



DLA-96-P40242

DEFENSE PERFORMANCE REVIEW METRICS

Wood Products Initiative

DECEMBER 1995

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INSIGHT THROUGH ANALYSIS

DORO

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Wood Products Initiative

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FOREWORD

In August 1995, an Interim Report was published to reflect the results of approximately the first half of the Wood Products Initiative Test. This report is the final document which extends the Interim Report observations to the end of the test. Given the additional test data, the findings and conclusions of the interim report, although not radically different from those in this report, are obsolete.

The author has received excellent support in the collection of test data from a number of sources. In particular, Mr. Ron Hughes and Ms. Linda Allen of MCLB Albany and Mr. Ron Waters of Camp LeJeune have been extremely cooperative and responsive to our many requests for clarification. Also, outstanding support has been provided by Mr. Doug Dapo and Mr. Ron White from Defense Construction Supply Center. Mr. Alvin Bowe, Defense Contract Management District South, conducted the entire quality assurance portion of the test and is to be commended for his efforts. Also, to be recognized are the efforts of Larry Johnson and Yvette Coleman, HQ DLA for developing and implementing the Wood Products Analysis Support System. The DLA Operations Research Office is extremely grateful for their help.

A handwritten signature in black ink, appearing to read "HAROLD BANKIRER", is positioned above the printed name.

HAROLD BANKIRER
Colonel, USA
Chief, DLA Operations Research Office

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LIST OF ABBREVIATIONS

BPA	Blanket Purchase Agreement
DCSC	Defense Construction Supply Center
DCMDS	Defense Contract Management Command, District South
DLA	Defense Logistics Agency
DORO	DLA Operations Research Office
DPR	Defense Performance Review
FSC	Federal Supply Class
MCLB	Marine Corps Logistics Base
NSN	National Stock Number
RDD	Requested Delivery Date
SAMMS	Standard Automated Material Management System
WPI	Wood Products Initiative
USMC	United States Marine Corps

SECTION 1 INTRODUCTION

1.1 BACKGROUND

The National Performance Review, also known as "Reinventing Government", was initiated by Vice President Gore to improve Federal Government functions, reduce costs and streamline bureaucracy. As part of this initiative, the Department of Defense began a supporting effort called the Defense Performance Review (DPR). The Defense Logistics Agency (DLA) was asked to participate in the DPR, and developed five major initiatives designed to focus on DLA's customers to improve material management support for items managed by DLA Supply Centers. One of these initiatives, the Wood Products Initiative, was conceived in 1993.

Historically, military users of Wood Products have met their requirements through a combination of local purchases and central procurement through one of DLAs Inventory Control Points, the Defense Construction Supply Center (DCSC), Columbus, OH. DCSC, as the manager of Federal Supply Classes (FSC) 5510 (Lumber) and 5530 (Plywood and Veneer), provides technical, procurement and supply support. Typically, requisitions from customers result in a procurement action by DCSC. A requisition is processed by the Standard Automated Material Management System (SAMMS) via batch mode into a recommended buy which then converts into a purchase request. The purchase request is processed according to DCSC procurement policies into a contract. Most contracts for FSC 5510 and FSC 5530 have been manual competitive purchases with direct shipment from the contractor to the customer. The primary advantages of central procurement via this approach are low prices and expert technical support. The primary disadvantage is customer responsiveness, with typical lead times averaging two to three months for routine priority requisitions.

The DPR Wood Products Initiative (WPI) was designed to find a better way to meet customer needs for FSC's 5510 and 5530. Some logisticians would advocate that local purchase is the preferred approach while others would argue for central procurement. The DPR encourages activities to experiment with new ideas and to demonstrate, through testing, that performance goals can be met. Thus, under the impetus of the DPR, DLA conceived a different approach to central procurement, one which would incorporate some of the advantages of local purchase, yet retain the benefits of a central procurement system. DCSC has set up four prototype regional long term contracts with electronic data interchange to supply multiple customers within a geographical area. The WPI test plan was developed to compare a pure local purchase system with this modified central procurement system for wood products. The United States Marine Corps (USMC) teamed with DLA to participate in this initiative as the customer representative for the test.

1.2 SCOPE

1.2.1 TEST SITES

Two test sites were randomly chosen to report test data. Camp LeJeune, NC represents the pure local purchase alternative. Camp LeJeune agreed to meet 100% of its requirements through a Blanket Purchase Agreement (BPA) with a local supplier. Requisitions from Base Supply are passed directly to the Base Contracting office at Camp LeJeune which places a delivery order against the BPA. Base Supply reports test data to DLA. The site representing the central procurement option is the Marine Corps Logistics Base (MCLB), Albany, GA. MCLB agreed to order all wood products from DCSC during the test, reporting performance data through their Base Supply organization. MCLB submits requisitions through an on-line order placement system. This system by-passes SAMMS batch operations and automatically generates a delivery order against one of four long-term DCSC wood products contracts awarded for MCLB and neighboring installations. Delivery orders are electronically transmitted to the appropriate contractor, providing next day delivery capability if requested. In addition to MCLB, other customers using DCSC prototype contracts include Warner-Robbins AFB, GA; Ft Benning, GA; Anniston Army Depot, AL; and Ft Rucker, AL.

1.2.2 TEST MEASURES

Four primary measures were selected .

- (1) System cost- the external cost of the contract plus the in-house cost to order and administer the contract.
- (2) Logistics response- the time from order placement until delivery.
- (3) Process quality- assessment that contract requirements match intended use and that contract requirements are met.
- (4) Customer satisfaction- assessment of the perceptions of the customers.

1.2.3 TEST TIME PERIOD

The WPI test officially began on 1 January 1995 and ended on 1 Oct 1995. Because of delays in initiating the test, some data was reported by Camp LeJeune prior to the test and this was used when necessary. Also, because of lack of funds, Camp LeJeune made no wood products requisitions in the last two months of the Fiscal Year (Aug 95 and Sep 95). This report covers data collected from 1 Dec 1994 to 31 July 95 at Camp LeJeune; from 1 Jan 95 until 30 September 1995 at MCLB.

1.3

OBJECTIVES

(1) To measure the logistics performance of alternative supply methods for wood products from the customer's perspective.

(2) To quantify performance differences between test sites and assess if the differences can be attributed to the two different buying practices with statistical confidence.

SECTION 2 METHODOLOGY

2.1 OVERVIEW

Data collected for this effort was planned and executed in accordance with a Memorandum of Understanding dated 3 Mar 94 among various DLA and USMC activities. A copy is at Appendix A. In general, data requirements were jointly planned by DLA and USMC team members. Based on these requirements, USMC test sites provided DLA Operations Research Office (DORO) with monthly data for cost and logistics response measures. Quality measures were taken by a knowledgeable wood product expert during on-site inspections. Surveys were used to gauge customer satisfaction.

2.2 SYSTEM COST

System cost is the sum of the vendor's final delivered product cost plus the government's administrative cost associated with ordering, contracting, accepting and paying for the product. All costs reported are in current dollars.

2.2.1 VENDOR COST

Most wood products contracts have quantity variation clauses which allow vendors to ship more or less (within limits) than the ordered quantity at the contract unit price. Thus, the total contract cost is not established until the end of the contract cycle. In addition, the DCSC contracts allow the contractor to consolidate orders and pass the transportation and handling savings to the customer by billing a lower unit price than the award unit price. Therefore, it is important to measure the final delivered vendor cost rather than the contract cost at time of award.

2.2.1.1 Pricing Considerations

There are at least three factors that influence price in addition to the contracting method. These other factors, called exogenous factors, are derived from external causes. Ideally, exogenous factors are controlled or minimized so that errors in measurement of the effect of the contracting method are reduced.

(1) The price of lumber and plywood is highly sensitive to economic and market conditions. Prices for the same National Stock Number (NSN) can vary greatly month to month. Therefore, the dates of prices used for comparison between test sites should be as close as possible for the comparison to be valid.

(2) The price of lumber and plywood is also subject to geographical factors. Test sites were chosen to reduce this factor, but nonetheless there are market differences between the two sites which influence the comparisons. Market price differences between eastern North Carolina and southern Georgia are reflected in the price comparisons as an exogenous factor.

(3) The price of lumber and plywood is very sensitive to the contractor's transportation costs. Transportation costs, in turn, are quite sensitive to the volume of wood products delivered at one time. By ordering early and thus permitting consolidation of orders, transportation costs can be reduced. Ordering larger quantities less frequently also results in lower prices. No attempt was made to control or change the customary ordering practices of test sites.

2.2.1.2 Pricing Methodology

The vendor price is as follows:

Camp LeJeune - The actual awarded (and delivered) contract unit price from the local purchase BPA.

MCLB Albany- (1) The final billed price if available (none were at the time of this report). This price matches the price reported by Camp LeJeune. Because of difficulty in obtaining this price, an assumption is made that the following prices are the same as the final billed price.

(2) If the above is unavailable, the unit price on the DD 250 was used. The DD 250, Material Inspection and Receiving Report, shows the price charged by the vendor for the line item (sometimes referred to as invoice price).

(3) The contract unit price is used if neither of the above are available.

(4) The estimated price at the time Base Supply submits the requisition is used if no other price data is available.

Other sites- For those neighboring installations which also obtain wood products from DCSC contracts, the contract unit price is used.

The contract unit price is multiplied by the delivered quantity to obtain total contract cost. If the delivered quantity is unknown, the contract quantity is used.

2.2.2 ADMINISTRATIVE COST

In addition to the direct cost of the product paid to the contractor, there are certain in-house administrative costs associated with the procurement process which must be considered in order to make a valid cost comparison. For the local purchase alternative, Camp LeJeune personnel must determine requirements, process a requisition which then becomes a purchase request, generate a delivery order against the BPA, receive and inspect the shipment and pay the contractor. For the central purchase alternative, MCLB Albany personnel also follow a similar process with the exception of the actual contracting action. In this section, administrative cost is divided into two components; namely Base Level Administrative Costs and External (to Base) Administrative Costs.

2.2.2.1 External Administrative Cost

Since DCSC is a Defense Business Operating Fund activity, its personnel and other operating costs are included in the price charged its customers. Unlike local purchase activities where contracting, supply and financial personnel are paid separately through direct appropriations, DCSC personnel and nonlabor costs are estimated yearly and applied as a surcharge to the contract price. This surcharge includes not only direct DCSC personnel labor costs, but includes as nonlabor costs all indirect and fixed DCSC overhead costs, including costs for the Defense Finance and Accounting Service and operation of Headquarters, DLA. This surcharge is currently 4.8%, and is added to all MCLB Albany reported prices. Since Camp LeJeune does its own contracting, there are no external administrative costs associated with local purchase.

2.2.2.2 Base Level Administrative Cost

To estimate the administrative cost differences at the base level between local purchase and central procurement requisition processing is more difficult. USMC was unable to provide these cost estimates. However, they concurred in the use of similar cost data found for the Air Force, since the base level processes used by the Air force are very similar to those used for Marine Corps bases.

An Air Force study¹ conducted in Dec 1991 compared the administrative time and costs for both local purchase and central procurement at the base level. The direct, hands-on time difference between the two methods was 3.17 man-hours in favor of central procurement. In other words, each requisition requires 3.17 more man-hours of direct labor for each local purchase. The primary driver in this difference is the time required by Base Contracting to award a local purchase delivery order.

To convert man-hours to cost, an hourly rate was calculated assuming an average civilian grade for each step in the process. FY 95 pay scales for GS employees with locality pay adjustments and standard factors for fringe benefits and leave were then applied. The resulting FY 95 direct cost is estimated to be an additional \$58.10 per order to process a local purchase. This amount does not include the cost at the base level, of developing and maintaining the BPA nor any overhead costs such as supervision, training, installation services, support services, etc. The reason for excluding these costs is that Camp LeJeune and the USMC were unable to quantify these with a degree of assurance. Although these costs can be significant, we chose to simply note that the comparison of sites is missing a cost component rather than try to guess the amount. The direct base level administrative cost at Camp LeJeune averaged 1.3% of the contract cost.

¹ Final Special Study Report, Standard Base Supply System - Cost of Local Purchase Requisitions Cost of Central Requisitions, AFLOGMET, Dover AFB, DE, 18 Dec 1991.

2.2.2.3 Administrative Cost Summary

Thus, when price comparisons are made, administrative costs of MCLB include a component which is fully burdened while Camp LeJeune's component is not burdened. Thus, the comparison is not completely fair and biases the results in favor of local purchase. However, when administrative costs are small in relation to vendor costs, this bias may not greatly influence the findings and conclusions.

2.3 LOGISTICS RESPONSE

Logistics response, lead time, order-ship time, etc. are different ways to express the concept of providing the material to the customer in a timely manner. A timely manner may not always mean "right away" since these commodities are bulky and perishable and present storage and handling concerns to the customer upon delivery. The customer wants not only quick delivery, but consistent delivery.

The primary measure used to test the responsiveness of the two procurement methods is the time from order placement to delivery. In addition, the percentage of time the delivery met the requested delivery date (RDD) is reported.

The responsiveness and reliability of the vendors at each test site is the test factor. This factor is affected by at least two exogenous factors.

(1) RDD: The customer can specify a requested delivery date. To the extent that the test sites express urgency differently through RDD, logistics response could be influenced. If one site, because of its mission, asks for quicker delivery more often, it will tend to experience better logistics response.

(2) Priority: The customer can specify requisition priority to also expedite logistics response time. A customer with higher priority requisitions (lower priority numbers) can expect faster response.

Dates used were reported by the test sites. The order date used was the date embedded in the requisition number. RDD and receipt dates were explicitly reported along with requisition priority. Results are stratified by priority group to normalize the comparisons.

2.4 PROCESS QUALITY

Process quality assessment was conducted by Defense Contract Management Command, District South (DCMDS). DCMDS conducted initial and final site visits to verify that customer requirements result in the proper items being ordered, that procurement systems properly specify requirements in the contract, and that contractual requirements are met.

2.5 CUSTOMER SATISFACTION

Identical customer surveys were taken at the beginning and end of the test. A survey questionnaire, developed by DCSC, was distributed to focal points at the test sites who solicited input and submitted responses to DORO. A copy of the survey questionnaire appears in Appendix B.

2.6 TEST METRICS

2.6.1 SYSTEM COST AND LOGISTICS RESPONSE

Where the exact item is ordered by both test sites, the system cost and logistics response time for each NSN is measured and compared. Descriptive statistics are generated on the comparisons. Since the number of direct observations is small, no inferential statistical analysis is attempted. These comparisons are titled "Direct Comparison" with results provided in para 3.2.1 for System Cost and para 3.3.1 for Logistics Response.

Because the mix of items ordered at the two test sites contained few overlapping NSN's, the test was expanded. Inclusion of Warner-Robbins, Ft Benning, Anniston Army Depot, and Ft Rucker expanded our ability to gain price information for NSN's which match the local purchase case. Where the exact item is ordered by Camp LeJeune and one of these MCLB Albany neighboring activities through the DCSC contract, the system cost for each NSN's is measured and compared. It is assumed that since these other neighboring activities are using the same process, the results at these activities reflect the price that MCLB would have achieved for that NSN. Descriptive statistics are generated on the comparisons. Since the number of direct observations is small, no inferential statistical analysis will be attempted. This comparison is titled "Alternative Direct Comparison" and results appear in para 3.2.2.

For all items ordered, the system cost of each site is compared monthly to costs for all DLA customers for the same mix of items. For DLA customers, NSN data was obtained from the DLA Integrated Data Bank, Requisition History File for the first quarter FY 95. The total cost of the monthly mix of items ordered at the test sites was priced at actual vendor cost plus administrative cost, and at the price paid by the typical DLA customer. Monthly percent differences between the test site and the typical customer were computed. Descriptive statistics on the percent differences by test site, and a hypothesis test on the difference between sites on the percent difference relative to a "typical" customer are shown in para 3.2.3.

A hypothesis test on differences in logistics response time is performed in the same manner as described above for system cost and can be found in para 3.3.2. Descriptive statistics on each site are provided as well in both para 3.3.2 and para 3.3.3.

2.6.2 PROCESS QUALITY AND CUSTOMER SATISFACTION

Side by side descriptive comparisons are presented for each test site. No attempt will be made to statistically evaluate these measures since they are subjective.

SECTION 3

FINDINGS

3.1 OVERVIEW

Findings in this report are final and based on test data for the entire test period. These results are an extension of results published in an Interim Report dated August 1995 entitled, "Defense Performance Review Metrics- Interim Report- Wood Products Initiative."

3.2 SYSTEM COST

3.2.1 DIRECT COMPARISON

Because the two test sites have different missions, the mix of wood products ordered is different. During the test, LeJeune placed 100 orders for 32 unique NSN's. At MCLB Albany, only 43 orders were placed for 15 different NSN's. However, there were only six cases where the two test sites ordered the same NSN. Results are shown in Table 3.1. In each case, the average system unit price for local purchase (LeJeune System Price) exceeded the average price paid through central procurement (MCLB System Price). Furthermore, even when discounting the administrative cost for local purchase, in all cases but one, the customer's cost was also higher for local purchase (LeJeune Unit Price vs. Albany System Price). The average item system cost was 8.05 percent lower at Albany, ranging from .9% to 13.46%. It is also noted that MCLB's prices vary more over time and are more closely linked to market conditions than prices at LeJeune.

NSN	Description	Order Date	LeJeune Unit Price	LeJeune System Price	Albany System Price
5530006186956	3/8 in Plywood	94293	\$11.27	\$11.40	
		94341	\$11.27	\$11.38	
		95010	\$11.27	\$11.38	
		95044	\$11.27	\$11.38	
		95104	\$11.27		
		95096	\$11.27		
		95152	\$11.27		
		95012			\$9.98
		95041			\$11.03
		95145			\$9.14
5530001297777	1/2 in Plywood	95032	\$19.20	\$19.47	
		95137	\$19.28	\$19.54	
		95005			\$18.34
5530006186958	1/2 in Plywood	94341	\$12.90	\$12.93	
		95023	\$12.90	\$13.35	
		95044	\$12.90	\$13.10	
		95096	\$13.41	\$13.61	
		95124	\$13.41	\$13.54	
		95152	\$13.41	\$13.57	
		95101			\$12.27
		95220			\$11.73
5510002206196	2x6x14 Lumber	95080	\$0.55	\$0.56	
		95194	\$0.50	\$0.50	
		95137	\$0.50	\$0.50	
		95094			\$0.45
5530006188073	3/4 in Plywood	94341	\$18.41	\$18.47	
		95044	\$18.41	\$18.49	
		95080	\$18.41	\$18.53	
		95124	\$19.78	\$19.90	
		95132	\$19.78	\$19.86	
		95152	\$19.78	\$19.86	
		95164	\$19.78	\$19.86	
		95010			\$21.75
		95165			\$16.46
		95194	\$0.43	\$0.43	
5510002206078	1 x 4 Lumber	95152	\$0.43	\$0.43	
		95089			\$0.37
		95160			\$0.40
		95160			\$0.39

Table 3-1. System Cost for Exact Match NSN's

3.2.2

ALTERNATIVE DIRECT COMPARISON

Additional comparisons are made by comparing exact NSN orders between Camp LeJeune and the other adjacent bases that are also using the same DCSC contract for wood products. The premise is that the prices paid by Albany's neighbors would reflect the price Albany would pay if they had ordered that particular NSN. Table 3-2 provides detailed visibility on price comparisons between LeJeune and other users of the DCSC contract for common items that are not covered in Table 3-1. Eight NSNs were found that were ordered at both LeJeune and one of the many other sites near Albany, GA. In each case, the Local Purchase price (LeJeune) exceeded the DCSC price both from the customer's perspective and from the system perspective. The system cost per item averaged 16.7% more under local purchase. Plywood prices were only 8.0% higher at LeJeune, but lumber prices were 25.37% more at LeJeune.

NSN	Description	Order Date	LeJeune Unit Price	LeJeune System Price	Other System Price
5530006186959	Plywood	95186	\$16.64		
		95101			\$15.63
		95122			\$14.73
5530002628179	Plywood	95010	\$23.47	\$23.97	
		95194	\$22.94	\$23.44	
		95076			\$22.94
		95221			\$19.75
5530006186959	Plywood	95010	\$15.48	\$15.58	
		95032	\$15.48	\$15.61	
		95044	\$15.48	\$15.58	
		95096	\$16.64	\$16.74	
		95152	\$16.64	\$16.74	
		95076			\$15.63
		95122			\$14.73
5530001297833	Plywood	95096	\$26.10	\$26.51	
		95164	\$26.10	\$26.50	
		95178	\$26.10	\$26.70	
		95108			\$25.30
		95160			\$24.80
		95076			\$25.30
		95177			\$23.62
		95240			\$23.39
5510005519869	Lumber	95104	\$0.95	\$1.04	
		95152	\$0.95	\$0.98	
		95194	\$0.95	\$0.98	
		95160			\$.64
5510005519871	Lumber	95096	\$0.67	\$0.68	
		95152	\$0.67	\$0.68	
		95164	\$0.67	\$0.68	
		95194	\$0.67		
		95135			\$.49
		95160			\$.53
		95160			\$.44
5510005519872	Lumber	95152	\$0.68	\$0.71	
		95194	\$0.68	\$0.71	
		95135			\$.54
5510005547760	Lumber	95164	\$0.58	\$0.61	
		95178	\$0.58	\$0.61	
		95108			\$.53

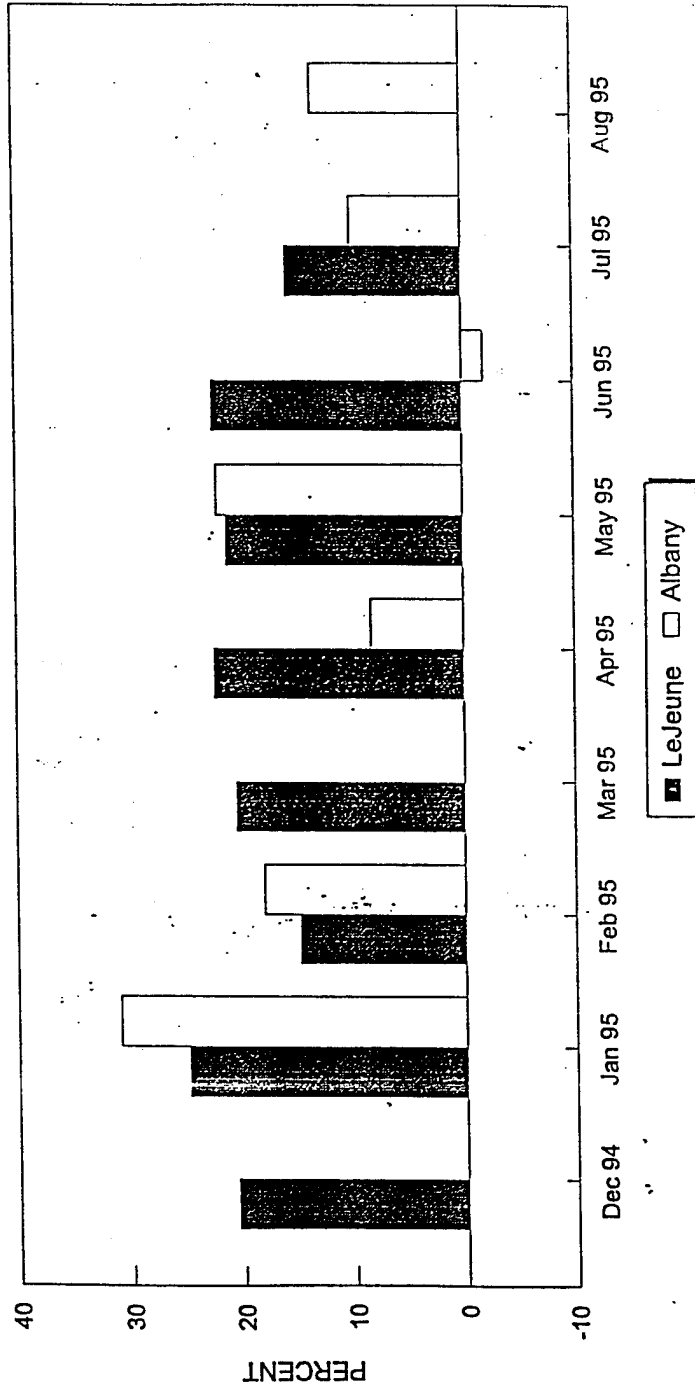
Table 3-2. System Cost for Exact NSN Matches Between LeJeune and MCLB's Neighbors

3.2.3

TEST SITE MARKETBASKET COMPARISON

The total mix of wood product prices at each site was compared to standard unit prices (or catalog prices). For example, for each order, the actual total system item cost was compared to the product of the standard unit price times the quantity delivered. Thus, this is an indirect comparison where each test site is measured against its own basket of items relative to the typical DLA customer. Monthly comparisons are shown in Figure 3-1. In December 94, no data was available at MCLB because the test had not officially begun. In August and September 1995, no data is reported for Camp LeJeune because no orders were made. September 1995 data for MCLB is not shown because the one order made had no price data available at the time of this report. In four of the seven months (January - July), the total cost was lower at MCLB Albany, with a monthly average difference of 7.7% in favor of MCLB. Because of the large price variations, especially at MCLB, this difference is not statistically significant at a 90% level of confidence.

CUSTOMER TOTAL COST Relative to DLA catalog price



LeJeune cost includes \$58 per order surcharge
Albany cost includes 4.8% surcharge;

Figure 3-1. Customer Total Cost: Relative to DLA Catalog Price

3.2.5

SYSTEM COST SUMMARY

Several cost comparisons made for Dec 94 - Aug 95 indicate that there is an increase in system cost associated with local purchase vice central purchase through DCSC prototype contracts. At this time it is estimated that the difference is between 7 and 17 percent. It appears that the cost differential is greater for lumber than for plywood. Also, price variability for the central purchase option is greater. Thus the customer may save in the long run, but can experience volatile price swings over time.

3.3

LOGISTICS RESPONSE

3.3.1

DIRECT COMPARISON

In the six cases where Camp LeJeune and MCLB Albany ordered the same NSN, Table 3-3 displays the time from order generation to delivery along with other pertinent facts. It is apparent that, despite the fact that MCLB had lower priority orders, the average logistics response was significantly faster vice local purchase. Only two of the six NSN's were faster under local purchase. The overall RDD success rate was slightly higher for MCLB.

NSN	Date Ordered	Date Received	Priority	Date Requested	Met Date Requested	Logistics Response (Days)
5530006186956	94293	94335	14	94319	no	42
	94341	94362	7	94362	yes	21
	95010	95038	7	95030	no	28
	95044	95075	7	95062	no	31
	95096	95103	7	95114	yes	7
	95104	95135	14	95131	no	31
	95152	95186	7	95172	no	34
	95012	95026	15	95022	no	14
	95041	95068	15	95146	yes	27
	95143	95158	15	95147	no	13
5530001297777	95032	95104	7	95053	no	71
	95137	95171	7	95156	no	34
	95003	95006	6	95006	yes	1
5530006189858	94327	94341	7	94348	yes	14
	94341	94356	7	94362	yes	15
	95044	95061	7	95062	yes	17
	95096	95116	7	95114	no	20
	95124	95144	7	95145	yes	20
	95101	95130	15	95111	no	29
	95220	95240	15	95222	no	20
5510002206196	94327	94346	7	94348	yes	19
	94356	95023	7	95011	no	68
	95080	95131	7	95101	no	51
	95137	95165	7	95156	no	28
	95194	95208	7	95215	yes	14
	95094	95110	15	95104	no	16
5530006188073	94341	94364	7	94362	no	23
	95044	95067	7	95062	no	23
	95080	95103	7	95101	no	23
	95124	95151	7	95145	no	27
	95132	95159	7	95152	no	27
	95152	95180	7	95172	no	28
	95164	95186	7	95181	no	22
	95010	95013	3	95013	yes	3
	95163	95104	15	95176	no	22
5510002206078	95152	95171	7	95172	yes	19
	95194	95212	7	95215	yes	18
	95089	95110	15	95099	no	21
	95160	95180	15	95185	yes	20
	95160	95180	15	95185	yes	20
Average			7.5		32%	26.7
			13.3		42%	17.1

Shaded area represents MCLB requisitions

Table 3-3. Logistics Response: Cases Where Same NSNs Ordered At Each Test Site

3.3.2

MARKETBASKET COMPARISON

The logistics response of the total mix of wood products at each test site was compared to the typical delivery experience for the same mix of items from all DCSC customers in the Oct-Dec 94 time frame. For example, for each item ordered, the actual logistics response time was compared to the average logistics response of all orders for that NSN. Monthly results were averaged weighting each order equally. Thus, this is an indirect comparison where each test site is measured against its own basket of items relative to the typical DLA customer. Monthly comparisons are shown in Figure 3.2. For example, in Dec 94 twenty-six orders for Camp LeJeune had actual average logistics response of 27.1 days. The average logistics response for the same items from "typical" DCSC customers was 83.3 days. Several important observations are: (1) Both test sites report significantly better response times than with conventional DCSC support. (2) The mix of items used by MCLB has a faster logistics response time in general than those of Camp LeJeune. (3) On the other hand, the average priority of Camp LeJeune's orders was much higher than those of MCLB [7.3 vs 12.9 respectively where the higher the priority number, the lower the priority]. (4) The logistics response time is generally faster for MCLB (central procurement) than for Camp LeJeune (local purchase). In 5 of 7 months where both sites had concurrent orders, MCLB had a faster logistics response time. The average monthly logistics response is 27.8 days for Camp LeJeune and 18.7 days for MCLB Albany. This difference is statistically significant at 90% confidence.

LOGISTICS RESPONSE TIME

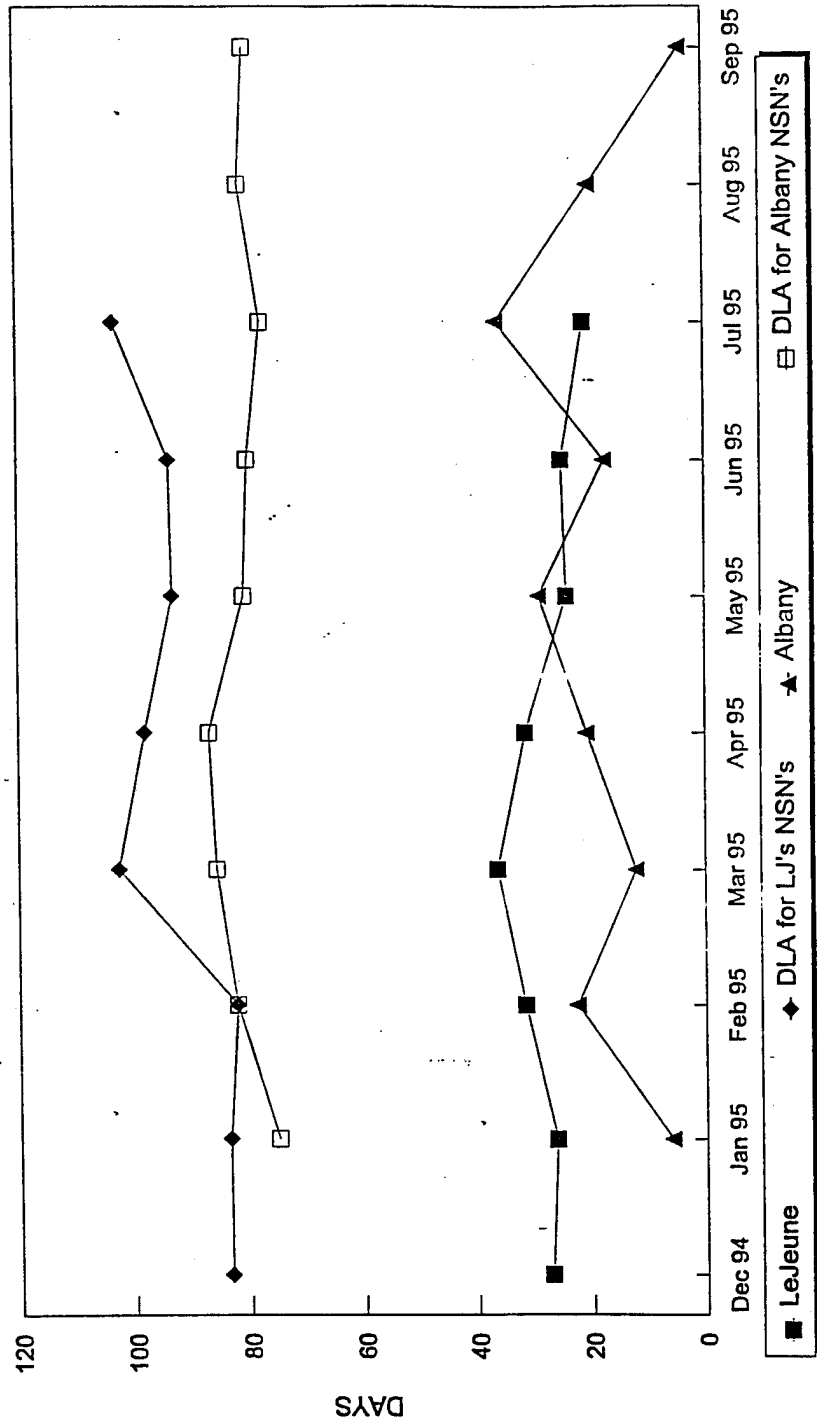


Figure 3-2. Logistics Response

3.3.3

PRIORITY BREAKOUT

Because of a major difference in the priority distribution of orders between the test sites, comparisons by priority group and number are shown in Table 3-4. This stratification shows that the logistics response time at MCLB is consistently faster.

Priority Group	Number	Logistics Response (Days)	
		Camp LeJeune	MCLB Albany
I	3	N/A	22.1*
II	4-6	25.0	1
III	7-10	26.8	3.8
	14-15	41.6	23.1

* Includes one observation with a very long response time. Excluding this observation yields 12.8 days.

Table 3-4. Logistics Response Test Results Stratified By Priority

3.4

PROCESS QUALITY

Quality assessment was performed by DCMCS and reported in Appendix C. To summarize DCMCS findings, no major differences between test sites were observed.

3.5

CUSTOMER SATISFACTION

The survey at Appendix B was administered at each site at the beginning and end of the test. In each case the respondents were those supply specialists who order material for the base, including wood products. Initially MCLB submitted three separate responses and Camp LeJeune submitted a consolidated response both times. At the end, MCLB provided two separate responses. The average of the MCLB responses, and Camp LeJeune response are tabulated in Table 3-5. Higher response numbers (on a scale of 1 to 5) reflect greater customer satisfaction. Thus, it appears that the customers of local purchase support had a much higher initial level of satisfaction than did DCSC customers. At the end of the test, survey responses increased slightly at Camp LeJeune, but major improvement was reported at MCLB. At the end of the test, the Local Purchase site continued to express higher levels of customer satisfaction, but the difference was considerably reduced.

QUESTION #	BEFORE TEST		AFTER TEST		CHANGE	
	LEJEUNE	MCLB	LEJEUNE	MCLB	LEJEUNE	MCLB
1	4	1.33	4	2	0	+.67
2	4	1	4	2	0	+1
3	3	1	3	2.5	0	+1.5
4	5	4	5	4	0	0
5	4	2	4	3	0	+1
6	4	4	4	4	0	0
7	N/A	1	N/A	2	N/A	+1
8	4	1	4	.5	0	+.5
9	N/A	1.5	N/A	4.5	N/A	3
10	4	2.33	4	3	0	+.67
11	4	3.67	5	2.5	+1	-1.17
12	3	2.67	4	3	+1	+.33
13	4	3.33	4	3.5	0	+.17
14	4	4	4	4.5	0	+.5
15	4	1	5	2	+1	+1
16	4	1.33	5	4.5	+1	+2.17
AVERAGE	3.92	2.20	4.21	3.03		

Table 3-5. Customer Satisfaction Questionnaire Response

In addition to the survey, customer comments were collected during site visits conducted before the test. Customers reported dissatisfaction with some constraints of the central procurement system, mainly with lumber, FSC 5510. Customers expressed a desire to order lumber in units of "each" rather than "board feet", and the ability to more easily order lumber in specific length rather than random length. As a result, many customers develop locally assigned stock numbers for specific lengths of lumber and order these through local purchase.

SECTION 4

CONCLUSIONS

At the conclusion of the test period, there has been sufficient data to conclude with a high degree of confidence that the prototype central procurement system has a significantly better logistics response time than local purchase, with an average savings of 9 days. The evidence is also strong that system cost is also lower for the central procurement option, since cost comparisons from a variety of perspectives consistently demonstrate savings of 7-17 percent. There was no discernable difference in process quality between test sites. Levels of customer satisfaction between test sites reflect a preference for local purchase. However, the degree of satisfaction difference decreased during the test, indicating that the prototype central procurement system had a positive effect.

SECTION 5

RECOMMENDATIONS

When compared to the existing central procurement system, the test metrics clearly show that the prototype central procurement system developed by DCSC results in faster deliveries and more satisfied customers. Furthermore, this prototype system also competed favorably with local purchase. Therefore, maximum effort should be made to extend this prototype concept to other geographical concentrations of demand. Where market conditions are favorable, potential exists to substantially reduce customer's (and taxpayer's) cost over local purchase, as well as reduce customer lead times.

APPENDIX A

**MEMORANDUM OF UNDERSTANDING
Wood Products Initiative Test Measurement Procedures**

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MEMORANDUM OF UNDERSTANDING

WOOD PRODUCTS INITIATIVE TEST MEASUREMENT PROCEDURES

1. References:

- a. Defense Performance Review (DPR) Wood Products Test Implementation Plan, November 1993 (draft), DCSC-P.
- b. Defense Performance Review (DPR) Wood Products Meeting on 3 Nov 93, DCSC-P.
- c. Defense Performance Review (DPR) Wood Products Meeting on 15 Nov 93, DCSC-P.

2. Purpose. The purpose of this Memorandum of Understanding (MOU) is to provide specific procedures and responsibilities to key players in the DPR Wood Products Initiative (WPI) test to be conducted from 1 August 1994 to 30 September 1995 at Marine Corps Logistics Base (MCLB) Albany, GA and Camp LeJeune, NC. The scope of this agreement pertains to the collection, compilation and reporting of test measures outlined in reference 1a.

3. Responsibilities. WPI is a team effort involving multiple DLA and Marine Corps organizations. By signing this agreement, each party commits to fulfilling the requirements contained in this agreement within the specified time frames to insure that the overall group effort meets DPR guidelines and milestones.

a. General. Each party below will provide a single individual to act as a point of contact. This person is expected to be assigned for the duration of the test. The name, address, phone and fax number of this point of contact (POC) will be sent to the listed DORO POC by 1 Apr 94. Funding requirements to support this effort will be met by the participants.

b. Data Requirements. Data requirements have been established and discussed with participants per reference 1b and 1c. Price and cycle time data will be gathered at the test sites by MCLB and Camp LeJeune POCs by completing electronic forms. The design of the forms, shown in draft as Enclosure 1, specifies the data requirements. There is also a requirement for historical data, in the same format, on Wood Product local purchases from the test sites for a period of one year prior to the start of the test. For quality measures, DLA is responsible for designing a form and collecting data. The draft quality form is shown as Enclosure 2. A customer satisfaction survey will be developed at a later date to serve as a gauge of customer perceptions. Responsibilities for data requirements are:

(1) DLA Operations Research Office (DORO) is responsible for all test measurements and is therefore ultimately responsible for the design of data collection instruments. DORO will provide final versions of data collection instruments to the DCSC Wood Products Team and the HQ Marine Corps POCs three weeks prior to the start of the data

collection methodology milestone date (estimated to be 1 Aug 94). DORO will also research administrative burden associated with central versus local purchase and propose a uniform cost factor to be applied as an add-on to local purchases to allow comparison of local purchase price with DLA price. The DORO POC is Mr. Paul Grover, Team Chief, Acquisition Analysis, DSN 695-4210, fax DSN 695-5319.

(2) Technology Integration, Office of Information Systems (CANI) is responsible for the development of the Wood Products Analysis Support System (WPASS). This system will be used by MCLB, Camp LeJeune and DORO to enter, transmit and analyze data. DLA-CANI POC will program WPASS to produce data entry screens per final version of Enclosure 1 at least four weeks prior to the start of the test (est. 1 Aug 94).

(3) During the period 1 April 1994 to 1 July 1994, DCSC Wood Products Team POC and the HQ Marine Corps POC will review any draft data collection forms and provide comments to DORO within one week of receipt of draft forms.

(4) DCSC Wood Products Team will provide DORO with a final customer survey before three weeks prior to start of the prototype operation (est. 1 Oct 94).

(5) Defense Contract Management District South (DCMDS) POC will provide a final quality form (Enclosure 2) to DORO before four weeks prior to the start of the test (est. 1 Aug 94).

c. Data collection. For each Wood Product requisition defined in reference 1c during the test period, measurement data will be collected for price and cycle time at the test site. To the extent possible, similar measures will be taken for the time period of one year prior to the start of the test. These pre-test measures will be collected by MCLB Albany and Camp LeJeune POCs and sent to DORO prior to the start of the test. Quality measurement will be done at discrete intervals with a minimum of two observations (beginning and end of test) by an onsite product audit conducted by a Quality Assurance specialist with wood products expertise. Customer satisfaction surveys will be sent also at discrete intervals with a minimum of two observations. Responsibilities are:

(1) HQ Marine Corps POC is primarily responsible for the timeliness and accuracy of data collection, except for quality data. Data problems reported by DORO will be coordinated with CANI and the test sites and corrective action will be taken within the monthly reporting period.

(2) DCMDS POC is primarily responsible for collecting quality data. Data will be collected during site visits by the same individual throughout the test at both locations.

(3) MCLB Albany and Camp LeJeune POCs will collect data as specified in paragraph 3b. They will also coordinate site visits with DCMDS and DLA personnel as necessary. Customer satisfaction surveys will be distributed to appropriate customers at each site. POCs will provide WPASS training and software requirements to DLA-CANI POC at least two months prior to the start of the test (est. 1 Aug 94). Each site will provide its own personal

computer with Windows 3.1, at least 4M RAM and 20M space available on the hard drive (est. 1 Aug 94).

d. Data entry. Data will be entered into electronic forms using WPASS for price and cycle time measures. Quality and customer satisfaction data will be reported through paper forms.

(1) DLA-CANI POC will provide MCLB Albany and Camp LeJeune with software to enable operation of WPASS. POC will also provide training and software support upon request. (It is expected that each site will require a single workstation, 386 or better, with WPASS software.) Support must be in place prior to start of test.

(2) MCLB Albany and Camp LeJeune POCs are primarily responsible for the timeliness and accuracy of data entry for WPASS data. Data entry problems reported by DORO or HQ Marine Corps POC will be resolved within the monthly reporting period. MCLB Albany and Camp LeJeune POCs are also responsible for the accuracy and timeliness of response to customer satisfaction surveys. POCs will arrange WPASS support directly with CANI POC.

(3) DCMDS POC is responsible for data entry for quality.

c. Data transmission. Data will be sent to DORO at the end of the reporting period. The reporting period is monthly for price and cycle time data in WPASS. The reporting time for quality and customer satisfaction will be determined at a later date but will at least be done prior and after the test period.

(1) HQ Marine Corps POC is responsible for timely submission of WPASS data to DORO. Problems will be resolved within the reporting period.

(2) DORO will provide MCLB Albany and Camp LeJeune POCs with formatted floppy disks with an addressed mailing envelope.

(3) Customer satisfaction surveys will be mailed directly to DORO by customers and will not be reviewed by POCs.

(4) DCMDS is responsible for timely submission of quality data described in Enclosure 2.

(5) Paper forms (quality data and surveys) will be mailed to DORO using this address:

DLA Operations Research Office
c/o DGSC
ATTN: Paul Grover
8000 Jefferson Davis Highway
Richmond, VA 23297-5082

f. Data receipt. DORO will keep a log of all incoming data associated with this test. When data is not received, DORO will notify HQ Marine Corps POC or DCMDS POC.

g. Data Analysis. DORO is responsible for data analysis. DORO will copy and compile data. Inferential and descriptive statistical analysis of data will be performed upon receipt of WPASS data from both test sites. Descriptive statistical analysis will be done on quality and customer satisfaction data. WPASS will be used to analyze data. Charts and graphs will be produced showing trends and comparisons between sites.

h. Data reporting. Tables and graphs will be produced in accordance with DPR guidelines. At the end of the test, a test report will be written which describes the test methodology and results for inclusion as an appendix to the Wood Products Initiative report. In addition, DORO will assess the feasibility of extending the test results to broader groups of customers. Interim findings will be reported monthly to the DLA DPR POC for WPASS measures. Responsibilities are:

(1) DORO is primarily responsible for producing interim and final documents reflecting test results. Each final product will be preceded with a draft which will be developed one week prior to the final product. Copies of the draft products will be faxed to other POCs and comments received will be considered in the final product. The final product will be submitted to the DLA DPR POC with copies furnished to reviewers. DORO will brief test results upon request of DLA DPR POC.

(2) DCSC Wood Products team will review and comment on all draft products.

(3) HQ Marine Corps POC will review and comment on all draft products.

(4) DCMDS POC will provide DORO a one page summary describing quality measurement and results one week prior to the first draft of the appendix to the Wood Products Initiative report. POC will review and comment on the draft report.

(5) DLA DPR POC will review and comment on all draft products. POC will provide DORO with reporting requirements.

4. Summary. Table 1 summarizes responsibilities.

DATA task	DPR	CANI	DORO	DCSC	DCMDS	HQ	USMC	MCLB	Camp	LeJ
Requirements		S	P	S	S		S			
Collection		S			P		P	S		S
Entry		S			P			P		P
Transmission			S		P		P	S		S
Receipt			P		S		S			
Analysis		S	P							
Reporting	S		P	S	S		S			

P-primary
S-support

5. Concurrence. MOU is official when all responsible parties have concurred by signing below.

Organization	Name	Title
DLA	Col Donald W. Klovstad, USAF	Chief Product Definition/ Supply Mgt Policy Group
DORO	Col Gerald F. Wyngaard, USAF	Chief, DORO
CANI	Larry M. Johnson	Computer Specialist
DCSC	E. A. Elliot, RADM, SC	Commander
DCMDS	James L. Bauer	Director Operations Support
HQ USMC	Col John A. O'Donovan	Head Materiel Policy & Readiness Branch
MCLB Albany	LTC Greg Freed, USMC	Director Base Support Division
Camp LeJeune	BGen L.H. Livingston, USMC	Commanding General, Marine Corps Base, Camp LeJeune

APPENDIX B

CUSTOMER SATISFACTION SURVEY FOR WOOD PRODUCTS SUPPORT

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CUSTOMER SATISFACTION SURVEY FOR WOOD PRODUCTS SUPPORT

The following questions have to do with the wood products support you have been receiving from your buying office. Please circle the number that most closely represents how you feel.

Please circle your answer according to the following scale:

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	N/A
5	4	3	2	1	N/A

- | | | | | | | |
|--------------------------------------------------------------------------------------------------|---|---|---|---|---|-----|
| 1. You receive quick response from your buying office to problems you refer. | 5 | 4 | 3 | 2 | 1 | N/A |
| 2. The services your buying office provide match your expectations of them. | 5 | 4 | 3 | 2 | 1 | N/A |
| 3. The educational training you receive on how to order in economic order quantities is helpful. | 5 | 4 | 3 | 2 | 1 | N/A |
| 4. The quality of the lumber you receive meets your requirements. | 5 | 4 | 3 | 2 | 1 | N/A |
| 5. The communication from your buying office for guidance, support, and assistance is helpful. | 5 | 4 | 3 | 2 | 1 | N/A |
| 6. The prices you receive for lumber are fair and reasonable. | 5 | 4 | 3 | 2 | 1 | N/A |
| 7. The use of Electronic Data Interchange (EDI) helps you to prepare and expedite requisitions. | 5 | 4 | 3 | 2 | 1 | N/A |
| 8. The delivery schedule you receive meets your requirements. | 5 | 4 | 3 | 2 | 1 | N/A |
| 9. The open lines of communication between you and the contractor is helpful. | 5 | 4 | 3 | 2 | 1 | N/A |
| 10. You receive satisfactory resolutions to problems from your buying office. | 5 | 4 | 3 | 2 | 1 | N/A |
| 11. The quality of the plywood you receive meets your requirements. | 5 | 4 | 3 | 2 | 1 | N/A |
| 12. The wood products knowledge and expertise you receive from your buying office is helpful. | 5 | 4 | 3 | 2 | 1 | N/A |
| 13. You receive professional and courteous service for your wood products support. | 5 | 4 | 3 | 2 | 1 | N/A |
| 14. The prices you receive for plywood are fair and reasonable. | 5 | 4 | 3 | 2 | 1 | N/A |
| 15. Overall, you are satisfied with the lumber support you receive. | 5 | 4 | 3 | 2 | 1 | N/A |
| 16. Overall, you are satisfied with the plywood support you receive. | 5 | 4 | 3 | 2 | 1 | N/A |

IDEAS FOR IMPROVEMENT? PLEASE COMMENT BELOW.

APPENDIX C
WOOD PRODUCTS INITIATIVE TEST

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DEFENSE LOGISTICS AGENCY
DEFENSE CONTRACT MANAGEMENT COMMAND
DEFENSE CONTRACT MANAGEMENT DISTRICT SOUTH
805 WALKER STREET
MARIETTA, GEORGIA 30060-2789



DCMDS-OT

IN REPLY
REFER TO

NOV 14 1995

MEMORANDUM FOR COMMANDER, DEFENSE OPERATIONS RESEARCH OFFICE
ATTN: MR. PAUL GROVER/DORO

SUBJECT: Defense Performance Review - Wood Products Initiative Test
Measurement Procedures

As described in the Memorandum of Understanding (MOU) dated March 3, 1994, the District South Representative was tasked to provide the Quality Assurance data for the Wood Products Initiative Test and subsequently, provide the results to DORO, Richmond, Virginia. The primary locations for the data collection for the Wood Products Test were the Marine Corps Logistics Base, Albany, Georgia and Camp LeJeune Marine Corps Base, Jacksonville, North Carolina. Two alternate locations were also visited during the test period, Anniston Army Depot, Anniston, Alabama and Robins Air Force Base, Warner Robins, Georgia. Upon completion of the audits, principle personnel at each location were interviewed to gain insight on their methods of operation for handling wood products. It was learned that each location operated under similar criteria, that is, material is received at a receiving area and a physical count/tally is accomplished. Observations are made to determine obvious handling and/or transit damage to the material and, if none, the material is either delivered to the user/requester or is transported to warehouse storage for later issues.

Discussions with key warehouse personnel and evaluation of available purchase orders/receiving documents, disclosed that there was no formal inspection process to determine product quality. We have concluded that this is common practice for wood products.

At each site visited, management/supervisory personnel were informed of the availability of quality assurance course, F06 Wood Products, and we have recommended that all receiving and warehouse personnel attend the course. The Quality Assurance data collection results are enclosed.

If you have questions regarding this matter, please contact Mr. Alvin D. Bowe on (770) 590-6634 or DSN 697-6634.

Edward L. Cooley
JAMES L. BAUER

Director

Operations Support Directorate

Attachments

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**WOOD PRODUCTS INITIATIVE TEST PROGRAM
SITE VISIT**

=====

SITE VISITED: Marine Corps Logistics Base, Albany, GA

CONTRACT: SPO720-94-D-3000, 0008

ITEM: Plywood

FSG 55 NSN(s): 5530-00-618-6956

=====

AUDIT RESULTS

=====

MATERIAL GRADE STAMPED: Yes. The material was grade marked as required by contract, also, the grade stamp contained the information required by national grading agencies' guidelines.

MATERIAL GRADE AS ORDERED: Yes. Observations made during the visit indicate the material to be the proper grade as required by contract.

MATERIAL SUITED FOR INTENDED PURPOSE: Yes. Discussions with warehouse personnel revealed material is issued to the installation Box Shop for the primary purpose to construct shipping crates/cartons.

ALSC CERTIFIED PRESSURE TREATING STAMP: No. The contract does not require the material to be pressure treated.

=====

PHYSICAL CONDITION OF MATERIAL AT TIME OF AUDIT: Observations made during the audit did not reveal any obvious handling or transit damage to the material.

PRESERVATION, PACKING, PACKAGING AND MARKING: The PPP was in accordance with contract requirements.

=====

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WOOD PRODUCTS INITIATIVE TEST PROGRAM

SITE VISIT

=====

SITE VISITED: Camp Lejeune Marine Corps Base , Jacksonville, NC

CONTRACT: Various

ITEM: Various

FSG 55 NSN(s): Various

=====

AUDIT RESULTS

=====

MATERIAL GRADE STAMPED: Yes. The material was grade marked as required by contract, also, the grade stamp contained the information required by national grading agencies' guidelines.

MATERIAL GRADE AS ORDERED: Yes. Observations made during the visit indicate the material to be the proper grade as required by contract.

MATERIAL SUITED FOR INTENDED PURPOSE: Yes. Discussions with warehouse personnel revealed material is issued to the installation Box Shop for the primary purpose to construct shipping crates/cartons.

ALSC CERTIFIED PRESSURE TREATING STAMP: No. The contract does not require the material to be pressure treated.

=====

PHYSICAL CONDITION OF MATERIAL AT TIME OF AUDIT: Observations made during the audit did not reveal any obvious handling or transit damage to the material.

PRESERVATION, PACKING, PACKAGING AND MARKING: The PPP was in accordance with contract requirements.

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REPORT DOCUMENTATION PAGE			Form Approved OMB No. 0704-0188	
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6. AUTHOR(S) Lead Analyst: Mr. Paul E. Grover Administrative Support: Ms. Sharan E. Dockery				
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) Defense Logistics Agency Operations Research Office (DORO) c/o Defense Supply Center Richmond Richmond, VA 23297-5082			8. PERFORMING ORGANIZATION REPORT NUMBER DLA-95-P40242	
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES) HQ Defense Logistics Agency (MMP) 8725 John J. Kingman Road, Suite 2533 Ft Belvoir, VA 22060-6221			10. SPONSORING/MONITORING AGENCY REPORT NUMBER	
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13. ABSTRACT (Maximum 200 words) A test was conducted to compare the performance of local purchase against a modified form of central procurement for wood products. During a test period of January 1, 1995 through September 30, 1995, two Marine bases were each instructed to purchase wood products via one of the test methods and to report test metrics. The base using local purchase reported generally higher prices averaging about 10% along with longer lead times of 9 days. The quality of material delivered was judged to be the same in each test case. The customers of local purchase reported higher levels of satisfaction during the conduct of the test. Therefore, it was concluded that the modified central procurement method was competitive with local purchase and should be expanded into additional geographical areas where the demand and market conditions warrant a similar contract type.				
14. SUBJECT TERMS Contracting, Procurement, Long Term Contracting, Defense Performance Review, Quality Assurance, Logistics Response Time, Design of Experiments, Metrics			15. NUMBER OF PAGES 58	
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