are homogeneous.

- We recommend you require BD&SG to submit a cost impact proposal in sufficient detail to determine the increased cost paid by the United States Government as a result of this noncompliance, including interest, on all CAS covered contracts and subcontracts in accordance with FAR 52.230-2(a)(5) and FAR 52.230-5(a).

- The ACO should take appropriate action to assure that BD&SG's CAS covered contracts are adjusted for the increased cost to the government.

Our specific recommendations to correct the noncompliant cost accounting practices include:

- Allocate laboratory and the supporting computing costs to cost objectives based on the use of these resources in accordance with the criteria established in CAS 418-50(e).

- Allocate the Tax pool costs for Puget Sound and Huntsville/Houston only to their respective cost objectives (similar to how the Puget Sound and Huntsville/Houston Use and Occupancy secondary overhead pools are currently allocated).

- Allocate the General Services pool costs for Puget Sound and Huntsville/Houston only to their respective cost objectives (similar to how the Puget Sound and Huntsville/Houston Use and Occupancy secondary overhead pools are currently allocated). In addition, BD&SG should identify the costs of any services recorded in the Huntsville/Houston GS pool which duplicate the support provided by NASA at its Houston Johnson Space Center. The costs related to the duplicative support should be removed from the GS allocation to Houston and be allocated only to Huntsville cost objectives.

- The Government and BD&SG should agree to a special allocation of computing automation and development costs to the Space Station contract in accordance with the procedures established in CAS 418-50(f).

BD&SG's Reaction and Additional Auditor Comments

BD&SG's 19 May 1995 letter, reference 9-9034-DB/DJB95-045, enclosed as Attachment 1 to this report responded to our 26 April 1995 request for comments on the draft report. BD&SG's reaction and our comments are summarized as follows:

Overview

BD&SG's Reaction

The audit report ignores the interrelationship of cost elements within a pool as a criterion for determining homogeneity as required in the first sentence in CAS 418.50(b)(1):

> An indirect cost pool is homogeneous if each significant activity whose costs are included therein has the same or similar beneficial or casual relationship to cost objectives as the other activities whose costs are included in the cost pool.

Laboratory, taxes, and general services are engineering resources used by the "engineering community" and have the same or similar beneficial relationship to the engineering pool's base as the other cost elements in the pool. BD&SG then concludes that "DCAA has not established these cost elements do not represent engineering resources."

BD&SG also stated that this position was expressed in the issue resolution process but omitted from the draft audit report. This position is detailed on page 1, paragraph 3 of the tax allocation enclosure to it's response.

Additional Auditor Comments

The CAS citation quoted by BD&SG does not address whether the costs in the pool represent engineering resources for determining homogeneity. It simply requires that each significant activity in the pool have the same or similar beneficial or casual relationship to cost objectives as the other activities whose costs are included in the pool. Our audit of the costs in the ER and CCC pools disclosed that laboratory, taxes, general services, and computing costs do not have the same or similar beneficial or casual relationship to cost objectives as the other activities whose costs are included in the cost pool.

Our response to BD&SG's position expressed during the issue resolution process is included in the portion of this report addressing the tax noncompliance. This was also included in our 26 April 1995 request to BD&SG for comments on the draft audit report.

Laboratory Costs

BD&SG's Reaction

BD&SG defends it's present cost allocation practices for laboratory costs based on the following:

1. The NASA situation is not dissimilar to other programs where DoD has Government laboratories and makes that capability available to Boeing D&SG to perform specific contracts.

2. An allocation of every laboratory discretely would "lose the ability to offer the full services and resources of the enterprise."

3. An allocation of laboratory costs based on resource consumption "does not recognize the benefit other programs receive from completed test results that are available to the engineering community but are performed only once for a single program."

4. The length of time required for each test, the number of tools used in each laboratory, and the amount of time the laboratory is used for that program are not represented in the data used in the audit analysis.

5. The use of the resource consumption or output measure required by CAS 418-40(c)(2)(i) & (ii) "is not always measurable to a specific contract, and therefore, not practical". We believe that the current engineering pool base is appropriate

6. Duplication of laboratory costs would occur if laboratories were aligned by geographical location.

Additional Auditor Comments

Our comments keyed to BD&SG's various reactions are:

1. We do not agree that the NASA situation is similar to other programs. The section of the audit report which discusses laboratory costs details five factors which contribute to the lower relative use of the laboratories by the Space Station contract.

2. The issue is how the costs of laboratories are allocated and not the ability to provide the laboratory services. If these laboratory services cannot be provided economically based on an allocation of costs based on laboratory usage, consideration should be given to obtaining these services from outside sources.

3. The allocation of laboratory costs should be made based on the specific program or IR&D project which used the laboratory. We do not believe that the potential benefit of laboratory work to other programs can be measured. It should also be noted that other engineering work being charged directly to programs could potentially benefit other programs.

4. In the section of the audit report which discusses laboratory costs, we acknowledge that the laboratory usage and cost data provided by BD&SG was not complete and stated that we would adjust our computation if additional usage or cost data was provided.

5. BD&SG's engineering pool base is a surrogate which should result in an allocation of costs that is representative of resources consumed. The requirements for this allocation base are stated in:

CAS 418-40 (c)(2)(iii), which calls for a surrogate that is representative of resources consumed.

CAS 418-50(e)(3), which provides that if neither resources consumed nor output of the activities can be measured practically, a surrogate that varies in proportion to the services received shall be used to measure the resources consumed. Generally, such surrogates measure the activity of the cost objectives receiving the services.

As previously discussed in the laboratory section of this report, the engineering labor base is not representative of the resources consumed nor does it vary in proportion to the services received.

6. The report only addresses the allocation of lab costs. The number of laboratories and their location is not a cost allocation issue.

Computing & Automation and Computing Development projects

BD&SG's Reaction

BD&SG defends it's present cost allocation practices for Computing & Automation and Computing Development projects based on the following:

1. The technical review was flawed because it lacked any written substance to support the matrix.

2. To estimate the level of support or benefit by engineering management to existing contracts would be speculative and create data that cannot be substantiated.

3. Costs included in Computing & Automation and Computing Development projects represent general purpose resources that are available to the engineering community. Only when resources are program specific and unique are the costs of these activities collected in product pools.

4. The intent of CAS 418.50(f) is to provide a vehicle that would be used as a tool during contract negotiations.

Additional Auditor Comments

Our comments keyed to BD&SG's various reactions are:

1. The technical review performed by NASA Space Station Program and DPRO engineers reviewed all of the 1994 Computing & Automation and Computing Development projects. The report details the specific projects that the technical review determined not applicable to the Space Station contract work performed at Houston.

2. As the prime contractor, BD&SG should know the Space Station requirements and be able to determine which projects will benefit the Space Station effort performed at Houston.

3. BD&SG states that the Computing & Automation and Computing Development projects represent general purpose resources that are available to the engineering community. However, the technical review performed by NASA Space Station Program and DPRO engineers determined that most of the projects would not benefit the Space Station effort at Houston or duplicated activities that were being provided at no cost to BD&SG as Government Furnished Property.

4. The intent of CAS 418.50(f) is to provide a means for a contractor and the government to negotiate special allocations in situations where a particular cost objective in relation to other cost objectives receives significantly more or less benefit from an indirect cost pool than would be reflected by the allocation of such costs using a base determined pursuant to paragraphs 418.50(d) and (e). We believe this clause can be utilized at any time during contract performance. Additionally, clause H.30 of contract no. NAS15-10000 states the following:

> The parties acknowledge that at the time of this negotiation/definitization, there is an unresolved issue between NASA and the Boeing Defense and Space Group as to whether certain of Boeing's accounting practices are in compliance with Cost Accounting Standard 418. There is a Defense Contract Audit Agency (DCAA) audit (Audit No. 4381-95C19418002) which, when completed, will result in a recommendation as to the proper engineering and manufacturing rates to be applied to this contract.

Relocation Expense

BD&SG's Reaction

BD&SG's response notes that the impact of the noncompliances in this report would be offset if relocation costs were charged to the general services pools in the geographic location where the employees were relocated as follows:

1. "DCAA considered BD&SG's 1993 accounting change that created Home Office pool VR to be noncompliant with CAS 418.40(c) because it did not result in those costs being allocated to cost objectives in reasonable proportion to the beneficial or causal relationship."

2. A change in the VR pool "would have an adverse impact to the Space Station contract" and "overshadow the amounts that the audit report proposes we adjust to the NASA Space Station contract."

3. "Boeing D&SG believes this practice and others discussed above are CAS compliant and consistent with the ongoing business concept."

Additional Auditor Comments:

Our comments keyed to BD&SG's various reactions are:

1. DCAA Audit Report No. 4381-93C19200004 reported that BD&SG's revised method of recording product division's relocation expenses in BD&SG's Home Office centralized services pool VR was noncompliant with CAS 418. The relocation costs recorded in pool VR are allocated to product divisions based on total Segments' (Product Divisions) General Service pool allocation base of direct and indirect labor hours net of Remote site hours. The allocated relocation costs are recorded in the Product Division's general service pools. Prior to this change, relocation costs were recorded in the general service pools at the geographic location to which the employee was relocated. The resolution of this issue is currently under consideration by the Corporate Administrative Contracting Officer.

2. We agree that if BD&SG corrected the noncompliance, the Space Station contract would be adversely impacted because of the significant number of employees relocated to Houston, Texas. However, this adverse impact should not occur in the future as the relocation costs have, for the most part, already been incurred. All future relocation costs would be charged to the segment/contract receiving the relocated employees.

3. We continue to believe that BD&SG's revised practice for relocation costs is noncompliant with CAS.

Materiality

BD&SG's Reaction

The results of the cost analysis presented in the audit report are not material.

Additional Auditor Comments

CAS 418-50(b)(2) provides that there be a material difference if the costs that are not homogeneous were allocated separately and that the determination of materiality shall be made using the criteria provided in 4 CFR 9903.305. We believe that the cost impact of the CAS noncompliance in this report are material in accordance with the criteria established in 9903.305 as discussed below:

9903.305(a)

The absolute dollar amount involved. The larger the dollar amount, the more likely that it will be material.

DCAA Comment

The costs of the activities without the same or similar beneficial or causal relationship to cost objectives totaled $108.6 million or 63.9 percent of the ER pool and $20.4 million or 65.8 percent of the CCC pool. We believe these amounts are material.

9903.305(b)

The amount of contract cost compared with the amount under consideration. The larger the proportion of the amount under consideration to contract cost, the more likely it is to be material.

DCAA Comment

The $108.6 million of ER pool costs and $20.4 million of CCC pool costs under consideration are 5.8 percent of the $2.204 billion in the G&A base. We believe that these amounts are material.

9903.305(c)

The relationship between a cost item and a cost objective. Direct cost items, especially if the amounts are themselves part of a base for allocation of indirect costs, will normally have more impact than the same amount of indirect costs.

DCAA Comment

All of the cost items being reported as not homogeneous are indirect costs. However, the major portion of these costs are in the base for G&A, New Business and Cost of Money.

9903.305(d)

The impact on Government funding. Changes in accounting treatment will have more impact if they influence the distribution of costs between Government and non-Government cost objectives than if all cost objectives have Government financial support.

DCAA Comment

The noncompliances resulted in $1.5 million of increased cost to government contracts and an offsetting decrease to commercial contracts. The $1.5 million of increased cost on government contracts

is the net of $5.3 million of increased cost on the NASA Space Station contract partially offset by $3.8 million of decreased costs allocated to other government contracts. However, this is only the impact for 1994 and this noncompliant condition will continue for subsequent years unless the noncompliant cost accounting practices are changed. We believe that the increased cost in 1994 and subsequent years is material.

9903.305(e)

The cumulative impact of individual immaterial items. It is appropriate to consider whether such impact tend to (i) offset one another; or (ii) be in the same direction and, hence, to accumulate into a material amount.

DCAA Comment

As shown in our comments on 9903.305(d), the cumulative impact of the noncompliant practices results in increased cost on the NASA Space Station contract partially offset by decreased costs on other government contracts resulting in a $1.5 million net increase to government contracts in 1994. However, this is only the impact for 1994 and this noncompliant condition will continue for subsequent years unless the noncompliant cost accounting practices are changed. We believe that the increased cost in 1994 and subsequent years is material.

9903.305(f)

The cost of administrative processing of the price adjustment modifications shall be considered. If the cost to process exceeds the amount to be recovered, it is less likely the amount will be material.

DCAA Comment

The response does not address the cost to process the amount to be recovered. The cost to process the price adjustment depends on how the noncompliant practices are corrected. However, we do not believe that these costs will be material relative to the present and future cost impact to the government.

DCAA PERSONNEL AND REPORT AUTHORIZATION

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RESTRICTIONS

1. Contractor information contained in this audit report may be proprietary. The restrictions of 18 U.S.C. 1905 should be considered before this information is released to the public.

2. Under the provisions of Title 32, Code of Federal Regulations, Part 290.26(b)(2), any Freedom of Information Act requests for audit reports received by DCAA will be referred to the cognizant contracting agency for determination as to releasability and a direct response to the requester.

3. The Defense Contract Audit Agency has no objection to release of this report, at the discretion of the contracting agency, to authorized representatives of The Boeing Company.

4. The information contained in this audit report should not be used for purposes other than action on the subject of this audit without first discussing its applicability with the auditor.

Boeing Defense and Space Group
Seattle, Washington

Rough Order Magnitude of Separately Identified Laboratory Costs *
CY 1994

Cost Objectives	Allocated on Usage Basis (Note) Puget Sound	Huntsville	Other Alloc.	Total
Engineering Resource Pool				
Puget Sound				
Government Contracts	$ -	$ -	$ 24,402,604	$ 24,402,604
Commercial/Other	-	-	11,257,162	11,257,162
Capital Assets			323,265	323,265
New Business (IR&D)	7,445,550			7,445,550
Program	24,429,781		(24,429,781)	-
Other (IDWA/Capital Assets, etc.)	12,062,818		(12,062,818)	-
Total Puget Sound	$ 43,938,149	$ -	$ (509,568)	$ 43,428,581
Huntsville/Houston				
Government Contracts				
Space Station				
Houston	$ 286,515			$ 286,515
Huntsville	618,800	$ 2,276,887		2,895,687
Other		584,842	$ 445,437	1,030,280
Total Government Contracts	$ 905,316	$ 2,861,729	$ 445,437	$ 4,212,482
Commercial/Other	-	-	6,486	6,486
Capital Assets			140,582	140,582
New Business (IR&D)		-		-
Other - Houston	-		-	-
Other - Huntsville	82,938	-	(82,938)	-
Total Huntsville/Houston	$ 988,253	$ 2,861,729	$ 509,568	$ 4,359,550
Total Engineering Resource Pool	$ 44,926,402	$ 2,861,729	$ 0	$ 47,788,131
	(Appendix 1-A)	(Appendix 1-B)		

Boeing Defense and Space Group
Seattle, Washington

Rough Order Magnitude of Separately Identified Laboratory Costs
CY 1994

Cost Objectives	Allocated on Usage Basis (Note) Puget Sound	Huntsville	Other Alloc.	Total
Engineering Computing Cost Center				
Puget Sound				
Government Contracts	$ -	$ -	$ 3,060,455	$ 3,060,455
Commercial/Other	-	-	1,451,643	1,451,643
Capital Assets			36,698	36,698
New Business (IR&D)	1,348,135			1,348,135
Program	3,023,155		(3,023,155)	-
Other (IDWA/Capital Assets, etc.)	1,604,309		(1,604,309)	-
Total Puget Sound	$ 5,975,599	$ -	$ (78,668)	$ 5,896,931
Huntsville/Houston				
Government Contracts				
Space Station	$ 14,524			$ 14,524
Houston	64,178			64,178
Huntsville			$ 59,272	59,272
Other				
Total Government Contracts	$ 78,701	$ -	$ 59,272	$ 137,973
Commercial/Other	-	-	775	775
Capital Assets			18,622	18,622
New Business (IR&D)				-
Other - Houston	-		-	-
Other - Huntsville	-		-	-
Total Huntsville/Houston	$ 78,701	$ -	$ 78,668	$ 157,369
Total Eng. Computing Cost Center	$ 6,054,300	$ -	$ (0)	$ 6,054,300

(Appendix 1-C)

Explanatory Note

The Puget Sound and Huntsville laboratory costs are specifically identified to individual labs or major functional laboratory categories in the referenced supporting appendices. The percentages used to seperately identify costs to New Business (IR&D) and the work on the Space Station contract at Houston and Huntsville is based on the usage identified in D&SG's 16 December 1994 laboratory operations study. The remaining laboratory costs are allocated to the remaining government contracts, commercial work, and capital assests using D&SG's established allocation base as shown in the other allocation column.

Boeing Defense and Space Group
Seattle, Washington

Rough Order Magnitude of Separately Identified Laboratory Costs
Pool 30A - Puget Sound
CY 1994

Description	Laboratory Costs: Subtotal	Laboratory Costs: Taxes	Laboratory Costs: General Services	Laboratory Costs: Total	Major Programs: Puget Sound Usage	Major Programs: Puget Sound Cost	Major Programs: Huntsville Usage	Major Programs: Huntsville Cost	Major Programs: Houston Usage	Major Programs: Houston Cost	Major Programs: Total Programs Usage	Major Programs: Total Programs Cost
Flight Technology Laboratories												
Communications Lab	$ 128,892	$ 1,939	$ 7,537	$ 138,373	40.0%	$ 55,349		$ -		$ -	40.0%	$ 55,349
Computer Image Generation Labs	120,270	845	2,512	123,616	40.0%	49,454		-		-	40.0%	49,454
VAX/Computer Systems Labs	83,677			83,677	40.0%	33,471		-		-	40.0%	33,471
Crew Systems Laboratory	51,991			51,991	60.0%	31,195		-		-	60.0%	31,195
Electronic Subsys. Integration Lab	44,100	135	628	44,863		-		-		-	0.0%	-
Electronic Subsys. Technology Lab	17,242	245	628	18,115		-		-		-	0.0%	-
Flight Controls & Simulation Lab	317,025	4,957	13,190	329,168	10.0%	32,917		-		-	10.0%	32,917
Guidance, Navigation & Controls Lab	246,435	3,256	7,537	257,229	50.0%	128,614		-		-	50.0%	128,614
MDII/Rapid Prototyping Lab	183,908	2,105	6,281	192,294	40.0%	76,918		-		-	40.0%	76,918
Operations Analysis Lab	88,844			88,844	20.0%	17,769		-		-	20.0%	17,769
Sensor Tower	24,665			24,665		-		-		-	0.0%	-
Thermal/Cryogenic/Propul Sys Lab	374,258	5,750	9,422	389,429	50.0%	194,715		-		-	50.0%	194,715
Video Systems Lab	72,689			72,689	45.0%	32,710		-		-	45.0%	32,710
Visual Simulation Domes	1,651,915	41,766	82,912	1,776,593	40.0%	710,637		-		-	40.0%	710,637
Visual Simulation Computer Labs	56,176			56,176	40.0%	22,550		-		-	40.0%	22,550
Subtotal Lab Costs	$ 3,457,304	$ 60,191	$ 130,619	$ 3,648,144		$ 1,386,319		$ -		$ -		$ 1,386,319
Support to Flight Labs	493,713	14,979	31,406	540,098	38.0%	205,241	0.0%	-	0.0%	-	38.0%	205,241
Depreciation	2,845,778	66,512		2,912,290	38.0%	1,114,289	0.0%	-	0.0%	-	38.0%	1,114,289
Subtotal Flight Technology Laboratories	$ 6,796,795	$ 141,682	$ 162,055	$ 7,100,532		$ 2,705,849		$ -		$ -		$ 2,705,849
Add'l Laboratory Support	616,124	18,823	38,682	673,628	6.6%	253,447	0.0%	-	0.0%	-	6.6%	253,447
Total Flight Technology Laboratories	$ 7,412,919	$ 160,504	$ 200,737	$ 7,794,160		$ 2,959,296		$ -		$ -		$ 2,959,296
Physics Laboratories												
Atmospheric Info Retrieval Systems Lab	$ 39,148	$ 865	$ 1,256	$ 41,270	65.0%	$ 26,825		$ -		$ -	65.0%	$ 26,825
Boeing Radiation Effects Lab	840,034	12,725	22,612	874,972	35.0%	306,240	17.5%	153,120	17.5%	153,120	70.0%	612,480
High Power Laser Lab	160,627	2,230	4,397	167,253	20.0%	33,451		-		-	20.0%	33,451
Industrial Computed Tomography Lab	83,297	1,735	3,769	88,801	45.0%	40,704	4.2%	3,700		-	50.0%	44,404
Laser Development Lab	30,798			30,798	20.0%	6,160		-		-	20.0%	6,160
Life Science Lab	59,618	476	1,884	61,998		-		-		-	0.0%	-
Microbiology Lab	33,930			33,930		-		-		-	0.0%	-
Non Destructive Evaluation Lab	23,490			23,490	15.0%	3,524	5.0%	1,175		-	20.0%	4,698
Shock Physics Lab	134,509	993	1,884	137,386	40.0%	54,955	20.0%	27,477		-	60.0%	82,432
XAS (Spectroscopy) Lab	10,518			10,518	20.0%	2,104		-		-	20.0%	2,104
Subtotal Lab Costs	$ 1,416,089	$ 18,525	$ 35,803	$ 1,470,416		$ 473,958		$ 185,472		$ 153,120		$ 812,550
Support to Physics Lab	386,690	11,699	27,009	425,398	32.2%	137,118	12.6%	53,618	10.4%	44,290	55.3%	235,026
Depreciation	561,281	17,063		578,344	32.2%	186,417	12.6%	72,950	10.4%	60,225	55.3%	319,592
Subtotal Physics Laboratories	$ 2,364,060	$ 47,287	$ 62,812	$ 2,474,158		$ 797,493		$ 312,079		$ 257,644		$ 1,367,216
Add'l Laboratory Support	214,300	5,505	14,991	234,798	1.9%	74,698	0.8%	29,331	0.6%	24,133	3.3%	128,062
Total Physics Laboratories	$ 2,578,360	$ 52,791	$ 77,805	$ 2,708,956		$ 872,191		$ 341,311		$ 281,776		$ 1,495,278
Material Laboratories												
Advanced Development Lab	$ 223,840	$ 700	$ 628	$ 225,169	70.0%	$ 157,618		$ -		$ -	70.0%	$ 157,618
Advanced Metallics Lab	318,617	6,010	5,633	330,360	54.0%	178,394		-		-	54.0%	178,394
Ceramics Lab	90,149			90,149	27.0%	24,340		-		-	27.0%	24,340
Chemical/Physical Analysis Lab	348,700	2,863	8,794	357,357	55.1%	196,943	6.9%	24,618		-	62.0%	221,561

Description	Other Programs: IR&D Usage	Other Programs: IR&D Cost	Other Programs: Puget Sound Usage	Other Programs: Puget Sound Cost	Other Programs: Huntsville Usage	Other Programs: Huntsville Cost	Other Programs: Houston Usage	Other Programs: Houston Cost	Other Programs: Total Other Usage	Other Programs: Total Other Cost	Total Usage	Total Cost
Flight Technology Laboratories												
Communications Lab	20.0%	$ 27,675	40.0%	$ 55,349		$ -		$ -	40.0%	$ 55,349	100.0%	$ 138,373
Computer Image Generation Labs	20.0%	24,727	40.0%	49,454		-		-	40.0%	49,454	100.0%	123,616
VAX/Computer Systems Labs	20.0%	16,735	40.0%	33,471		-		-	40.0%	33,471	100.0%	83,677
Crew Systems Laboratory	40.0%	20,796		-		-		-	0.0%	-	100.0%	51,991
Electronic Subsys. Integration Lab	90.0%	40,379	10.0%	4,487		-		-	10.0%	4,487	100.0%	44,863
Electronic Subsys. Technology Lab	70.0%	12,680	30.0%	5,434		-		-	30.0%	5,434	100.0%	18,115
Flight Controls & Simulation Lab	50.0%	164,684	40.0%	131,747		-		-	40.0%	131,747	100.0%	329,168
Guidance, Navigation & Controls Lab	20.0%	51,446	26.3%	67,523	3.8%	9,646		-	30.0%	77,169	100.0%	257,229
MDII/Rapid Prototyping Lab	30.0%	57,688	30.0%	57,688		-		-	30.0%	57,688	100.0%	192,294
Operations Analysis Lab	60.0%	53,306	20.0%	17,769		-		-	20.0%	17,769	100.0%	88,844
Sensor Tower	100.0%	24,665		-		-		-	0.0%	-	100.0%	24,665
Thermal/Cryogenic/Propul Sys Lab	20.0%	77,886	22.5%	87,622	7.5%	29,207		-	30.0%	116,829	100.0%	389,429
Video Systems Lab	15.0%	10,903	40.0%	29,076		-		-	40.0%	29,076	100.0%	72,689
Visual Simulation Domes	20.0%	355,319	40.0%	710,637		-		-	40.0%	710,637	100.0%	1,776,593
Visual Simulation Computer Labs	15.0%	8,456	45.0%	25,369		-		-	45.0%	25,369	100.0%	56,176
Subtotal Lab Costs		$ 917,316		$ 1,273,626		$ 38,853		$ -		$ 1,311,479		$ 3,648,144
Support to Flight Labs	26.0%	140,252	35.0%	188,853	1.1%	5,752	0.0%	-	36.0%	194,605	100.0%	540,098
Depreciation	26.0%	761,454	35.0%	1,035,317	1.1%	31,229	0.0%	-	36.0%	1,036,546	100.0%	2,912,290
Subtotal Flight Technology Laboratories		$ 1,819,032		$ 2,489,796		$ 75,835		$ -		$ 2,565,610		$ 7,120,517
Add'l Laboratory Support	4.5%	173,194	6.1%	233,210	0.2%	7,100	0.0%	-	6.2%	240,311	17.1%	666,956
Total Flight Technology Laboratories		$ 2,012,246		$ 2,723,006		$ 82,938		$ -		$ 2,805,944		$ 7,767,456
Physics Laboratories												
Atmospheric Info Retrieval Systems Lab	5.0%	$ 2,063	30.0%	$ 12,381		$ -		$ -	30.0%	$ 12,381	100.0%	$ 41,270
Boeing Radiation Effects Lab	10.0%	87,497	20.0%	174,994		-		-	20.0%	174,994	100.0%	874,972
High Power Laser Lab	20.0%	33,451	60.0%	100,352		-		-	60.0%	100,352	100.0%	167,253
Industrial Computed Tomography Lab	20.0%	17,760	30.0%	26,640		-		-	30.0%	26,640	100.0%	88,801
Laser Development Lab	20.0%	6,160	60.0%	18,479		-		-	60.0%	18,479	100.0%	30,798
Life Science Lab	10.0%	6,200	90.0%	55,798		-		-	90.0%	55,798	100.0%	61,998
Microbiology Lab	10.0%	3,393	90.0%	30,537		-		-	90.0%	30,537	100.0%	33,930
Non Destructive Evaluation Lab	10.0%	2,349	70.0%	16,443		-		-	70.0%	16,443	100.0%	23,490
Shock Physics Lab	30.0%	41,216	10.0%	13,739		-		-	10.0%	13,739	100.0%	137,386
XAS (Spectroscopy) Lab	15.0%	1,578	65.0%	6,837		-		-	65.0%	6,837	100.0%	10,518
Subtotal Lab Costs		$ 209,667		$ 456,200		$ -		$ -		$ 456,200		$ 1,470,416
Support to Physics Lab	13.7%	58,343	31.0%	131,981	0.0%	-	0.0%	-	31.0%	131,981	100.0%	425,398
Depreciation	13.7%	79,319	31.0%	179,433	0.0%	-	0.0%	-	31.0%	179,433	100.0%	578,344
Subtotal Physics Laboratories		$ 319,329		$ 767,613		$ -		$ -		$ 767,613		$ 2,474,158
Add'l Laboratory Support	0.8%	30,784	1.9%	71,900	0.0%	-	0.0%	-	1.9%	71,900	6.0%	234,798
Total Physics Laboratories		$ 370,113		$ 839,513		$ -		$ -		$ 839,513		$ 2,70[illegible]
Material Laboratories												
Advanced Development Lab	25.0%	$ 56,292	5.0%	$ 11,258		$ -		$ -	5.0%	$ 11,258	100.0%	$ 225,169
Advanced Metallics Lab	10.0%	33,036	36.0%	118,930		-		-	36.0%	118,930	100.0%	330,360
Ceramics Lab	63.0%	56,794	10.0%	9,015		-		-	10.0%	9,015	100.0%	90,149
Chemical/Physical Analysis Lab	8.0%	28,589	30.0%	107,207		-		-	30.0%	107,207	100.0%	357,357

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Boeing Defense and Space Group
Seattle, Washington

Rough Order Magnitude of Separately Identified Laboratory Costs
Pool 30A - Puget Sound
CY 1994

Description	Laboratory Costs: Subtotal	Taxes	General Services	Total
Chemical Technology Lab	$ 113,637	$ 1,667	$ 4,397	$ 119,700
Composite Materials Lab	259,042	4,410	8,794	272,246
Composites/Adhesives Lab	117,424			117,424
Dielectrometer Lab	141,414	1,081	3,141	145,635
Failure Analysis Lab	170,636	1,831	3,141	175,610
High Temperature Materials Lab	200,412	2,061	1,884	204,358
Laser/Chemical Etch Lab	199,046	1,536	3,769	204,351
Robotics Lab	12,424			12,424
Signature Materials Lab	606,808	5,867	14,447	627,121
Superconductivity Lab	51,360			51,360
Image Analysis Lab	18,192			18,192
Materials Characterization Lab	30,015			30,015
Particle/Contamin. Analysis Lab	48,755			48,755
Subtotal Lab Costs	$ 2,943,398	$ 33,091	$ 54,646	$ 3,031,135
Parts, Materials & Processes - Safety	29,365	899	3,141	33,404
Support to Material Labs	32,040	918	-	32,958
Depreciation	2,320,032	70,529		2,390,561
Subtotal Material Laboratories	$ 5,324,990	$ 105,466	$ 57,787	$ 5,490,251
A&R Laboratory Support	482,880	12,276	13,791	508,959
Total Material Laboratories	$ 5,809,886	$ 117,740	$ 71,581	$ 5,999,210
Total Physics & Material Laboratories	$ 8,388,346	$ 170,535	$ 149,306	$ 8,708,167
RAI/RFAIS Laboratories				
Adv. Tech Dev Lab (ATDL)	$ 650,295	$ 2,960	$ 4,397	$ 657,652
Antenna Labs	703,605	8,594	15,075	727,274
Central Signal Proc. Labs	116,592	1,202	3,141	120,935
Communications Lab	60,400	965	3,141	64,506
Data Management Lab	198,002	4,584	6,281	208,867
Electromagnetic Effects (EME) Labs	422,572	3,841	7,537	433,950
Engineering Model Lab	367,471	7,536	3,769	378,776
EO/IR Sensors Lab	160,821	1,892	4,397	167,110
IR Signature Lab	508,707	2,218	5,025	515,950
Multi-Process Labs	79,805	930	628	81,363
Opto-Electronic Charac. Labs	80,395	550	1,256	82,201
Opto Electronic Pkg Labs	173,036	1,386	2,513	176,935
Opto-Electronic Sub Sys Labs	248,143	1,739	2,512	252,394
Precision Optical Meas. Lab	220,710	2,134	3,769	226,613
Processing Clean Room Labs	347,197	6,267	14,447	367,911
RCS Boardman Lab	1,187,958	35,195	1,884	1,225,037
RCS DC Labs	1,927,745	13,948	30,506	1,972,199
RCS KSC Lab	464,215	2,745	6,281	473,241
RF Sensors Labs	77,502	1,719	5,025	84,246
RF Systems Labs	155,898	1,186	1,256	158,340
Sensor Seeker Integ. Lab (SSIL)	280,016	4,250	6,281	290,547
SSSL	13,821	419	1,256	15,496
Subtotal Lab Costs	$ 8,440,066	$ 104,300	$ 131,377	$ 8,696,742

Description	Major Programs: Puget Sound Usage	Puget Sound Cost	Huntsville Usage	Huntsville Cost	Houston Usage	Houston Cost	Total Programs Usage	Total Programs Cost
Chemical Technology Lab	6.0%	$ 7,182	2.0%	$ 2,394	2.0%	$ 2,394	10.0%	$ 11,970
Composite Materials Lab	40.0%	108,898		-		-	40.0%	108,898
Composites/Adhesives Lab	60.0%	70,454		-		-	60.0%	70,454
Dielectrometer Lab	60.0%	89,181		-		-	60.0%	89,181
Failure Analysis Lab	82.5%	144,878	7.5%	13,171		-	90.0%	158,049
High Temperature Materials Lab		-		-		-	0.0%	-
Laser/Chemical Etch Lab		-		-		-	0.0%	-
Robotics Lab		-		-		-	0.0%	-
Signature Materials Lab	40.0%	250,849		-		-	40.0%	250,849
Superconductivity Lab		-		-		-	0.0%	-
Image Analysis Lab	75.0%	13,644		-		-	75.0%	13,644
Materials Characterization Lab	58.6%	17,596	8.4%	2,514		-	67.0%	20,110
Particle/Contamin. Analysis Lab	80.0%	39,004		-		-	80.0%	39,004
Subtotal Lab Costs		$ 1,298,904		$ 42,686		$ 2,394		$ 1,344,075
Parts, Materials & Processes - Safety	42.8%	14,392	1.4%	473	0.1%	27	44.3%	14,891
Support to Material Labs	42.8%	14,115	1.4%	464	0.1%	26	44.3%	14,605
Depreciation	42.8%	1,023,295	1.4%	33,651	0.1%	1,887	44.3%	1,059,333
Subtotal Material Laboratories		$ 2,351,206		$ 77,285		$ 4,333		$ 2,432,903
A&R Laboratory Support	3.7%	220,234	0.2%	7,239	0.0%	406	3.9%	227,880
Total Material Laboratories		$ 2,574,522		$ 84,524		$ 4,739		$ 2,660,785
Total Physics & Material Laboratories		$ 3,443,310		$ 435,834		$ 204,515		$ 4,156,043
RAI/RFAIS Laboratories								
Adv. Tech Dev Lab (ATDL)	80.0%	$ 526,121		$ -		$ -	80.0%	$ 526,121
Antenna Labs	95.0%	690,910		-		-	95.0%	690,910
Central Signal Proc. Labs	40.0%	48,374		-		-	40.0%	48,374
Communications Lab	10.0%	6,459		-		-	10.0%	6,459
Data Management Lab	60.0%	125,368		-		-	60.0%	125,368
Electromagnetic Effects (EME) Labs	98.0%	425,272		-		-	98.0%	425,272
Engineering Model Lab	83.1%	310,320	6.9%	25,077		-	90.0%	336,398
EO/IR Sensors Lab	20.0%	33,422		-		-	20.0%	33,422
IR Signature Lab	50.0%	257,975		-		-	50.0%	257,975
Multi-Process Labs		-		-		-	0.0%	-
Opto-Electronic Charac. Labs		-		-		-	0.0%	-
Opto Electronic Pkg Labs		-		-		-	0.0%	-
Opto-Electronic Sub Sys Labs	10.0%	25,243		-		-	10.0%	25,243
Precision Optical Meas. Lab	50.0%	113,306		-		-	50.0%	113,306
Processing Clean Room Labs	10.0%	36,791		-		-	10.0%	36,791
RCS Boardman Lab	98.0%	1,200,537		-		-	98.0%	1,200,537
RCS DC Labs	75.0%	1,494,149		-		-	75.0%	1,494,149
RCS KSC Lab	50.0%	236,620		-		-	50.0%	236,620
RF Sensors Labs	40.0%	33,698		-		-	40.0%	33,698
RF Systems Labs		-		-		-	0.0%	-
Sensor Seeker Integ. Lab (SSIL)		-		-		-	0.0%	-
SSSL		-		-		-	0.0%	-
Subtotal Lab Costs		$ 5,564,267		$ 25,077		$ -		$ 5,590,644

Description	IR&D Usage	IR&D Cost	Other Programs: Puget Sound Usage	Puget Sound Cost	Huntsville Usage	Huntsville Cost	Houston Usage	Houston Cost	Total Other Usage	Total Other Cost	Total Usage	Total Cost
Chemical Technology Lab		$ -	90.0%	$ 107,730		$ -		$ -	90.0%	$ 107,730	100.0%	$ 119,[illegible]
Composite Materials Lab	40.0%	108,898	20.0%	54,449		-		-	20.0%	54,449	100.0%	272,[illegible]
Composites/Adhesives Lab	7.0%	8,220	33.0%	38,750		-		-	33.0%	38,750	100.0%	117,[illegible]
Dielectrometer Lab	20.0%	29,728	20.0%	29,728		-		-	20.0%	29,728	100.0%	14[illegible]
Failure Analysis Lab		-	10.0%	17,561		-		-	10.0%	17,561	100.0%	17[illegible]
High Temperature Materials Lab	45.0%	91,961	55.0%	112,397		-		-	55.0%	112,397	100.0%	20[illegible]
Laser/Chemical Etch Lab	100.0%	204,351		-		-		-	0.0%	-	100.0%	20[illegible]
Robotics Lab	100.0%	12,424		-		-		-	0.0%	-	100.0%	12,[illegible]
Signature Materials Lab	30.0%	188,136	30.0%	188,136		-		-	30.0%	188,136	100.0%	627,[illegible]
Superconductivity Lab	21.0%	10,765	79.0%	40,495		-		-	79.0%	40,495	100.0%	51,[illegible]
Image Analysis Lab	10.0%	1,819	15.0%	2,729		-		-	15.0%	2,729	100.0%	18,[illegible]
Materials Characterization Lab	10.0%	3,002	23.0%	6,903		-		-	23.0%	6,903	100.0%	30,[illegible]
Particle/Contamin. Analysis Lab	10.0%	4,876	10.0%	4,876		-		-	10.0%	4,876	100.0%	48,[illegible]
Subtotal Lab Costs		$ 818,869		$ 850,164		$ -		$ -		$ 850,164		$ 3,03[illegible]
Parts, Materials & Processes - Safety	27.7%	9,294	28.0%	9,419	0.0%	-	0.0%	-	28.0%	9,419	100.0%	33,[illegible]
Support to Material Labs	27.7%	9,115	28.0%	9,218	0.0%	-	0.0%	-	28.0%	9,218	100.0%	32,[illegible]
Depreciation	27.7%	661,171	28.0%	670,057	0.0%	-	0.0%	-	28.0%	670,057	100.0%	2,39[illegible]
Subtotal Material Laboratories		$ 1,318,470		$ 1,538,858		$ -		$ -		$ 1,538,858		$ 5,4[illegible]
A&R Laboratory Support	3.7%	142,229	3.7%	144,141	0.0%	-	0.0%	-	3.7%	144,141	11.4%	51[illegible]
Total Material Laboratories		$ 1,660,699		$ 1,683,019		$ -		$ -		$ 1,683,019		$ 6,00[illegible]
Total Physics & Material Laboratories		$ 2,036,011		$ 2,521,531		$ -		$ -		$ 2,521,531		$ 8,710,[illegible]
RAI/RFAIS Laboratories												
Adv. Tech Dev Lab (ATDL)	20.0%	$ 131,530		$ -		$ -		$ -		$ -	100.0%	$ 657,[illegible]
Antenna Labs		-	5.0%	36,364		-		-	5.0%	36,364	100.0%	727,[illegible]
Central Signal Proc. Labs	40.0%	48,374	20.0%	24,187		-		-	20.0%	24,187	100.0%	12[illegible]
Communications Lab		-	90.0%	58,127		-		-	90.0%	58,127	100.0%	6[illegible]
Data Management Lab	20.0%	41,789	20.0%	41,789		-		-	20.0%	41,789	100.0%	20[illegible]
Electromagnetic Effects (EME) Labs		-	2.0%	8,679		-		-	2.0%	8,679	100.0%	43[illegible]
Engineering Model Lab		-	10.0%	37,378		-		-	10.0%	37,378	100.0%	37[illegible]
EO/IR Sensors Lab	60.0%	100,266	20.0%	33,422		-		-	20.0%	33,422	100.0%	167,[illegible]
IR Signature Lab	30.0%	154,785	20.0%	103,190		-		-	20.0%	103,190	100.0%	515,[illegible]
Multi-Process Labs	10.0%	8,136	90.0%	73,227		-		-	90.0%	73,227	100.0%	81,[illegible]
Opto-Electronic Charac. Labs	35.0%	28,770	65.0%	53,431		-		-	65.0%	53,431	100.0%	82,[illegible]
Opto Electronic Pkg Labs	20.0%	35,387	80.0%	141,548		-		-	80.0%	141,548	100.0%	176,[illegible]
Opto-Electronic Sub Sys Labs	10.0%	25,243	80.0%	201,947		-		-	80.0%	201,947	100.0%	252,[illegible]
Precision Optical Meas. Lab		-	50.0%	113,306		-		-	50.0%	113,306	100.0%	226,[illegible]
Processing Clean Room Labs	10.0%	36,791	80.0%	294,329		-		-	80.0%	294,329	100.0%	367,[illegible]
RCS Boardman Lab		-	2.0%	24,501		-		-	2.0%	24,501	100.0%	1,225,[illegible]
RCS DC Labs	20.0%	398,440	5.0%	99,610		-		-	5.0%	99,610	100.0%	1,972,[illegible]
RCS KSC Lab		-	50.0%	236,620		-		-	50.0%	236,620	100.0%	473,[illegible]
RF Sensors Labs	60.0%	50,547		-		-		-	0.0%	-	100.0%	84,[illegible]
RF Systems Labs	20.0%	31,668	80.0%	126,672		-		-	80.0%	126,672	100.0%	158,[illegible]
Sensor Seeker Integ. Lab (SSIL)	25.0%	72,637	75.0%	217,910		-		-	75.0%	217,910	100.0%	290,[illegible]
SSSL	25.0%	3,874	75.0%	11,622		-		-	75.0%	11,622	100.0%	15,[illegible]
Subtotal Lab Costs		$ 1,164,219		$ 1,937,859		$ -		$ -		$ 1,937,859		$ 8,696,[illegible]

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Seattle, Washington

Rough Order Magnitude of Separately Identified Laboratory Costs
Pool 50A - Puget Sound
CY 1994

Description	Laboratory Costs: Subtotal	Taxes	General Services	Total	Major Programs: Puget Sound Usage	Puget Sound Cost	Huntsville Usage	Huntsville Cost	Houston Usage	Houston Cost	Total Programs Usage	Total Programs Cost
7-61-12	$ 38,485	$ 1,159	$ 2,512	$ 42,157	64.0%	$ 26,975	0.3%	$ 125	0.0%	$ -	64.3%	$ 27,100
Support to EM/RF/OS Labs	720,032	21,974	47,909	790,915	64.0%	508,001	0.3%	2,163	0.0%	-	64.3%	510,163
Depreciation	6,339,809	192,730		6,532,539	64.0%	4,179,959	0.3%	19,437	0.0%	-	64.3%	4,199,396
Subtotal EM/RF/OS Laboratories	$ 15,540,146	$ 321,162	$ 200,990	$ 16,063,307		$ 10,279,700		$ 47,002		$ -		$ 10,327,503
Add'l Laboratory Support	1,400,978	38,107	47,928	1,494,343	25.0%	962,162	0.1%	4,077	0.0%	-	25.1%	967,119
Total EM/RF/OS Laboratories	$ 16,952,164	$ 350,330	$ 240,976	$ 17,559,689		$ 11,241,563		$ 52,279		$ -		$ 11,294,842
Electronics Laboratories												
EL NEP Lab	$ 37,017	$ 502	$ 1,084	$ 40,303	1.0%	$ 403		$ -		$ -	1.0%	$ 403
Electronic Packaging Labs	13,404	132	-	13,916	68.2%	9,502	6.8%	950		-	75.0%	10,452
Interconnects Lab	25,759	148	628	26,535	90.0%	23,881		-		-	90.0%	23,881
Experimental Systems Assy Lab	97,771	2,510	3,769	104,050	65.0%	67,632		-		-	65.0%	67,632
Mechanical Lab	170,949	2,604	3,769	177,322	40.0%	70,929		-		-	40.0%	70,929
Optical Element Lab Lab	60,376	1,470	3,141	64,987		-		-		-	0.0%	-
Parts Test Lab	249,665	5,420	1,884	256,969	40.9%	105,124	4.1%	10,512		-	45.0%	115,636
Power Systems Lab	127,901	1,499	3,769	133,169	76.0%	101,208		-		-	76.0%	101,208
Printed Wiring Assy Lab	129,946	1,635	3,769	135,349	10.0%	13,535		-		-	10.0%	13,535
Printed Wiring Board Lab	340,463	2,486	3,769	347,717	10.0%	34,772		-		-	10.0%	34,772
Experimental Support Lab (15-01)	122,719	720	628	123,137	40.0%	49,255		-		-	40.0%	49,255
Subtotal Lab Costs	$ 1,377,160	$ 19,254	$ 27,009	$ 1,423,424		$ 476,241		$ 11,463		$ -		$ 487,703
Microelectronics	5,711	170	-	5,881	33.5%	1,960	0.8%	47	0.0%	-	34.3%	2,015
Elec R&D Lab Lab	96,522	2,911	12,562	107,019	33.5%	37,477	0.8%	902	0.0%	-	34.3%	38,379
M&L Supplies	70,186	2,079	-	72,265	33.5%	24,178	0.8%	582	0.0%	-	34.3%	24,760
Support to Electronics Labs	344,870	10,433	16,330	371,634	33.5%	124,339	0.8%	2,993	0.0%	-	34.3%	127,332
Depreciation	714,326	21,716		736,042	33.5%	246,260	0.8%	5,927	0.0%	-	34.3%	252,188
Subtotal Electronics Laboratories	$ 2,608,775	$ 56,582	$ 55,903	$ 2,721,260		$ 910,461		$ 21,914		$ -		$ 932,377
Add'l Laboratory Support	234,483	6,587	13,341	256,414	2.2%	85,280	0.1%	2,053	0.0%	-	3.3%	87,332
Total Electronics Laboratories	$ 2,843,258	$ 63,169	$ 69,246	$ 2,977,674		$ 995,743		$ 23,966		$ -		$ 1,019,709
S&ETL Laboratories												
Acoustic Test Lab	$ 269,050	$ 3,795	$ 8,794	$ 281,638	90.0%	$ 253,475		$ -		$ -	90.0%	$ 253,475
Acoustic Test Cell Lab	26,100			26,100	100.0%	26,100		-		-	100.0%	26,100
Central Dyn. Instrument Lab	388,434	9,703	21,356	419,523	84.5%	354,687	8.5%	35,469		-	93.0%	390,156
Centrifuge Lab	13,363			13,363	99.0%	13,229		-		-	99.0%	13,229
Data Systems Support Lab	46,450			46,450	69.0%	32,056		-		-	69.0%	32,056
Earth Environments Lab	150,986	940	3,141	155,067	48.0%	74,432	12.0%	18,608		-	60.0%	93,040
Impact Mechanics Lab	121,647	690	1,884	124,222	75.0%	93,166		-		-	75.0%	93,166
Mass Properties Lab	32,146	660	2,512	35,318	70.0%	24,723		-		-	70.0%	24,723
Materials Test Lab	306,736	4,643	13,819	325,198	97.0%	315,442		-		-	97.0%	315,442
Mobile Data Systems Lab				-	100.0%	-		-		-	100.0%	-
Solar/Thermal Radiation Lab	1,014,844	26,553	25,125	1,066,522	94.0%	1,002,530		-		-	94.0%	1,002,530
Space & Thermal Environ. Lab	461,510			463,510	56.0%	259,566		-		-	56.0%	259,566
Strain Gage Lab	26,623			26,623	97.0%	25,823		-		-	97.0%	25,823
Structural Test Lab	406,299			406,299	94.0%	381,921		-		-	94.0%	381,921
Thermal Vacuum Lab	124,027			124,027	99.0%	122,787		-		-	99.0%	122,787
Transducer Calibration Lab	21,490			21,490	83.4%	19,595	7.6%	1,781		-	91.0%	21,376

Description	IR&D Usage	IR&D Cost	Other Programs: Puget Sound Usage	Puget Sound Cost	Huntsville Usage	Huntsville Cost	Houston Usage	Houston Cost	Total Other Usage	Total Other Cost	Total Usage	Total Cost
7-61-12	13.4%	$ 5,661	22.3%	$ 9,394	0.0%	$ -	0.0%	$ -	22.3%	$ 9,394	100.0%	$ 42,15[illegible]
Support to EM/RF/OS Labs	13.4%	106,647	22.3%	176,905	0.0%	-	0.0%	-	22.3%	176,905	100.0%	[illegible]
Depreciation	13.4%	872,509	22.3%	1,455,610	0.0%	-	0.0%	-	22.3%	1,455,610	100.0%	6,532,53[illegible]
Subtotal EM/RF/OS Laboratories		$ 2,158,068		$ 3,579,775		$ -		$ -		$ 3,579,775		$ 16,065,3[illegible]
Add'l Laboratory Support	3.3%	202,138	0.7%	335,304	0.0%	-	0.0%	-	8.7%	335,304	97.1%	1,494,34[illegible]
Total EM/RF/OS Laboratories		$ 2,360,207		$ 3,915,080		$ -		$ -		$ 3,915,080		$ 17,570,1[illegible]
Electronics Laboratories												
EL NEP Lab	79.0%	$ 31,839	20.0%	$ 8,061		$ -		$ -	20.0%	$ 8,061	100.0%	$ 40,3[illegible]
Electronic Packaging Labs	20.0%	2,787	5.0%	697					5.0%	697	100.0%	13,9[illegible]
Interconnects Lab	5.0%	1,327	5.0%	1,327					5.0%	1,327	100.0%	26,53[illegible]
Experimental Systems Assy Lab	10.0%	10,405	25.0%	26,012					25.0%	26,012	100.0%	104,0[illegible]
Mechanical Lab	30.0%	53,197	30.0%	53,197					30.0%	53,197	100.0%	177,3[illegible]
Optical Element Lab Lab	25.0%	16,234	75.0%	48,703					75.0%	48,703	100.0%	64,9[illegible]
Parts Test Lab	25.0%	64,242	30.0%	77,091					30.0%	77,091	100.0%	256,9[illegible]
Power Systems Lab	24.0%	31,961		-					0.0%	-	100.0%	133,1[illegible]
Printed Wiring Assy Lab	30.0%	40,605	60.0%	81,210					60.0%	81,210	100.0%	135,3[illegible]
Printed Wiring Board Lab	20.0%	69,543	70.0%	243,402					70.0%	243,402	100.0%	347,7[illegible]
Experimental Support Lab (15-01)	30.0%	36,941	30.0%	36,941					30.0%	36,941	100.0%	123,1[illegible]
Subtotal Lab Costs		$ 359,001		$ 576,619		$ -		$ -		$ 576,619		$ 1,423,4[illegible]
Microelectronics	25.2%	1,484	40.5%	2,382	0.0%	-	0.0%	-	40.5%	2,382	100.0%	5,8[illegible]
Elec R&D Lab Lab	25.2%	28,254	40.5%	45,378	0.0%	-	0.0%	-	40.5%	45,378	100.0%	[illegible]
M&L Supplies	25.2%	18,230	40.5%	29,275	0.0%	-	0.0%	-	40.5%	29,275	100.0%	[illegible]
Support to Electronics Labs	25.2%	93,750	40.5%	150,552	0.0%	-	0.0%	-	40.5%	150,552	100.0%	371,[illegible]
Depreciation	25.2%	185,678	40.5%	298,176	0.0%	-	0.0%	-	40.5%	298,176	100.0%	736,0[illegible]
Subtotal Electronics Laboratories		$ 686,485		$ 1,102,402		$ -		$ -		$ 1,102,402		$ 2,721,2[illegible]
Add'l Laboratory Support	1.7%	64,300	2.7%	103,258	0.0%	-	0.0%	-	2.7%	103,258	6.6%	256,4[illegible]
Total Electronics Laboratories		$ 750,785		$ 1,205,660		$ -		$ -		$ 1,205,660		$ 2,976,[illegible]
S&ETL Laboratories												
Acoustic Test Lab	10.0%	$ 28,164		$ -		$ -		$ -	0.0%	$ -	100.0%	$ 281,63[illegible]
Acoustic Test Cell Lab		-		-					0.0%	-	100.0%	26,10[illegible]
Central Dyn. Instrument Lab	1.0%	4,195	6.0%	25,171					6.0%	25,171	100.0%	419,52[illegible]
Centrifuge Lab		-	1.0%	134					1.0%	134	100.0%	13,36[illegible]
Data Systems Support Lab	1.0%	465	30.0%	13,937					30.0%	13,937	100.0%	46,45[illegible]
Earth Environments Lab	20.0%	31,013	20.0%	31,013					20.0%	31,013	100.0%	155,06[illegible]
Impact Mechanics Lab	11.0%	13,664	14.0%	17,391					14.0%	17,391	100.0%	124,22[illegible]
Mass Properties Lab		-	30.0%	10,596					30.0%	10,596	100.0%	35,31[illegible]
Materials Test Lab	1.0%	3,252	2.0%	6,504					2.0%	6,504	100.0%	325,19[illegible]
Mobile Data Systems Lab		-		-					0.0%	-	100.0%	
Solar/Thermal Radiation Lab	3.0%	31,330	4.0%	42,661					4.0%	42,661	100.0%	1,066,52[illegible]
Space & Thermal Environ. Lab	2.0%	9,270	42.0%	194,674					42.0%	194,674	100.0%	463,51[illegible]
Strain Gage Lab	1.0%	266	2.0%	532					2.0%	532	100.0%	26,62[illegible]
Structural Test Lab	3.0%	12,189	3.0%	12,189					3.0%	12,189	100.0%	406,29[illegible]
Thermal Vacuum Lab		-	1.0%	1,240					1.0%	1,240	100.0%	124,02[illegible]
Transducer Calibration Lab	1.0%	215	5.0%	1,079					5.0%	1,079	100.0%	21,49[illegible]

Boeing Defense and Space Group
Seattle, Washington

Rough Order Magnitude of Separately Identified Laboratory Costs
Pool 50A - Puget Sound
CY 1994

Description	Laboratory Costs: Subtotal	Taxes	General Services	Total	Major Programs: Puget Sound Usage	Puget Sound Cost	Huntsville Usage	Huntsville Cost	Houston Usage	Houston Cost	Total Programs Usage	Total Programs Cost
Tulalip Test Labs	$ 860,411	$ 3,043	$ 5,025	$ 868,479	25.0%	$ 217,120		$ -		$ -	25.0%	$ 217,120
Vibration & Shock Lab	127,890			127,890	88.2%	112,776	8.8%	11,278		-	97.0%	124,053
Subtotal Lab Costs	$ 4,402,033	$ 50,037	$ 81,655	$ 4,533,726		$ 3,329,428		$ 67,136		$ -		$ 3,396,563
Adm/Supt - ESD Support	28,799	875	2,513	32,187	73.4%	23,417	1.5%	477	0.0%	-	74.9%	24,104
Adm/Supt - Test Plng Mgmt	25,309	766	1,801	27,860	73.4%	20,459	1.5%	402	0.0%	-	74.9%	20,872
Adm/Supt - Preliminary Design	31,706	964	2,512	35,182	73.4%	25,837	1.5%	521	0.0%	-	74.9%	26,358
Adm/Supt - Aerodynamics & Design Supt	24,014	730	1,884	26,628	73.4%	19,555	1.5%	394	0.0%	-	74.9%	19,949
Adm/Supt - Test Control Automation	123,928	3,774	5,025	132,677	73.4%	97,434	1.5%	1,965	0.0%	-	74.9%	99,399
Adm/Supt - Control Systems	80,409	2,426	4,397	87,232	73.4%	64,060	1.5%	1,292	0.0%	-	74.9%	65,352
Adm/Supt - MAD/IHP/LE/RCA & Other Supt	15,974	486	1,884	18,344	73.4%	13,470	1.5%	272	0.0%	-	74.9%	13,741
Support to S&E IL Labs	1,042,621	31,453	53,390	1,127,464	73.4%	827,974	1.5%	16,696	0.0%	-	74.9%	844,670
Depreciation	1,150,876	34,987		1,185,863	73.4%	870,861	1.5%	17,560	0.0%	-	74.9%	888,421
Subtotal S&E IL Labs	$ 6,925,569	$ 126,448	$ 155,045	$ 7,207,062		$ 5,292,716		$ 106,724		$ -		$ 5,399,440
Add'l Laboratory Support	627,727	14,720	37,018	679,550	72.9%	495,749	0.3%	9,996	0.0%	-	73.1%	505,346
Total S&E IL Laboratories	$ 7,553,366	$ 141,168	$ 192,070	$ 7,886,712		$ 5,788,466		$ 116,720		$ -		$ 5,905,186
Subtotal Laboratories Prior to Add'l Support	$ 39,565,383	$ 818,627	$ 694,700	$ 41,078,710		$ 22,337,508		$ 565,003		$ 261,977		$ 23,165,288
Additional Laboratory Support												
Support to All Labs (Mgmt, Adm, IRI)	$ 1,057,036	$ 25,562	$ 25,753	$ 1,108,350								
Supt to All Labs (Cmts, Cap, LIII, U&O, DD, Sfty)	1,778,118	53,981	95,474	1,927,573								
General Purpose Test Equip Management	528,048	13,756	44,396	582,193								
Lab Operations Storage	229,376			229,376								
Total Additional Laboratory Support	$ 3,584,578	$ 93,298	$ 165,823	$ 3,847,692								
Total Laboratories (inc Add'l Lab. Support)	$ 43,150,954	$ 913,925	$ 860,523	$ 44,926,402		$ 24,029,701		$ 618,800		$ 266,518		$ 25,335,096

Description	IR&D Usage	IR&D Cost	Other Programs: Puget Sound Usage	Puget Sound Cost	Huntsville Usage	Huntsville Cost	Houston Usage	Houston Cost	Total Other Usage	Total Other Cost	Total Usage	Total Cost
Tulalip Test Labs	4.0%	$ 34,739	71.0%	$ 616,620		$ -		$ -	71.0%	$ 616,620	100.0%	$ 868,479
Vibration & Shock Lab	2.0%	2,558	1.0%	1,279		-		-	1.0%	1,279	100.0%	127,890
Subtotal Lab Costs		$ 161,348		$ 975,821		$ -		$ -		$ 975,821		$ 4,533,726
Adm/Supt - ESD Support	3.6%	1,145	21.5%	6,928	0.0%	-	0.0%	-	21.5%	6,928	100.0%	32,187
Adm/Supt - Test Plng Mgmt	3.6%	991	21.5%	5,996	0.0%	-	0.0%	-	21.5%	5,996	100.0%	27,860
Adm/Supt - Preliminary Design	3.6%	1,253	21.5%	7,571	0.0%	-	0.0%	-	21.5%	7,571	100.0%	35,182
Adm/Supt - Aerodynamics & Design Supt	3.6%	948	21.5%	5,731	0.0%	-	0.0%	-	21.5%	5,731	100.0%	26,628
Adm/Supt - Test Control Automation	3.6%	4,721	21.5%	28,557	0.0%	-	0.0%	-	21.5%	28,557	100.0%	132,677
Adm/Supt - Control Systems	3.6%	3,104	21.5%	18,775	0.0%	-	0.0%	-	21.5%	18,775	100.0%	87,232
Adm/Supt - MAD/IHP/LE/RCA & Other Supt	3.6%	653	21.5%	3,948	0.0%	-	0.0%	-	21.5%	3,948	100.0%	18,344
Support to S&E IL Labs	3.6%	40,121	21.5%	242,671	0.0%	-	0.0%	-	21.5%	242,671	100.0%	1,127,464
Depreciation	3.6%	42,201	21.5%	255,240	0.0%	-	0.0%	-	21.5%	255,240	100.0%	1,185,863
Subtotal S&E IL Labs		$ 256,480		$ 1,551,240		$ -		$ -		$ 1,551,241		$ 7,207,161
Add'l Laboratory Support	0.6%	24,024	3.8%	145,299	0.0%	-	0.0%	-	3.8%	145,299	17.5%	675,669
Total S&E IL Laboratories		$ 280,504		$ 1,696,541		$ -		$ -		$ 1,696,541		$ 7,883,231
Subtotal Laboratories Prior to Add'l Support		$ 6,007,001		$ 11,029,706		$ 75,035		$ -		$ 11,105,540		$ 41,078,710
Total Laboratories (inc Add'l Lab. Support)		$ 7,445,550		$ 12,862,018		$ 82,930		$ -		$ 11,145,756		$ 41,926,401

Recorded Tax Rate (Puget Sound)	3.040%
Recorded General Services Rate (Puget Sound)	$ 3.455

A-1-44

Boeing Defense and Space Group
Seattle, Washington

Rough Order Magnitude of Separately Identified Laboratory Costs
Pool 50J - Huntsville
CY 1994

Description	Laboratory Costs				Major Programs							
			General		Space Station		Non-Space Station		Houston		Total Program	
	Subtotal	Taxes	Services	Total	Usage	Cost	Usage	Cost	Usage	Cost	Usage	Cost
Central Laboratories												
Electromag. Environ. Effects Lab	$ 44,010			$ 44,010	50.0%	$ 22,005	50.0%	$ 22,005		$ -	100.0%	$ 44,010
External Effects Lab	46,357			46,357	50.0%	23,179	50.0%	23,179		-	100.0%	46,357
Mfg & Engr Support Lab	47,091			47,091	65.0%	30,609	35.0%	16,482		-	100.0%	47,091
Electical Power/Electronic Lab	15,648			15,648	33.3%	5,216	66.7%	10,432		-	100.0%	15,648
Thermal Control Systems Lab	34,841			34,841	50.0%	17,421	50.0%	17,421		-	100.0%	34,841
Subtotal Lab Costs	$ 187,947	$ -	$ -	$ 187,947		$ 98,429		$ 89,518		$ -		$ 187,947
Central Laboratories Labor & Non-Labor	42,924	152	2,464	45,540	52.4%	23,850	47.6%	21,691	0.0%	-	100.0%	45,540
Central Laboratories IICS Computing (MPJ)	7,359			7,359	52.4%	3,854	47.6%	3,505	0.0%	-	100.0%	7,359
Depreciation (50J, MPJ)	898,846	3,236		902,082	52.4%	472,426	47.6%	429,655	0.0%	-	100.0%	902,082
Subtotal Central Laboratories	$ 1,137,076	$ 3,388	$ 2,464	$ 1,142,928		$ 598,559		$ 544,369		$ -		$ 1,142,928
Add'l Laboratory Support	75,682	270	1,013	76,964	22.5%	44,502	20.4%	40,473	0.0%	-	42.9%	84,976
Total Central Laboratories	$ 1,212,758	$ 3,658	$ 3,477	$ 1,219,892		$ 643,062		$ 584,842		$ -		$ 1,227,904
Analytical Chemistry/Microbiology												
Analyt. Chem/Microbiology Lab	$ 908,924	$ 2,437	$ 57,496	$ 968,857	100.0%	$ 968,857		$ -		$ -	100.0%	$ 968,857
Depreciation (50J, MPJ)	549,921	1,980		551,900	100.0%	551,900	0.0%	-	0.0%	-	100.0%	551,900
Subtotal Analytical Laboratories	$ 1,458,845	$ 4,417	$ 57,496	$ 1,520,758		$ 1,520,758		$ -		$ -		$ 1,520,758
Add'l Laboratory Support	97,098	352	23,629	121,079	57.1%	113,067	0.0%	-	0.0%	-	57.1%	113,067
Total Analytical Chemistry/Microbiology	$ 1,555,943	$ 4,769	$ 81,125	$ 1,641,837		$ 1,633,825		$ -		$ -		$ 1,633,825
Subtotal Labs. Prior to Add'l Support	$ 2,595,921	$ 7,805	$ 59,960	$ 2,663,686		$ 2,119,317		$ 544,369		$ -		$ 2,663,686
Support To All Huntsville Labs	$ 172,780	$ 622	$ 24,641	$ 198,043								
Total Laboratories (inc Add'l Support)	$ 2,768,701	$ 8,427	$ 84,601	$ 2,861,729		$ 2,276,887		$ 584,842		$ -		$ 2,861,729
Recorded Tax Rate (Huntsville)	0.360%											
Recorded General Services Rate (Huntsville)	$ 4.518											

Boeing Defense and Space Group
Seattle, Washington

Rough Order Magnitude of Separately Identified Laboratory Costs
Fuel MPA - Puget Sound
CY 1996

Description	Laboratory Costs				Major Programs								IR&D		Other Programs								Total Other		Total	
					Puget Sound		Huntsville		Houston		Total Programs				Puget Sound		Huntsville		Houston							
	Subtotal	Taxes	General Services	Total	Usage	Cost	Usage	Cost	Usage	Cost	Usage	Cost	Usage	Cost	Usage	Cost	Usage	Cost	Usage	Cost	Usage	Cost	Usage	Cost
Flight Technology Laboratories																								
Communications Labs	$ 197	$ 6	$ -	$ 203	40.0%	$ 81		$ -		$ -	40.0%	$ 81	20.0%	$ 41	40.0%	$ 81		$ -		$ -	40.0%	$ 81	100.0%	$ 203
Computer Image Generation Labs	21,772	660	2,512	24,895	40.0%	9,958		-		-	40.0%	9,958	20.0%	4,979	40.0%	9,958		-		-	40.0%	9,958	100.0%	24,895
VAXC Computer Systems Labs	27,965	850	2,512	31,328	40.0%	12,531		-		-	40.0%	12,531	20.0%	6,266	40.0%	12,531		-		-	40.0%	12,531	100.0%	31,328
Electronic Subsys, Integration Lab	16,183	492	3,141	19,816		-		-		-	0.0%	-	90.0%	17,834	10.0%	1,982		-		-	10.0%	1,982	100.0%	19,816
Flight Controls & Simulation Lab	93,957	2,856	9,422	106,235	10.0%	10,624		-		-	10.0%	10,624	50.0%	53,118	40.0%	42,494		-		-	40.0%	42,494	100.0%	106,235
Visual Simulation Computer Labs	233,272	7,107	21,956	262,235	40.0%	104,894		-		-	40.0%	104,894	15.0%	39,335	45.0%	118,006		-		-	45.0%	118,006	100.0%	262,235
Subtotal Lab Costs	$ 393,396	$ 11,971	$ 38,943	$ 444,711		$ 138,088		$ -		$ -		$ 138,088		$ 121,572		$ 185,051		$ -		$ -		$ 185,051		$ 444,711
Depreciation	1,864,666	56,686		1,921,352	31.0%	596,601	0.0%	-	0.0%	-	31.1%	596,601	27.3%	525,243	41.6%	799,506	0.0%	-	0.0%	-	41.6%	799,506	100.0%	1,921,352
Subtotal Flight Technology Laboratories	$ 2,258,462	$ 68,657	$ 38,943	$ 2,366,063		$ 734,688		$ -		$ -		$ 734,688		$ 646,815		$ 984,557		$ -		$ -		$ 984,557		$ 2,366,063
Add'l Laboratory Support	541,099	14,809	2,860	558,767	13.0%	173,046	0.0%	-	0.0%	-	13.0%	173,046	10.2%	132,702	20.8%	232,436	0.0%	-	0.0%	-	20.8%	232,436	48.3%	558,584
Total Flight Technology Laboratories	$ 2,799,561	$ 83,466	$ 41,803	$ 2,924,830		$ 908,135		$ -		$ -		$ 908,135		$ 779,519		$ 1,216,993		$ -		$ -		$ 1,216,993		$ 2,924,646
Physics Laboratories																								
Boeing Radiation Effects Lab	$ 12,835	$ 390	$ 1,256	$ 14,481	35.0%	$ 5,068	17.5%	$ 2,534	17.5%	$ 2,534	70.0%	$ 10,137	10.0%	$ 1,448	20.0%	$ 2,896		$ -		$ -	20.0%	$ 2,896	100.0%	$ 14,481
Industrial Computed Tomography Lab	26,490	805	1,256	28,552	45.8%	13,086	4.2%	1,190		-	50.0%	14,276	20.0%	5,710	30.0%	8,565		-		-	30.0%	8,565	100.0%	28,552
Subtotal Lab Costs	$ 39,325	$ 1,195	$ 2,512	$ 43,033		$ 18,155		$ 3,724		$ 2,534		$ 24,413		$ 7,158		$ 11,462		$ -		$ -		$ 11,462		$ 43,033
Misc MIPs & Physics S/W Support	962	29	-	991	42.2%	418	8.7%	86	5.9%	58	56.7%	562	16.6%	165	26.6%	264	0.0%	-	0.0%	-	26.6%	264	100.0%	991
Depreciation (inc Material Laboratory)	130,907	4,588		135,495	42.2%	65,680	8.7%	13,456	5.9%	9,117	56.7%	88,253	16.6%	25,866	26.6%	41,416	0.0%	-	0.0%	-	26.6%	41,416	100.0%	135,495
Subtotal Physics Laboratories	$ 171,194	$ 5,812	$ 2,512	$ 179,519		$ 84,172		$ 17,266		$ 11,710		$ 113,188		$ 33,190		$ 53,141		$ -		$ -		$ 53,141		$ 179,519
Add'l Laboratory Support	45,808	1,234	184	47,246	1.7%	19,872	0.4%	4,076	0.2%	2,774	2.3%	26,722	0.7%	7,035	1.1%	12,546	0.0%	-	0.0%	-	1.1%	12,546	4.1%	47,103
Total Physics & Material Laboratories	$ 217,002	$ 7,046	$ 2,697	$ 226,765		$ 104,044		$ 21,342		$ 14,484		$ 139,909		$ 41,025		$ 65,687		$ -		$ -		$ 65,687		$ 226,621
EM/IR/EOS Laboratories																								
Antenna Labs	$ 6,532	$ 199	$ 628	$ 7,359	95.0%	$ 6,991		$ -		$ -	95.0%	$ 6,991		$ -	5.0%	$ 368		$ -		$ -	5.0%	$ 368	100.0%	$ 7,359
Control Signal Proc Labs	26,127	794	2,512	29,434	40.0%	11,773		-		-	40.0%	11,773	40.0%	11,773	20.0%	5,887		-		-	20.0%	5,887	100.0%	29,434
EO/IR Sensors Lab	6,532	199	628	7,359	20.0%	1,472		-		-	20.0%	1,472	60.0%	4,415	20.0%	1,472		-		-	20.0%	1,472	100.0%	7,359
Precision Optical Meas Lab	6,532	199	628	7,359	50.0%	3,679		-		-	50.0%	3,679		-	50.0%	3,679		-		-	50.0%	3,679	100.0%	7,359
RCS IDC Labs	139,617	4,244	11,936	155,796	75.0%	116,847		-		-	75.0%	116,847	20.0%	31,159	5.0%	7,790		-		-	5.0%	7,790	100.0%	155,796
RCS ESC Lab	1,227	33	-	1,780	50.0%	890		-		-	50.0%	890		-	50.0%	890		-		-	50.0%	890	100.0%	1,780
Sensor Seeker Integ Lab (SSIL)	13,065	357	1,256	14,718		-		-		-	0.0%	-	25.0%	3,680	75.0%	11,039		-		-	75.0%	11,039	100.0%	14,718
Subtotal Lab Costs	$ 200,032	$ 6,084	$ 17,587	$ 223,803		$ 141,652		$ -		$ -		$ 141,652		$ 51,027		$ 31,124		$ -		$ -		$ 31,124		$ 223,803
VHF Capital S/W Support	375	11		386	63.3%	243	0.0%	-	0.0%	-	63.3%	243	22.8%	88	13.9%	54	0.0%	-	0.0%	-	13.9%	54	100.0%	386
Depreciation	1,388,865	42,221		1,431,086	63.3%	905,727	0.0%	-	0.0%	-	63.3%	905,727	22.8%	326,289	13.9%	199,070	0.0%	-	0.0%	-	13.9%	199,070	100.0%	1,431,086
Subtotal EM/IR/EOS Laboratories	$ 1,589,272	$ 48,317	$ 17,587	$ 1,655,276		$ 1,047,674		$ -		$ -		$ 1,047,674		$ 377,405		$ 230,198		$ -		$ -		$ 230,198		$ 1,655,276
Add'l Laboratory Support	380,793	10,421	1,791	392,506	21.4%	247,336	0.0%	-	0.0%	-	21.4%	247,336	7.7%	89,098	4.7%	54,345	0.0%	-	0.0%	-	4.7%	54,345	33.8%	390,780
Total EM/IR/EOS Laboratories	$ 1,970,065	$ 58,738	$ 19,379	$ 2,047,781		$ 1,295,010		$ -		$ -		$ 1,295,010		$ 466,503		$ 284,543		$ -		$ -		$ 284,543		$ 2,046,056
Electronics Laboratories																								
Power Systems Lab	$ 9,533	$ 290	$ 628	$ 10,451	76.0%	$ 7,943		$ -		$ -	76.0%	$ 7,943	24.0%	$ 2,508		$ -		$ -		$ -		$ -	100.0%	$ 10,451
Subtotal Lab Costs	$ 9,533	$ 290	$ 628	$ 10,451		$ 7,943		$ -		$ -		$ 7,943		$ 2,508		$ -		$ -		$ -		$ -		$ 10,451
Electronics Prototype	19,966	607	1,884	22,457	76.0%	17,068	0.0%	-	0.0%	-	76.0%	17,068	24.0%	5,390	0.0%	-	0.0%	-	0.0%	-	0.0%	-	100.0%	22,457
Depreciation	66,302	2,016		68,318	76.0%	51,921	0.0%	-	0.0%	-	76.0%	51,921	24.0%	16,396	0.0%	-	0.0%	-	0.0%	-	0.0%	-	100.0%	68,318
Subtotal Electronics Laboratories	$ 95,801	$ 2,912	$ 2,512	$ 101,226		$ 76,932		$ -		$ -		$ 76,932		$ 24,294		$ -		$ -		$ -		$ -		$ 101,226

Boeing Defense and Space Group
Seattle, Washington

Rough Order Magnitude of Separately Identified Laboratory Costs
Pool MPA - Puget Sound
CY 1994

Description	Laboratory Costs				Major Programs								Other Programs							
					Puget Sound		Huntsville		Houston		Total Programs		IR&D		Puget Sound		Huntsville		Houston		Total Other		Total	
	Subtotal	Taxes	General Services	Total	Usage	Cost	Usage	Cost	Usage	Cost	Usage	Cost	Usage	Cost	Usage	Cost	Usage	Cost	Usage	Cost	Usage	Cost
Add'l Laboratory Support	$ 22,953	$ 628	$ 184	$ 23,765	8.6%	$ 18,162	0.0%	$ -	0.0%	$ -	8.6%	$ 18,162	0.5%	$ 5,735	0.0%	$ -	0.0%	$ -	0.0%	$ -	2.1%	$ 25,897
Total Electronics Laboratories	$ 108,756	$ 3,541	$ 2,697	$ 124,991		$ 95,094		$ -		$ -		$ 95,094		$ 30,030		$ -		$ -		$ -		$ 125,124
S&T 10. Laboratories																						
Acoustic Test Lab	$ 3,110	$ 95	$ -	$ 3,205	90.0%	$ 2,884		$ -		$ -	90.0%	$ 2,884	10.0%	$ 320		$ -		$ -		$ -	100.0%	$ 3,204
Control Dyn Instrument Lab	137,914	4,801	14,447	177,161	84.5%	149,782	8.5%	14,978		-	93.0%	164,760	1.0%	1,772	6.0%	10,630		-	6.0%	10,630	100.0%	177,162
Solar/Thermal Radiation Lab	24,895	757	2,512	28,164	94.0%	26,474		-		-	94.0%	26,474	2.0%	563	4.0%	1,127		-	4.0%	1,127	100.0%	28,164
Structural Test Lab	36,140	1,099	3,141	40,379	94.0%	37,956		-		-	94.0%	37,956	3.0%	1,211	3.0%	1,211		-	3.0%	1,211	100.0%	40,378
Subtotal Lab Costs	$ 222,059	$ 6,751	$ 20,100	$ 248,909		$ 217,097		$ 14,978		$ -		$ 232,073		$ 3,867		$ 12,968		$ -		$ 12,968		$ 248,908
Test Control Automation	70,139	648	1,256	23,038	87.2%	20,088	6.0%	1,381	0.0%	-	93.2%	21,469	1.6%	358	5.2%	1,201	0.0%	-	0.0%	-	5.2%	1,201	100.0%	23,038
Depreciation	294,960	8,967		303,927	87.2%	265,083	6.0%	18,289	0.0%	-	93.2%	283,371	1.6%	4,729	5.2%	15,834	0.0%	-	0.0%	-	5.2%	15,834	100.0%	303,934
Subtotal S&T 10. Labs	$ 538,178	$ 16,361	$ 21,356	$ 575,895		$ 502,291		$ 34,655		$ -		$ 536,945		$ 8,946		$ 30,003		$ -		$ 30,003		$ 575,895
Add'l Laboratory Support	128,941	3,329	1,968	134,038	90.3%	118,582	0.7%	8,181	0.0%	-	18.8%	126,763	0.2%	2,112	0.6%	7,083	0.0%	-	0.0%	-	0.6%	7,083	11.8%	133,845
Total S&T 10. Laboratories	$ 667,119	$ 19,889	$ 23,324	$ 709,933		$ 620,873		$ 42,836		$ -		$ 663,708		$ 11,058		$ 37,086		$ -		$ 37,086		$ 711,852
Subtotal Laboratories Prior to Add'l Support	$ 4,673,007	$ 142,059	$ 82,912	$ 4,897,978		$ 2,443,753		$ 51,930		$ 11,750		$ 2,509,427		$ 1,090,652		$ 1,297,899		$ -		$ 1,297,899		$ 4,897,978
Additional Laboratory Support																						
Support to All Labs	$ 808,478	$ 24,100		$ 832,578																		
General Purpose Test Equip Management	86,631	2,630	$ 5,653	94,938																		
Laboratory Operations (M/L)	224,464	3,907	435	228,806																		
Total Additional Laboratory Support	$ 1,119,593	$ 30,641	$ 6,088	$ 1,156,322																		
Total Laboratories (inc Add'l Lab. Support)	$ 5,792,600	$ 172,700	$ 89,000	$ 6,054,300		$ 3,013,155		$ 64,170		$ 14,514		$ 3,101,856		$ 1,348,135		$ 1,601,309		$ -		$ 1,601,309		$ 6,051,300
Recorded Tax Rate (Puget Sound)	3.040%																					
Recorded General Services Rate (Puget Sound)	$ 3.455																					

Boeing Defense and Space Group
Seattle, Washington

Results of NASA/DPRO Technical Evaluation of Computing Development Projects
CY 1994

Sub	W/O Description	Labor	Other	Total
Computing Development Applicable to All per Joint Technical				
Seattle Projects				
LP01	Mil-Spec Compliance	$ 323	$ 267	$ 590
5574	Single Event Effects Database	22,538	18,187	40,725
5528	S/W Defect Trend Analysis	60	48	109
5748	S/W Defect Trend Analysis	45,840	36,703	82,543
5820	R&D Planning	43,068	34,604	77,672
Subtotal Seattle Projects		111,829	89,810	201,639
Huntsville Projects				
1613	MultiGraph Tool Set	20,384	120,211	140,595
Total CD Applicable to All		132,213	210,021	342,234
Computing Development Applicable to All but Houston				
5517	Stress Workstation	150,169	121,982	272,151
5517	Durability/Damage -	29,987	24,534	54,521
5561	Signature Code Enhancement	114,022	94,308	208,330
5528	Core S/W Eng Environments	3,495	2,760	6,255
5748	Core S/W Eng Environments	93,171	74,451	167,622
5528	ADA Compiler	1,519	1,199	2,718
5748	ADA Compiler	68,335	54,752	123,087
5542	Air to Surface Simulation	97,348	80,234	177,582
5784	Air to Surface Simulation	76,037	62,035	138,072
5567	IR/Visual Signature Processor	28,835	23,445	52,280
1722	DM2000 (Phil)/Common Core	5,791	4,891	10,682
1723	DM2000 (Phil)/Common Core	124	101	225
5812	WIRS Replacement/Common Core	263,987	222,340	486,327
5812	DM2000/Common Core Systems	585,716	490,895	1,076,611
5542	DIS Gateway	14,008	11,755	25,763
5784	DIS Gateway	10,222	8,577	18,799
5814	CAD/CAM Workstation Integ	74,012	60,319	134,331
0000	RAVE-AY6	909	749	1,658
5748	RAVE-AY6	5,471	4,484	9,955
5760	Auto of Data Access/Citis	62,041	49,761	111,802
5210	Automated Chagne Processing	57,448	47,223	104,671
5810	Auto Weld Anomaly Detection	15,283	12,855	28,138
Total CD Applicable to All but Houston		1,757,930	1,453,651	3,211,581
Total Computing Development		$ 1,890,143	$ 1,663,672	$ 3,553,815

Boeing Defense and Space Group
Seattle, Washington

Results of NASA/DPRO Technical Evaluation of Computing & Automation Tasks/Processes
CY 1994

Serial	Description	Tasks/Processes Applicable To Space Station-Houston	
		Yes	No
MODSIM	Initiate development of multi-year Modeling and Simulation initiative	$	$39,607
100000	Develop and implement plans and strategies for D&SG Eng Computing Activities. Provide & be functionally responsible for personnel required by programs for computing support. Represent D&SG on Corporate Engineering Computing related committees. Be responsible for D&SG Engineering Computing development and capital planning.	580,189	
NETWRK	Provide technical support & system mgmt of general purpose Eng computing resources used for computer aided design, analysis, documentation and data management. Includes hardware, software and applications support. Represent D&SG engineering in company computing network activity. Includes development of network requirements to meet engineering performance and functionality needs, deciding building wiring priorities, and reviewing networking cost plans.		904,494
REDUCE	Collect, evaluate, and manage Pool 50 computing cost data to determine effective cost reduction actions. Covers both BCS and D&SG computing labor and non-labor budgets, plus the management and disposition of Pool 50 computing inventory of equipment and software. Specific actions include, but are not limited to, transfer and surplus of equipment, consolidation of assets, reduction of labor and replacement of high cost assets.	148,858	
CASAPD	Provide software modifications and software deficiency corrections for CASA (Configuration Accountability System-Aerospace) for the PCBS and PGPS platforms. Activities include the: definition and review of specifications with the requesting and affected CASA user org(s); review and approval and prioritization by the CASA change board; design, development and test of the changes to CASA; migration of the changes to the production systems on PCBS and PGPS; tracking and reporting of changes and deficiency corrections.		398,057
DMMAIN	Sustaining of the DM2000 common system applications and common client/server core utility software. Includes troubleshooting, corrections(bug fixes), minor extensions to existing baseline software modules, as well as, DM2000 application developer support.		185,783
EDCARS	No W/A. Drawing Data Mgmt System Support		4,414
GVIS00	Provide support to the D&SG Graphics Visualization Integration System computing environment including but not limited too: Architecture development and documentation; Software development and documentation; Procedure and process development and documentation.		366,715
PDMS00	No W/A. Drawing Data Mgmt System Support		6,007
WSMAIN	System software maintenance on baseline WS2000 as defined by the Functional Custodian. Software engineering tasks to include: All application software changes to include minor/major modes and broke code; Application software consultation and program management; Application software documentation and configuration management.		117,493
100000	Provide computing direction, management and control to ensure the technical, cost, schedule achievement of assigned Engineering Computing tasks and the effective use of Engineering IRM resources. Would include but is not limited too: Providing budget, cost and resource control support to the IRM organization, including administration of dedicated equipment, external computing resources, internal cost allocations and labor supporting computing resources. Provide sustaining computing support to computing systems and applications.		2,896,154

Boeing Defense and Space Group
Seattle, Washington

Results of NASA DPRO Technical Evaluation of Computing & Automation Tasks/Processes
CY 1994

Serial	Description	Tasks/Processes Applicable To Space Station-Houston Yes	No
2G6052	No W/A.		13,995
200000	Migration of the systems in the PCBS logical partition of Philadelphia IBM mainframe systems to the PGPS LPAR. This requires conversion of JCL, scheduling and operations software.		7,190
CADCAE	Provide support to D&SG Engineering which include: Support CAD/CAE Process and System Planning and Implementation, Consultation and System Troubleshooting. Establish and Maintain CAD/CAE Standards and User Libraries. Support CAD/CAE Hardware/Software Validations/Evaluations. Support Resource Computing Centers. Provide incidental support to H/W systems and applications.		638,539
CADCAM	Provide computing support and solutions for all aspects of CAD-CAE-CAM. Support includes application support & integration, technical analysis and cost visibility.		101,989
CADDEV	Provide overall program development, integration and maintenance of new techniques and tools for CAD/CAM workstations. Inter CAD/CAE/CAM data conversion/translation Catia interfaces with other applications Evaluate available CAD interface tools Unix workstation applications Provide incidental support to CAD/CAE/CAM workstation development Apply conventional and advanced S/W techniques for automation of Eng. & Mfg. processes.		468,411
CADGRF	Provide maintenance and development support to the DI2000 and XEGG graphics software. Provide general support activities for the CAD/CAE/CAM organization, which include: Hardware and Software Allocation Move and Change Coordination Administration Tasks/Saico Administration/Security Briefings		400,587
CCCOHO	Provide supervisory and clerical support for the CAD/CAE/CAM organization(9-5814).		773,071
EngGSCI	Scientific & Engineering Computing Analyst(s) Supporting D&SG Engineering Resource Pool: User problem resolution User consultation Application development support CAD/CAE/CAM, Graphics, Electromagnetics, and other engineering applications (Development, Maintenance, Enhancements, Analysis, Etc.) Hardware and Software troubleshooting Software upgrades and installation Computing environment performance analysis, monitoring and reporting Computing environment security monitoring and Focal Point Network troubleshooting Technical interface for vendor maintenance Direct the account administration and maintenance activities Computing environment configurations/installations Future computing plans and requirements File management and database consultation/support Backup and recovery planning and monitoring Disaster recovery planning and implementation Intrasystems communication facility implementation and maintenance Operating system consultation Computing environment operation automation (Scripts, Macros, Procedures, Etc.) Other incidental activities in support of the D&SG Engineering Resource Pool	315,904	
HELIWG	Provide computing system analysis, requirement gathering and implementation to support all aspects of Heliwing program.		9,463

Boeing Defense and Space Group
Seattle, Washington

Results of NASA/DPRO Technical Evaluation of Computing & Automation Tasks/Processes
CY 1994

Serial	Description	Tasks/Processes Applicable To Space Station-Houston Yes	No
100000	Provide supervision and clerical support to the Electronic Computing Support organization		594,186
200000	Implement and support an Electronics Design Automation(EDA) process and system. Specific tasks for 1994 are: 1. Planning and Administration- Provide short-and long-range organizational planning. Coordinate with D&SG planning efforts (budgets, etc.) and provide required organizational input. 2. System Deployment and Support- Manage hardware and software resources. Provide consultation to users for automation implementation planning. Implement and maintain policies for execution of system-related activities. Perform system administration, including vendor software installation and checkout, software and utility compatibility testing, system upgrades, preventative maintenance, system backups, and troubleshooting system problems. 3. Mentor Reference Data- Develop and implement library requirements, policies, and procedures. Provide and maintain the libraries of symbols, functional models, and physical models for design and analysis tools. Implement a library management system. 4. Functional Design Tool Consultation- Develop simulation plans. Provide user consultation and training. Implement interfaces between functional design tools and EDA Mentor system. Develop procedures for and manage use of compute-intensive simulation facility. 5. EDA System Software and Consultation- Implement, maintain and support Mentor-based functional design process simulation tools, and external interfaces. Provide system integration for functional, physical, wiring, and documentation tools. Develop EDA software methodology and supply software to support development activities. 6. Physical Design Software and Consultation- Implement, maintain and support Mentor-based physical design tools and procedures for PWB/PWA/Hybrid design and interfaces to manufacturing. Provide user training and consultation support translation between Intergraph and Mentor. Maintain Intergraph-based physical design tools. Maintain and enhance software for tracking work-in-process. Implement, integrate and maintain EDA-developed and vendor software for operation of plotting equipment. 7. Electronic Packaging Software and Consultation- Implement, maintain and support electronics packaging design tools. 8. Wiring Design Software and Consultation- Implement, maintain and support Vendor-based and Boeing developed wiring design tools.		2,659,367
100000	Support process development and validation through out D&SG programs and R&E Divisions.	209,780	
	Other	66,355	
Total		$1,321,086	$10,585,522

C. J. Walker
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Cost Policy, Acctg & Property Mgmt
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Audit Report No. 4381-95C19200004

ATTACHMENT
9 Pages

May 19, 1995
9-9634-DB/DJ895-045

To: Defense Contract Audit Agency - Western Region
Boeing Defense & Space Group - Puget Sound
c/o The Boeing Company
P. O. Box 6240, M/S 3C-50
Kent, Washington 98064-6240

BOEING

Attention: J. N. Heyel
Resident Auditor

Subject: 1994 NASA CAS 418 - Draft Audit Report

Reference: Letter, April 26,1995, J. N. Heyel to R. L. Hessler, Draft Audit Report - request for comments (DCAA Audit Report No. 4381-95C19200004)

The following comments are in response to your draft audit report and the subsequent meeting regarding the NASA CAS 418 issue. Engineering labs, computing cost centers, taxes and general services were discussed through the issue resolution process, however, many of our comments are not represented in the draft audit report. Rather than reiterate many of the points we addressed through the issue resolution process, we have enclosed copies of our responses. We will discuss laboratory costs in further detail, as well as the following new issues: computing and automation, computing development projects, relocation and materiality.

Overview

Rather than evaluating the CAS 418 standard in its total context, the audit report keys on individual elements of compliance with the standard. CAS 418.50(b)(1) identifies the interrelationship of cost elements within a pool as a criterion for homogeneity, however, the draft audit report ignores this issue to determine homogeneity. The engineering pool (50) base represents the engineering community that has access to or utilizes resources which include the cost elements identified in the draft audit report. The audit report has not questioned whether the laboratories, taxes and general services cost elements are engineering resources or not. We believe that these cost elements do represent engineering resources and that they have the same or similar beneficial relationship to the pool's base as the other cost elements in the pool. DCAA has not established that these cost elements do not represent engineering resources. We expressed this position in the issue resolution process (page 1 para. 3), but it has been omitted from the draft audit report.

> CAS 418.50(b)(1)
> An indirect cost pool is homogeneous if each significant activity whose costs are included therein has the same or similar beneficial or causal relationship to cost objectives as the other activities whose costs are included in the cost pool.

The issues addressed in this audit report focus on a single contract. When evaluating the overall equity of an overhead pool one must understand the context of the CAS Board's Statement of Objectives, Policies and Concepts relating to the flow of costs which states, "overhead pools will distribute their costs using an allocation base that measures the total activity of a period." Resource pools exist to support and provide resources to a broad based activity. Individual elements of costs are collected in a overhead pool because of the interrelationships that they have in supporting the overall activity. These principles must be understood and taken into consideration when evaluating homogeneity.

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Laboratory Costs

Central labs assigned to the engineering resource pool are general purpose labs beneficial to the engineering community. Laboratories identified as Program Labs are assigned to the individual product pool that the lab supports. Although NASA is supplying some lab capabilities for the Space Station contract, the situation is not dissimilar to other programs where DoD has Government labs and makes that capability available to Boeing D&SG to perform specific contracts. If we attempted to allocate every general purpose activity discretely we would lose the ability to offer the full services and resources of the enterprise. Boeing D&SG is in the business of systems integration contracting which requires the company's full complement of resources and services. Space Station is such a contract.

The audit report has taken the position that resource consumption of the engineering labs can be specifically identified with cost objectives. As we stated on the issues resolution form (page 5), this is an incorrect assumption because it does not recognize the benefit other programs receive from completed test results that are available to the engineering community but are performed only once for a single program. In addition, the length of time required for each test, the number of tools used in each lab, and the amount of time the lab is used for that program are not represented in the data used in the audit analysis. The very unavailability of the data serves to show the impracticability of measurement of consumption or output for allocating engineering lab costs to individual cost objectives.

The draft audit report does not list the different allocation bases that CAS 418.40(c)(2) identifies and further clarifies in CAS 418.50(e) when individual circumstances are considered. It begins with consumption if available and practical. If not, it moves to the basic unit of output, and then if consumption or output cannot be measured practically, to a surrogate that varies in proportion to the services rendered. Through the issue resolution process (page 5) we have explained that consumption or output is not always measurable to a specific contract, and therefore, not practical. We believe that the current engineering pool base is appropriate.

The resources within the engineering pool are available to the entire engineering community supported through the base. Geographical location is neither a barrier nor a deterrent to the use of resources within the pool. The audit report ignores the duplication of activity that occurs when aligning company resources by geographical location.

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Computing & Automation and Computing Development projects

The technical review of the MP computing cost center was flawed because it lacked any written substance to support the matrix. We could not comment on the level of support in these areas because we do not collect costs at that level, there is no business requirement to do so and we would incur additional costs to collect information not currently required. To ask engineering management to estimate the level of support or benefit to existing contracts would be speculative and create data that cannot be substantiated. Engineering management is asked to manage tasks and areas of responsibility at the overhead and computing cost center levels only. There is neither a contractual nor regulatory requirement to identify or collect costs at lower levels.

The costs included in Computing & Automation and Computing Development projects are overhead functions. They represent general purpose resources that are available to the engineering community. Only when resources are program specific and unique are the costs of those activities collected in product pools.

We believe the intent of CAS 418.50(f) was to provide a vehicle that would be used as a tool during contract negotiations. The audit report implies that this paragraph would be used at any time during contract performance which we believe to be inappropriate and unintended. In addition, we believe the amount in question to be immaterial as a percentage of the total indirect pool expense. The audit report identifies only 1.6 percent of the computing cost center expenses for possible adjustments. Consequently, we do not consider it appropriate to establish a special allocation in this case.

> CAS 418.50(f)
> Where a particular cost objective in relation to other cost objectives receives significantly more or less benefit from an indirect cost pool than would be reflected by the allocation of such costs using a base pursuant to paragraphs (d) and (e) of this section, the Government and contractor may agree to a special allocation from that indirect cost pool to the particular cost objective commensurate with the benefit received. (emphasis added)

Relocation expense

DCAA considered our 1993 Accounting change that created Home Office pool VR to be noncompliant with CAS 418.40(c) because it did not result in those costs being allocated to cost objectives in reasonable proportion to the beneficial or causal relationship. If we were to change pool VR as DCAA proposed, it would have an adverse impact to the Space Station contract because of the substantial relocation activity that occurred in Houston from 1993 and on. This change alone would overshadow the amounts that the audit report proposes we adjust to the NASA Space Station contract. These are representative of certain aspects of the accounting system which emphasize the need to understand the overall system and the inherent dangers of evaluating an impact on a single cost objective. Boeing D&SG believes this practice and others discussed above are CAS compliant and consistent with the ongoing business concept. The availability of experienced personnel and their home location varies over time. Management has the responsibility to provide these resources to all locations within Boeing D&SG. Therefore, it is in the best interest of the company to combine such costs in a single Home Office pool.

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Materiality

Notwithstanding the above issues, we do not believe the results of the cost analysis presented in the audit report are material. We believe the amount in the audit analysis for computing and engineering labs to be immaterial as a percentage of the total indirect pool expense. The audit report identifies only 1.6 percent ($0.5M/$31.1M) of the computing cost center expenses for possible adjustment and 2.5 percent ($4.2M/$170M) of the engineering laboratory costs. When taken one step further, the audit report proposes adjusting only 0.7 percent ($1.5M/$201.1M) of the total costs of the engineering pool and computing cost center between Government and non-Government contracts. In addition, the amounts in the audit analysis for tax and general services offset one another.

Materiality must be looked at from the perspective of the Government in whole. We evaluate impacts in terms of the balance of costs between Government and non-Government contracts. Although offsets between Government agencies may be of interest to the Government, we view the Government as a single customer. Accordingly, CAS views interagency offsets as an internal Government issue, not as a contractor issue. Using the assumptions within the draft audit report, when interagency amounts are evaluated, we consider the changes which would result from the DCAA audit analysis to be immaterial.

Questions regarding this response may be directed to D. J. Bryant on 773-6274.

C. J. Walker
9-9100, 80-FT
773-0113

Enclosure

Enclosure to
9-9034-DB/DJB95-045

March 10, 1995
DCAA NASA 1994 CAS 418

Tax allocation
Response to Issue/Resolution No. 2

- The type of taxes collected in the respective tax pools represent state and local taxes. The method that local taxing jurisdictions chose to collect their taxes varies but these taxes are collected by municipalities for the purpose of providing services to the communities which they serve. The nature of the taxes is the same it is only the methodology for collecting said taxes that varies.

- To determine homogeneity, both the nature and allocation of costs must be addressed in the pool where the costs are initially incurred (i.e., the respective tax pools). CAS 418 has two criteria for determining homogeneity, and only one of the criteria needs to be met for the pool to be deemed homogeneous. The first criteria is whether "each significant activity whose costs are included in the cost pool has the same or similar beneficial or causal relationship to cost objectives as the other activities whose costs are included in the cost pool." The second criteria is that "if the allocation of the costs of the activities included in the cost pool result in an allocation to cost objectives which is not materially different from the allocation that would result if the costs of the activities were allocated separately." It is not a CAS 418 issue to look at individual allocations of a cost pool's base (i.e., unload costs must be reviewed for CAS 418 purposes in their respective secondary pool).

- The issue resolution process discusses both the nature and the amount of taxes recorded in the respective tax pools. Although a detailed worksheet is provided with the issue/resolution form, no explanation is given as to the difference in nature that is mentioned. Therefore, we can not comment on this issue until it is further identified. As we discussed with the auditor who submitted the initial issue resolution request on the allocation of taxes, the issue described in your form does not pertain to the similarity of costs within the tax pool which is a basic requirement for determining homogeneity in CAS 418. The audit worksheet only performed one of the two tests required by CAS 418.50(b)(2) to determine that a pool is not homogeneous. That single test was not performed properly, it was based solely on the allocation to individual customer specific cost objectives in the receiving pool rather than looking at all cost objectives within the tax pools.

Submitted by: Dan Bryant 9-9034 8A-70 773-6274

March 10, 1995
DCAA NASA 1994 CAS 418

General Services allocation
Response to Issue/Resolution No. 3

- The type of general services provided collected in the respective general services pools represent services provided to D&SG employees.. The nature of the general services is the same although the method of providing those services may vary from location to location.

- To determine homogeneity, both the nature and allocation of costs must be addressed in the pool where the costs are initially incurred (i.e., the respective general services pools.) CAS 418 has two criteria for determining homogeneity, and only one of the criteria needs to be met for the pool to be deemed homogeneous. The first criteria is whether "each significant activity whose costs are included in the cost pool has the same or similar beneficial or causal relationship to cost objectives as the other activities whose costs are included in the cost pool." The second criteria is that "if the allocation of the costs of the activities included in the cost pool result in an allocation to cost objectives which is not materially different from the allocation that would result if the costs of the activities were allocated separately." It is not a CAS 418 issue to look at individual allocations of a cost pool's base (i.e., unload costs must be reviewed for CAS 418 purposes in their respective secondary pools prior to allocation).

- The issue resolution process discusses both the nature and the amount of general services costs recorded in the respective pools. Although a detailed worksheet is provided with the issue/resolution form, no explanation is given as to the difference in nature that is mentioned. Therefore, we can not comment on this issue until it is further identified. The audit worksheet only performed one of the two tests required by CAS 418.50(b)(2) to determine that a pool is not homogeneous. That single test was not performed properly, it was based solely on the allocation to individual customer specific cost objectives in the receiving pool rather than looking at all cost objectives within the general services pools.

Submitted by: Dan Bryant 9-9034 8A-70 773-6274

March 10, 1995
DCAA NASA 1994 CAS 418

Engineering pool 50 and CCC MP allocation
Response to Issue/Resolution No. 4

- The type of resources provided to the engineering community through overhead pool 50 and the CCC MP represent resources provided to D&SG engineering personnel that are not available at the program level and relate to general engineering requirements. Although the location of these resources may vary, the nature of the engineering resource capabilities are the same. To provide for maximum use of these assets and services, they are maintained in broad based overhead and computing cost center (CCC) pools. According to CAS 418, if each significant activity in the Engineering Resource pool has the same or similar causal beneficial relationship to the pool's final cost objectives this indirect cost pool is homogeneous. Likewise, if each significant computing resource in the Engineering CCC (MP) has the same or similar causal beneficial relationship to the center's final cost objectives this computing cost center (pool) is homogeneous.

- To prove that an indirect cost pool is not homogeneous requires that: (1) all significant activities in the pool do not have the same or similar beneficial or causal relationship to cost objectives; and (2) if the costs were allocated separately, the resulting allocation would be materially different. Both of the above criteria must be met before it can be stated that the pool is not homogeneous. The audit analysis attempts to address only the second criteria listed above.

- The audit's attempt at allocating engineering lab and CCC costs is seriously flawed. D&SG provided the engineering lab data to DCAA based on the understanding that it would be used to determine whether, in general, the pool's cost objectives received benefit from a significant activity (labs) of the engineering pool. As we have discussed with DCAA personnel on several occasions, the data that D&SG provided was extremely subjective and only represents six months of activity. By only considering 6 months of data, DCAA's approach fails to take into account the life cycle phases of a program or project that benefits from the activities being performed in these labs. For example, NASA's ISSA contract is currently receiving benefit from many technologies and processes that were developed by our technologists, in our laboratories, years before the current contract was awarded. Also, the technologies and processes being developed today may benefit ISSA ten years from now. This data represents D&SG Engineering's best guess to support an

Engineering pool 50 and CCCMP allocation
Response to Issue/Resolution No. 4
(Continued)

internal budgeting exercise only. It was merely an assessment of the number of tasks performed within the various labs. It did not measure the length of time each task took to complete, nor did it measure the number of tools/test equipment used to accomplish the task. Furthermore, the data represented rough percentages that only identified whether the tasks performed were for a major program, IR&D, or other programs. Consequently, to use this data for purposes other than its original intent, as the audit analysis has done, can only produce meaningless results.

The audit analysis prorated each lab costs by dividing programs by location by total number of programs. This allocation was not based on data provided by the D&SG budget exercise - it was arrived at by a NASA employee who was familiar with the programs at Huntsville and Houston. This portion of the subjective audit analysis only dealt with costs identifiable to the engineering labs. Depreciation and support costs were not identified by lab or support usage because no information is available below the pool level for these costs. Instead, the audit analysis merely used the identifiable engineering lab costs as the basis for allocating depreciation and support costs. In many cases, depreciation can represent up to a third of the total lab costs that were reallocated by this analysis. DCAA chose to review only 52 out of 93 engineering labs because the NASA engineering representative determined that the other 41 labs or 44 percent had current or future benefit to NASA. Our assessment of the remaining 52 labs indicates that 70 percent of these have current or potential benefit to NASA. This results in 80 - 85 percent of all labs having applicability to NASA, which is probably as high a percentage as any other cost objective in this pool. The audit analysis also did not acknowledge any benefit to NASA contracts from the Other category nor from IR&D. Our review of the Other category and IR&D found applications to NASA. No matter how objective the analysis attempts to be, since it used highly subjective, hypothetical or non-existent data the analysis can not be valid. Because the data used in this audit analysis was not intended to address these issues there is no way that this data could begin to meet the above criteria.

Engineering pool 50 and CCC MP allocation
Response to Issue/Resolution No. 4
(Continued)

In order to perform the type of analysis that DCAA attempted to do, one must first determine what information is practical to collect. Furthermore, it must be determined whether it is a reasonable measure of the causal beneficial relationship to cost objectives, and whether it can be estimated and reported. To even consider such an analysis history must be developed based on establishing total lab costs and usage rates which we do not have in our systems today. The analysis would have to comply with the overall intent of establishing broad based pools . Therefore, a pilot would need to be established that would address specific criteria for a possible allocation base. It must be understood that even this type of analysis would not be practical, since it cannot measure the general purpose nature of the labs. In addition, it could not measure the intangible benefits because lab test results can be shared by all programs. For example, lab test results are shared by the D&SG engineering community on all programs.

Submitted by: Dan Bryant 9-9034 8A-70 773-6274

National Aeronautics and
Space Administration

Headquarters
Washington, DC 20546-0001

APPENDIX 2

Reply to Attn of HC

OCT 27 1995

TO: W/Acting Deputy Assistant Inspector General for Auditing

FROM: H/Associate Administrator for Procurement

SUBJECT: Draft Rapid Action Report, Boeing Indirect Cost Allocations to Space Station Contract, Assignment No. A-JS-95-005

We have reviewed the draft rapid action report forwarded by your letter of September 25, 1995 and concur with the report's recommendation that the Associate Administrators for Procurement and Space Flight work with the Divisional Administrative Contracting Officer (DACO) and the Defense Logistics Agency to ensure an equitable allocation of Boeing indirect costs to the Space Station contract. The Office of Procurement has been actively involved with the CAS 418 allocation issue since it arose during the review and negotiation of the Boeing Space Station proposal last year. In addition, we have also been involved with the earlier CAS 418 issue involving the Marshall Space Flight Center (MSFC) Space Station Freedom contract. It is directly as a result of our intervention that the Headquarters, Defense Contract Management Command (DCMC) has become sensitized to NASA's concerns and has taken steps with the DACO to ensure that they are addressed. We will continue to stay actively involved and will keep program officials apprised of any changes in status. Additionally, we will ensure that the DACO meets with NASA management to outline his proposed actions before any final decision is made and implemented. The International Space Station Program Office (ISSPO) is sending Boeing a letter indicating their concurrence with the draft rapid action report. ISSPO is also reviewing the feasibility of suspending payment of the excess allocation of cost.

The following additional comments are offered for your consideration. The report estimates that an equitable allocation of indirect costs could save $33 million over the life of the Space Station contract. This estimate is based on a rough calculation which assumes that the proportion of costs over allocated in 1994 will remain constant throughout the life of the contract . It is unlikely that this ratio will remain stable and it may be subject to wide fluctuations. Changes in the mix of costs incurred on the contract and movement in Boeing's business base are two drivers which will cause the percentage to vary. The best estimate of actual cost savings will be obtained from a cost impact proposal if and when one is obtained from Boeing. We recommend that the savings estimate be portrayed as a rough estimate subject to modification as more detailed information is obtained from the contractor. In the interim, the ISSPO is working with the DACO at Boeing to arrive at a better estimate of the potential savings.

We recommend that the second paragraph on page 6 of the draft report be revised as follows to recognize that ISSPO is reviewing the feasibility of suspending payment of the excess allocation of cost:

> "Because the laboratories associated with these indirect costs provide no benefit to the Space Station contract, the current method of allocating costs associated with the laboratories to various cost objectives violates a fundamental requirement of CAS 418 and the method is inequitable to NASA. NASA is being charged for these costs by Boeing as the company submits public vouchers for payment on contract NAS15-10000. ISSPO is reviewing the feasibility of suspending payment of these costs beginning with billings received in November 1995."

If you have any questions regarding our comments, please direct them to Mr. Jim Balinskas at (202) 358-0445.

for Deidre A. Lee

cc:
M/W. Trafton
HC/J. Horvath
HS/V. Wycoff