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# Promoting Freight Carrier EDI Participation with the Defense Finance and Accounting Service – Indianapolis Center

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## Executive Summary

# PROMOTING FREIGHT CARRIER EDI PARTICIPATION WITH THE DEFENSE FINANCE AND ACCOUNTING SERVICE – INDIANAPOLIS CENTER

By the end of January 1994, the Defense Finance and Accounting Service – Indianapolis Center (DFAS-IN) will be ready to receive freight shipment and invoice information electronically from DoD shipping activities and freight carriers that are capable of sending such information. The success of the electronic system depends largely on two conditions:

- The impiementation of electronic data interchange (EDI) at the six high-volume shipping depots of the Defense Logistics Agency (DLA) and three Army regional data centers known as Multifunctional Information Processing Activities (MIPAs) that house the EDI translation software and process EDI transactions for their corresponding satellite depots
- The availability of EDI-capable motor freight carriers to serve as DFAS-IN's trading partners.

Insofar as implementation of EDI at DLA and Army depots is concerned, it is proceeding apace. The six DLA depots are scheduled to complete their EDI implementation by the end of January 1994 and the three Army MIPAs by late May 1994. The process of determining the availability of EDI-capable motor carriers is also proceeding. In this report, we propose a three-step plan for soliciting freight carrier trading partners for DFAS-IN. First, we have prepared promotional and instructional materials and recommend their widespread distribution throughout the industry; second, we suggest a series of freight carrier workshops; and third, we propose a process of selectively targeting carriers that represent large shipment volumes. We recommend that DFAS-IN develop a process to test interested carriers' EDI qualifications prior to accepting electronic invoices for payment and that DFAS-IN conduct that process using the "first-come, first-served" service approach.

With the implementation of DLA and Army EDI plans and persistent, aggressive solicitation of the freight carrier industry, DFAS-IN can expect that 50 percent of all freight shipment information and 40 percent of all invoice



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information will be transmitted to it electronically within 6 months of initial EDI implementation.

# PROMOTING FREIGHT CARRIER EDI PARTICIPATION WITH THE DEFENSE FINANCE AND ACCOUNTING SERVICE – INDIANAPOLIS CENTER

## INTRODUCTION

Each year the Defense Finance and Accounting Service – Indianapolis Center (DFAS-IN) receives over a million bills from freight carriers, generating several million pieces of paper. To eliminate the costs associated with handling that much paper, it is implementing the Defense Transportation Payment System (DTRS). DTRS will make extensive use of electronic data interchange (EDI) techniques to enhance its payment, collection, accounting, and reporting functions as well as to eliminate paper. It will receive freight government bills of lading (GBLs) and shipment cost data electronically from EDI-capable shipping activities through an EDI interface with Military Traffic Management Command's (MTMC's) CONUS Freight Management (CFM) system. In addition, DFAS-IN will receive electronic invoice information from EDI-capable carriers and match that information to the pre-positioned electronic shipment information for reconciliation and payment.

The DFAS-IN is interested in attracting freight carriers to be EDI trading partners as quickly as possible. We have developed and are implementing a plan to accomplish that goal. The plan calls for developing program materials, conducting general carrier workshops, and soliciting specific carriers for initial implementation of DTRS. Both the materials and the workshops are designed to introduce freight carriers to EDI and to DoD's operating concept and to explain what carriers must do to become DFAS-IN trading partners. By targeting specific carriers, DFAS-IN can be assured of having high-volume carriers qualified to transmit electronic invoices when DTRS goes into production.

In the next section, we estimate the volume of EDI invoices that DFAS-IN can expect. Since DFAS-IN is limiting EDI invoices to shipments originating at EDI-capable shipping activities, our projections are based on the Defense Logistics Agency (DLA's) and the Army's plans for implementing EDI at their shipping activities and on the EDI capability of carriers.

## EDI PROJECTIONS FOR DFAS-IN

In a previous study, we found that 85 percent (1.1 million) of the total 1.3 million annual CONUS freight shipments are transported by motor carriers, 12 percent (0.2 million) by air freight carriers, 2 percent (20,000) by rail carriers, and 1 percent by others.[1] Those statistics remain relatively constant from year to year. In the same study, we found that DLA is the predominant DoD shipper, with 34 percent of the total (45 percent if we include the Defense Contract Administration Service's shipping), followed by the Army with 24 percent, the Air Force with 17 percent, the Navy with 12 percent, and the Marine Corps with 2 percent.

The current DFAS-IN plan focuses on carriers that have transported DLA and Army freight in the recent past. We concentrated on those carriers because DLA and Army EDI plans for shipping activities are more mature than those of the Air Force; DLA and Army represent significantly more EDI shipment potential than the Navy or the Marine Corps; and DFAS-IN's system, which will be needed to process Navy and Marine Corps bills under payment center consolidation plans, is currently capable of processing only DLA, Army, and Air Force bills.

The DLA and Army plan to implement EDI at their largest depots. They are targeting activities that account for 56 percent (618,000 shipments) of DFAS-IN's current total annual freight shipments (about 1.1 million shipments). From March 1991 through February 1992, EDI-capable carriers were involved in about 45 percent (490,000 shipments) of DFAS-IN's total freight business. Almost all of those shipments are by motor carriers because although rail carriers are EDI capable, their shipment volume is insignificant and few air freight carriers are EDI capable. The DLA's and Army's EDI plans are detailed below.

### DLA EDI Implementation Plan and Schedule

The DLA is currently implementing EDI at six of its depot shipping activities and plans to add two Army depots now being consolidated under DLA management. The six DLA depots account for about 40 percent (435,000 shipments) of the freight GBLs paid each year by the DFAS-IN; the two Army depots will account for another

[1]LMI Report AL711R1, *An Electronic Future for Defense Transportation Management*, Thomas W. Heard and W. Michael Bridges, January 1988.

8 percent. As a result, implementation of EDI at the DLA depots is key to the success of DoD's EDI transportation payment program.

The DLA has procured commercial EDI translation software packages for its depots and has developed a pilot system at the Defense Depot Ogden, Utah (DDOU). (DDOU was selected as the pilot activity because it is collocated with DLA's central design agency.) DDOU began testing the pilot system in February 1992 by exchanging information electronically with the CFM system.

In August 1993, the EDI pilot system at DDOU will make the transition to a full-scale production operation, and DDOU will then begin to export the pilot system to the other five depots in 1-month increments. Sharpe Army Depot, Cal., will eventually be consolidated with Defense Depot Tracy, Cal., and New Cumberland Army Depot, Pa., will eventually be consolidated with Defense Depot Mechanicsburg, Pa. Figure 1 shows the EDI implementation schedule at the six DLA depots between June 1993 and February 1994. Current plans call for an EDI capability at Sharpe Army Depot and New Cumberland Army Depot following the DLA depot implementation.

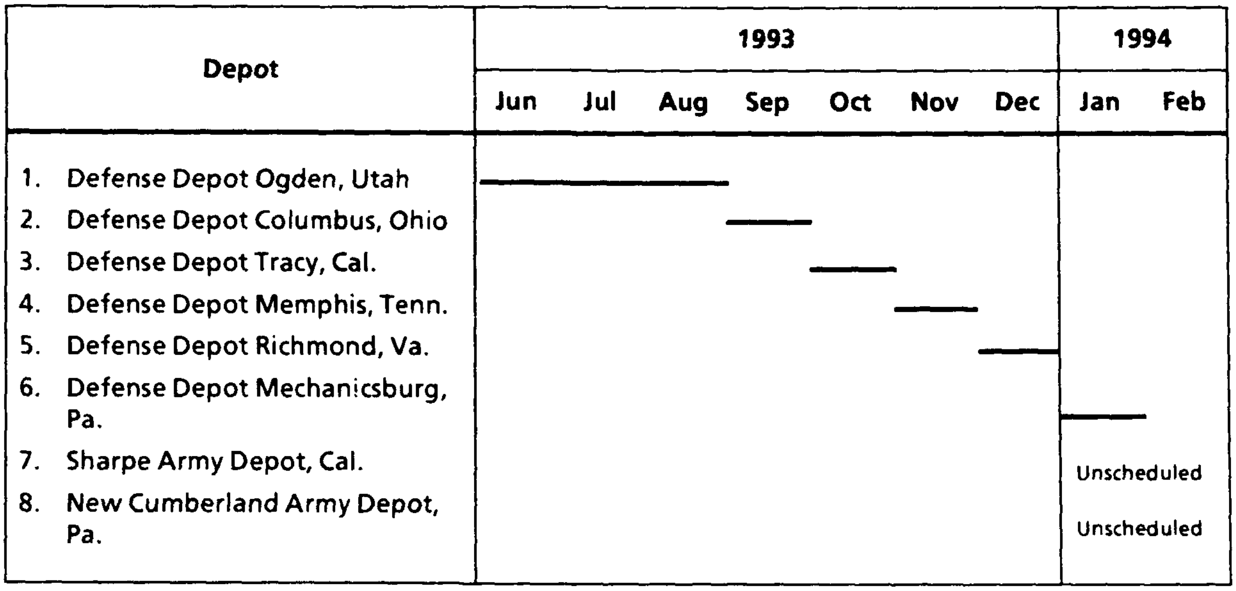


**FIG. 1. DLA EDI IMPLEMENTATION SCHEDULE**

Most of the carriers that serve the eight depots are large, less-than-truckload motor carriers that are able to use EDI to conduct business. EDI-capable carriers that serve the six DLA depots will account for about 30 percent (339,000 shipments) of the freight invoices paid by DFAS-IN. Another 8 percent will be added by Sharpe Army Depot and New Cumberland Army Depot invoices.

Table 1 shows the largest carriers at each DLA depot and their GBL volumes from March 1991 through February 1992. At each depot, 12 or fewer carriers accounted for more than 90 percent of the GBL volume. About 70 percent of DLA's shipments were guaranteed traffic (GT) shipments. DLA plans to focus its EDI efforts initially on GT shipments and by August 1993 expects carriers of all freight shipments to be EDI capable. Although most GT contracts will end in 1993, future awards will likely include many of the same carriers identified in Table 1. Table 2 presents the 20 largest carriers at the eight depots. Those carriers account for over 85 percent of DLA's freight shipments, almost all are EDI capable, and they include DLA's largest GT carriers.

### Army EDI Implementation Plan and Schedule

An Army initiative, Streamlining Information Services Operations Consolidation System (SISOCS), will provide better control of business data and improved utilization of information system resources. It will do so by integrating and consolidating the Army Materiel Command major subordinate command data-processing environment (now 49 mainframe computers at 22 different locations) into four regional data centers known as Multifunctional Information Processing Activities (MIPAs). The four consolidation MIPA hubs are Chambersburg, Pa.; Rock Island, Ill.; Huntsville, Ala.; and St. Louis, Mo.

Three MIPA hubs (Chambersburg, Rock Island, and Huntsville) will house the EDI translation software and process EDI transactions for their corresponding satellite depots. The St. Louis MIPA hub does not have shipping depot communications connectivity and thus will not house the EDI translator nor have EDI processing capability. The two Army depots are to be consolidated into DLA and are not included in the configurations.

The SISOCS initiative enables the Army to implement EDI quickly. The MIPA hubs house the mainframe computers with identical EDI systems. Therefore, once EDI implementation is complete at one hub, the other two can easily be added by installing a copy of the system software on each mainframe and conducting the EDI

TABLE 1

DLA TRAFFIC PROFILE

(March 1991 – February 1992)

| Depot (GBLOC)[a]/ total shipments | Carrier | Shipments | % of total depot shipments | GT shipments | % of total depot GT shipments | EDI capability[b] |
|---|---|---|---|---|---|---|
| Ogden, Utah (KASQ) | Consolidated Freightways | 13,862 | 33.9 | 12,511 | 30.6 | yes |
| | Overnite Transportation | 13,001 | 31.8 | 11,701 | 28.6 | yes |
| | Clearwater Trucking | 5,977 | 14.6 | 5,223 | 12.8 | yes |
| | Yellow Freight System | 1,994 | 4.9 | 1,771 | 4.3 | yes |
| | Molerway Freight Lines | 1,398 | 3.4 | 1,225 | 3.0 | no |
| | Motor Cargo | 606 | 1.5 | 507 | 1.2 | no |
| **40,901** | | **36,838** | **90.1** | **32,938** | **80.5** | |
| Columbus, Ohio (EISQ) | Carolina Freight Carriers | 12,699 | 30.8 | 12,214 | 29.6 | yes |
| | Western New York Air Freight | 8,183 | 19.9 | 677 | 1.6 | no |
| | Overnite Transportation | 6,283 | 15.2 | 6,022 | 14.6 | yes |
| | Consolidated Freightways | 5,652 | 13.7 | 5,528 | 13.4 | yes |
| | Hover Trucking Co. | 2,041 | 5.0 | 1,959 | 4.8 | yes |
| | ANR Freight Systems | 1,811 | 4.4 | 1,746 | 4.2 | no |
| | ABF Freight System, Inc. | 949 | 2.3 | 906 | 2.2 | yes |
| **41,213** | | **37,618** | **91.3** | **29,052** | **70.5** | |
| Tracy, Cal. (LHSQ) | Yellow Freight System | 40,940 | 54.3 | 34,130 | 45.2 | yes |
| | Conway Express | 8,354 | 11.1 | 7,046 | 9.3 | yes |
| | Consolidated Freightways | 5,578 | 7.4 | 4,234 | 5.6 | yes |
| | Associated Air Freight | 2,678 | 3.6 | 0 | 0 | no |

[a] GBLOC = government bill of lading office code.

[b] Carriers with EDI capability claim to be able to send or receive at least one American National Standards Institute (ANSI) Accredited Standards Committee (ASC) X12 transaction set, not necessarily invoice or shipment information transaction sets.

TABLE 1

**DLA TRAFFIC PROFILE**

**(March 1991 – February 1992) (Continued)**

| Depot (GBLOC)[a]/ total shipments | Carrier | Shipments | % of total depot shipments | GT shipments | % of total depot GT shipments | EDI capability[b] |
|---|---|---|---|---|---|---|
| | Dynamic Air Freight | 1,831 | 2.4 | 0 | 0 | no |
| | Jess Cervantes | 2,186 | 2.9 | 1,442 | 1.9 | no |
| | Clearwater Trucking | 2,067 | 2.7 | 1,683 | 2.2 | yes |
| | General Transportation | 1,691 | 2.2 | 1,331 | 1.8 | no |
| | Airborne Freight | 1,549 | 2.1 | 0 | 0 | yes |
| | Americargo | 1,241 | 1.6 | 1,225 | 1.6 | no |
| **75,435** | | **68,115** | **90.3** | **51,091** | **67.8** | |
| **Memphis, Tenn. (FDSQ)** | Roadway Express, Inc. | 23,149 | 20.0 | 19,980 | 17.3 | yes |
| | Overnite Transportation | 16,467 | 14.2 | 11,167 | 9.7 | yes |
| | Consolidated Freightways | 12,336 | 10.7 | 8,365 | 7.2 | yes |
| | Spartan Express, Inc. | 9,199 | 8.0 | 8,360 | 7.2 | yes |
| | Transus, Inc. | 7,338 | 6.3 | 6,653 | 5.8 | yes |
| | Batesville Truck Lines | 7,330 | 6.3 | 6,611 | 5.7 | no |
| | Conway Express | 7,132 | 6.2 | 6,014 | 5.2 | yes |
| | Jones Truck Lines | 6,461 | 5.6 | 5,254 | 4.5 | yes |
| | Hover Trucking Co. | 4,299 | 3.7 | 3,903 | 3.4 | yes |
| | Western New York Air Freight | 3,994 | 3.5 | 218 | 0.2 | no |
| | AFC Express | 3,816 | 3.3 | 66 | 0 | no |
| | Old Dominion Freight Line | 3,420 | 3.0 | 3,211 | 2.8 | yes |
| **115,586** | | **104,941** | **90.8** | **79,802** | **69.0** | |

[a] GBLOC = government bill of lading office code.

[b] Carriers with EDI capability claim to be able to send or receive at least one ANSI ASC X12 transaction set, not necessarily invoice or shipment information transaction sets.

## TABLE 1

## DLA TRAFFIC PROFILE

**(March 1991 – February 1992) (Continued)**

| Depot (GBLOC)[a]/ total shipments | Carrier | Shipments | % of total depot shipments | GT shipments | % of total depot GT shipments | EDI capability[b] |
|---|---|---|---|---|---|---|
| **Richmond, Va. (BJSQ)** | Carolina Freight Carriers | 21,277 | 31.2 | 17,082 | 25.0 | yes |
| | St. Johnsbury Trucking | 11,587 | 17.0 | 9,380 | 13.8 | yes |
| | Estes Express Lines | 9,643 | 14.1 | 8,486 | 12.4 | no |
| | Preston Trucking | 7,303 | 10.7 | 4,982 | 7.3 | yes |
| | Old Dominion Freight Line | 5,006 | 7.3 | 4,399 | 6.5 | yes |
| | Overnite Transportation | 3,966 | 5.8 | 3,293 | 4.8 | yes |
| | Carroll Trucking | 2,859 | 4.2 | 272 | 0.4 | no |
| **68,233** | | **61,641** | **90.3** | **47,894** | **70.2** | |
| **Mechanicsburg, Pa. (DMSQ)** | Carolina Freight Carriers | 34,019 | 36.2 | 32,681 | 34.8 | yes |
| | Consolidated Freightways | 18,798 | 20.0 | 14,850 | 15.8 | yes |
| | Ward Trucking | 9,470 | 10.1 | 8,478 | 9.0 | yes |
| | St. Johnsbury Trucking | 8,974 | 9.6 | 8,270 | 8.8 | yes |
| | ABF Freight System, Inc. | 7,654 | 8.2 | 1 | 0 | yes |
| | Preston Trucking | 4,087 | 4.3 | 198 | 0.2 | yes |
| | Old Dominion Freight Line | 3,032 | 3.2 | 2,913 | 3.1 | yes |
| **93,915** | | **86,034** | **91.6** | **67,391** | **71.8** | |
| **Sharpe, Cal. (LEAQ)** | Yellow Freight System | 13,909 | 52.2 | 428 | 1.6 | yes |
| | Consolidated Freightways | 2,520 | 9.5 | 1,131 | 4.2 | yes |
| | Dynamic Air Freight | 2,029 | 7.6 | 335 | 1.3 | no |
| | Conway Express | 1,137 | 4.3 | 2 | 0 | yes |

[a] GBLOC = government bill of lading office code.

[b] Carriers with EDI capability claim to be able to send or receive at least one ANSI ASC X12 transaction set, not necessarily invoice or shipment information transaction sets.

TABLE 1

DLA TRAFFIC PROFILE

(March 1991 – February 1992) (Continued)

| Depot (GBLOC)[a]/ total shipments | Carrier | Shipments | % of total depot shipments | GT shipments | % of total depot GT shipments | EDI capability[b] |
|---|---|---|---|---|---|---|
| | Clearwater Trucking | 1,082 | 4.1 | 76 | 0.3 | yes |
| | Emery Worldwide | 1,042 | 3.9 | 992 | 3.7 | yes |
| | J&S Trucking Co. | 947 | 3.6 | 900 | 3.4 | no |
| | Jess Cervantes | 655 | 2.5 | 111 | 0.4 | no |
| | Convenant Transport, Inc. | 579 | 2.2 | 561 | 2.1 | no |
| **26,651** | | **23,900** | **89.7** | **4,536** | **17.0** | |
| **New Cumberland, Pa. (DNAQ)** | Roadway Express, Inc. | 22,138 | 35.0 | 21,571 | 34.1 | yes |
| | Carolina Freight Carriers | 16,032 | 25.4 | 15,589 | 24.7 | yes |
| | Overnite Transportation | 7,408 | 11.7 | 6,777 | 10.7 | yes |
| | Pennco Trucking | 3,197 | 5.1 | 3,160 | 5.0 | no |
| | Consolidated Freightways | 2,523 | 4.0 | 2,404 | 3.8 | yes |
| | St. Johnsbury Trucking | 2,132 | 3.4 | 2,090 | 3.3 | yes |
| | Western New York Air Freight | 2,001 | 3.2 | 1,972 | 3.1 | no |
| | Fulton, Authur H. | 1,062 | 1.7 | 1,053 | 1.7 | no |
| | Ward Trucking | 951 | 1.5 | 927 | 1.5 | yes |
| **63,197** | | **57,444** | **90.1** | **55,543** | **87.9** | |
| **Grand total 525,131** | | **476,531** | **91.0** | **368,247** | **70.1** | |

[a] GBLOC = government bill of lading office code.

[b] *Carriers with EDI capability claim to be able to send or receive at least one ANSI ASC X12 transaction set, not necessarily invoice or shipment information transaction sets.*

TABLE 2

DLA'S 20 LARGEST FREIGHT CARRIERS

(Including Sharpe and New Cumberland Army Depots)

(March 1991 – February 1992)

| Carrier | Total shipments | GT shipments | EDI capability[a] |
|---|---|---|---|
| Carolina Freight Carriers | 84,027 | 77,566 | yes |
| Consolidated Freightways | 61,269 | 49,023 | yes |
| Yellow Freight System | 56,843 | 36,329 | yes |
| Overnite Transportation | 47,125 | 38,960 | yes |
| Roadway Express, Inc. | 45,287 | 41,551 | yes |
| St. Johnsbury Trucking | 22,693 | 19,740 | yes |
| Conway Express | 16,623 | 13,062 | yes |
| Western New York Air Freight | 14,178 | 2,867 | no |
| Old Dominion Freight Line | 11,458 | 10,523 | yes |
| Preston Trucking | 11,390 | 5,180 | yes |
| Ward Trucking | 10,421 | 9,405 | yes |
| Estes Express Lines | 9,643 | 8,486 | no |
| Spartan Express, Inc. | 9,199 | 8,360 | yes |
| Clearwater Trucking | 9,126 | 6,982 | yes |
| ABF Freight System, Inc. | 8,603 | 907 | yes |
| Transus, Inc. | 7,338 | 6,653 | yes |
| Batesville Trucking | 7,330 | 6,611 | no |
| Jones Truck Lines | 6,461 | 5,254 | yes |
| Hover Trucking Co. | 6,340 | 5,862 | yes |
| Dynamic Air Freight | 3,860 | 335 | no |
| Total | 449,216 | 353,756 | — |

[a] Carriers with EDI capability claim to be able to send or receive at least one ANSI ASC X12 transaction set, not necessarily invoice or shipment information transaction sets.

training and new procedures training at each satellite location. That training is expected to take approximately 2 weeks.

The first MIPA hub scheduled for EDI implementation is Chambersburg. Letterkenny Army Depot, Pa., where the maintenance is housed, is currently testing an EDI pilot system. After that prototype is complete, EDI will be implemented and training conducted at the other satellites of this hub – Tobyhanna Army Depot, Pa.; Seneca Army Depot, N.Y.; Savanna Army Depot, Ill.; and Lake City Army Ammunition Plant, Mo.

The MIPA at Huntsville will be implemented next. It is scheduled next because one of its satellites, the Red River Army Depot, Tex., has by far the largest volume of shipments of any depot, and by implementing the Huntsville hub next, the Army will maximize EDI benefits sooner. Other Huntsville satellite activities include Anniston Army Depot, Ala.; Lexington Bluegrass Army Depot, Ky.; Rock Island Arsenal, Ill.; Redstone Army Depot, Ala.; and Corpus Christie Army Depot, Tex.

The Rock Island hub will be the third to have EDI capability. Satellite activities within Rock Island's configuration include Sacramento Army Depot, Cal.; McAlister Army Ammunition Depot, Ok.; Pueblo Army Depot, Col.; Sierra Army Depot, Cal.; Hawthorne Army Ammunition Depot, Nev.; Crane Army Ammunition Plant, Ind.; Tooele Army Depot, Utah.; Pine Bluff Arsenal, Ark.; and Navajo Depot Activity, Ariz. Figure 2 presents the probable EDI implementation schedule for Army hubs.

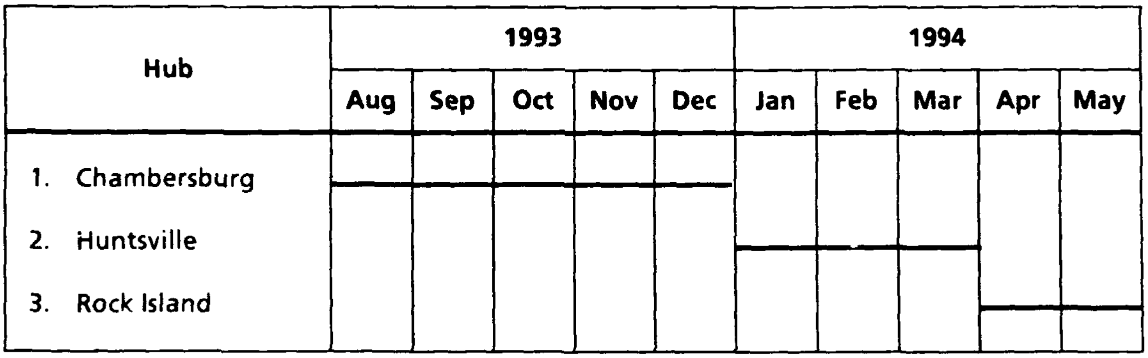


**FIG. 2. ARMY EDI IMPLEMENTATION SCHEDULE**

By May 1994, the shipping activities that the Army is targeting for EDI capability will account for almost 100,000 shipments annually, which is about 8 percent of DFAS-IN's total freight shipments. Tables 3, 4, and 5 show the largest carriers that served the largest Army activities planned for EDI capability between March 1991 and February 1992. More than 80 percent of the total shipments were transported by 15 or fewer carriers at each depot. Carriers that served the larger Army activities were able to transmit electronic invoices for about 70 percent of the

Army's shipments, representing over 6 percent of DFAS-IN's total invoices paid annually. Reliable historical data are not available on the smaller satellite activities that fall under the hub configuration, and hence, those activities are not included in Tables 3, 4, and 5.

TABLE 3

ARMY TRAFFIC PROFILE – CHAMBERSBURG HUB

(March 1991 – February 1992)

| Depot (GBLOC)[a]/ total shipments | Carrier | Shipments | % of total depot shipments | GT shipments | % of total depot GT shipments | EDI capability[b] |
|---|---|---|---|---|---|---|
| Letterkenny, Pa. (DMAQ) | Consolidated Freightways | 2,865 | 24.4 | 272 | 2.3 | Yes |
| | Overnite Transportation | 1,373 | 11.7 | 432 | 3.7 | Yes |
| | St. Johnsbury Trucking | 1,139 | 9.7 | 291 | 2.5 | Yes |
| | Preston Trucking | 936 | 8.0 | 14 | 0.1 | Yes |
| | Old Dominion Freight Line | 848 | 7.2 | 218 | 1.9 | Yes |
| | Yellow Freight System | 444 | 3.8 | 0 | 0 | Yes |
| | C. I. Whitten Transfer Co. | 436 | 3.7 | 0 | 0 | No |
| | Cressler | 390 | 3.3 | 17 | 0.1 | No |
| | T. F. Boyle Transportation | 340 | 2.9 | 0 | 0 | Yes |
| | Estes Express Lines | 302 | 2.6 | 0 | 0 | No |
| | Tri-State Motor Transit | 277 | 2.4 | 0 | 0 | Yes |
| | ABF Freight System, Inc. | 241 | 2.1 | 0 | 0 | Yes |
| **11,735** | | **9,591** | **81.7** | **1,244** | **10.6** | |
| Tobyhanna, Pa. (DOAQ) | Roadway Express, Inc. | 1,321 | 22.9 | 0 | 0 | Yes |
| | Consolidated Freightways | 809 | 14.0 | 0 | 0 | Yes |
| | Ward Trucking | 581 | 10.1 | 10 | 0.2 | Yes |
| | Overnite Transportation | 507 | 8.8 | 1 | 0 | Yes |

[a] GBLOC = government bill of lading office code.

[b] Carriers with EDI capability claim to be able to send or receive at least one ANSI ASC X12 transaction set, not necessarily invoice or shipment information transaction sets.

TABLE 3

ARMY TRAFFIC PROFILE – CHAMBERSBURG HUB (Continued)

(March 1991 – February 1992)

| Depot (GBLOC)[a]/ total shipments | Carrier | Shipments | % of total depot shipments | GT shipments | % of total depot GT shipments | EDI capability[b] |
|---|---|---|---|---|---|---|
| | Emery Worldwide | 557 | 9.7 | 0 | 0 | Yes |
| | Pilot Air Freight | 399 | 6.9 | 0 | 0 | No |
| | Pre Fab Transit | 357 | 6.2 | 0 | 0 | No |
| | Yellow Freight System | 296 | 5.1 | 0 | 0 | Yes |
| **5,771** | | **4,827** | **83.6** | **11** | **0.2** | |
| **Seneca, N.Y. (DCAQ)** | Howards Express | 366 | 15.0 | 0 | 0 | Yes |
| | Roadway Express, Inc. | 269 | 11.0 | 0 | 0 | Yes |
| | Carolina Freight Carriers | 241 | 9.9 | 0 | 0 | Yes |
| | ABF Freight System, Inc. | 205 | 8.4 | 0 | 0 | Yes |
| | Ranger Transportation | 180 | 7.4 | 0 | 0 | Yes |
| | Consolidated Freightways | 167 | 6.8 | 0 | 0 | Yes |
| | Tri-State Motor Transit | 148 | 6.1 | 0 | 0 | Yes |
| | C. I. Whitten Transfer Co. | 148 | 6.1 | 0 | 0 | No |
| | T. F. Boyle Transportation | 133 | 5.5 | 0 | 0 | Yes |
| | New England Motor Freight | 77 | 3.2 | 0 | 0 | No |
| | Three Coast Carriers | 67 | 2.7 | 0 | 0 | No |
| **2,441** | | **2,001** | **82.0** | **0** | **0** | |
| **Chambersburg total 19,947** | | **16,419** | **82.3** | **1,255** | **6.3** | |

[a] GBLOC = government bill of lading office code.

[b] Carriers with EDI capability claim to be able to send or receive at least one ANSI ASC X12 transaction set, not necessarily invoice or shipment information transaction sets.

TABLE 4

ARMY TRAFFIC PROFILE – HUNTSVILLE HUB

(March 1991 – February 1992)

| Depot (GBLOC)[a]/ total shipments | Carrier | Shipments | % of total depot shipments | GT shipments | % of total depot GT shipments | EDI capability[b] |
|---|---|---|---|---|---|---|
| **Red River, Tex. (HBAQ)** | Consolidated Freightways | 17,646 | 38.1 | 0 | 0 | Yes |
| | Yellow Freight System | 7,894 | 17.1 | 0 | 0 | Yes |
| | Overnite Transportation | 4,436 | 9.6 | 0 | 0 | Yes |
| | Arkansas Freightways | 3,822 | 8.3 | 0 | 0 | Yes |
| | Central Freight Lines | 3,140 | 6.8 | 0 | 0 | Yes |
| | Roadway Express, Inc. | 2,944 | 6.4 | 0 | 0 | Yes |
| **46,267** | | **39,882** | **86.2** | **0** | **0** | |
| **Anniston, Ala. (FGAQ)** | Baggett Transportation | 1,307 | 16.1 | 0 | 0 | No |
| | Tri-State Motor Transit | 925 | 11.4 | 0 | 0 | Yes |
| | Ranger Transportation | 756 | 9.3 | 0 | 0 | Yes |
| | Roadway Express, Inc. | 750 | 9.2 | 0 | 0 | Yes |
| | Watkins Motor Lines | 726 | 8.8 | 0 | 0 | Yes |
| | Transus, Inc. | 599 | 7.4 | 0 | 0 | Yes |
| | Overnite Transportation | 469 | 5.8 | 0 | 0 | Yes |
| | ABF Freight System, Inc. | 418 | 5.1 | 0 | 0 | Yes |
| | Carolina Freight Carriers | 417 | 5.1 | 0 | 0 | Yes |
| | T. F. Boyle Transportation | 416 | 5.1 | 0 | 0 | Yes |
| **8,129** | | **6,783** | **83.4** | **0** | **0** | |

[a] GBLOC = government bill of lading office code.

[b] Carriers with EDI capability claim to be able to send or receive at least one ANSI ASC X12 transaction set, not necessarily invoice or shipment information transaction sets.

TABLE 4

ARMY TRAFFIC PROFILE – HUNTSVILLE HUB (Continued)

(March 1991 – February 1992)

| Depot (GBLOC)[a]/ total shipments | Carrier | Shipments | % of total depot shipments | GT shipments | % of total depot GT shipments | EDI capability[b] |
|---|---|---|---|---|---|---|
| Lexington Bluegrass, Ky. (FAAQ) | Roadway Express, Inc. | 1,526 | 18.8 | 0 | 0 | Yes |
| | Carolina Freight Carriers | 1,020 | 12.5 | 0 | 0 | Yes |
| | Tri-State Motor Transit | 811 | 10.0 | 0 | 0 | Yes |
| | Consolidated Freightways | 625 | 7.7 | 0 | 0 | Yes |
| | C. I. Whitten Transfer Co. | 597 | 7.3 | 0 | 0 | No |
| | Mercer Transportation | 472 | 5.8 | 0 | 0 | Yes |
| | Universal Transportation | 342 | 4.2 | 0 | 0 | No |
| | T. F. Boyle Transportation | 292 | 3.5 | 0 | 0 | Yes |
| | Emery Worldwide | 242 | 3.0 | 0 | 0 | Yes |
| | Northwest Transport Service | 194 | 2.4 | 0 | 0 | Yes |
| | Baggett Transportation | 182 | 2.2 | 1 | 0 | No |
| | McGil Specialized Carriers | 179 | 2.2 | 0 | 0 | Yes |
| **8,130** | | **6,482** | **79.7** | **1** | **0** | |
| **Huntsville total 62,526** | | **53,147** | **85.0** | **1** | **0** | |

[a] GBLOC = government bill of lading office code.

[b] Carriers with EDI capability claim to be able to send or receive at least one ANSI ASC X12 transaction set, not necessarily invoice or shipment information transaction sets.

TABLE 5

ARMY TRAFFIC PROFILE – ROCK ISLAND HUB

(March 1991 – February 1992)

| Depot (GBLOC)[a]/ total shipments | Carrier | Shipments | % of total depot shipments | GT shipments | % of total depot GT shipments | EDI capability[b] |
|---|---|---|---|---|---|---|
| Sacramento, Ca. (LGAQ) | Consolidated Freightways | 741 | 15.4 | 5 | 0.1 | Yes |
| | Yellow Freight System | 676 | 14.1 | 0 | 0 | Yes |
| | G. I. Trucking | 512 | 10.7 | 0 | 0 | Yes |
| | Danzas – Northern Air | 485 | 10.1 | 0 | 0 | No |
| | Condor Freight Lines | 344 | 7.1 | 0 | 0 | No |
| | Universal Transportation | 337 | 7.0 | 0 | 0 | No |
| | Conway Express | 217 | 4.5 | 1 | 0 | Yes |
| | Viking Freight System | 204 | 4.2 | 0 | 0 | Yes |
| | Profit By Air | 191 | 4.0 | 0 | 0 | No |
| | Delta Air | 165 | 3.4 | 0 | 0 | Yes |
| **4,809** | | **3,872** | **80.5** | **6** | **0.1** | |
| McAlister, Okla. (HOAM) | Tri-State Motor Transit | 488 | 19.9 | 0 | 0 | Yes |
| | Federal Express | 312 | 12.7 | 0 | 0 | Yes |
| | L. D. Conner Trucking | 191 | 7.8 | 0 | 0 | No |
| | Coast Countries Express | 163 | 6.7 | 0 | 0 | No |
| | Wilson Transfer Special | 138 | 5.6 | 0 | 0 | No |
| | ABF Freight System, Inc. | 114 | 4.7 | 0 | 0 | Yes |
| | Consolidated Freightways | 107 | 4.4 | 0 | 0 | Yes |
| | Pre Fab Transit | 80 | 3.3 | 0 | 0 | No |
| | Baggett Transportation | 79 | 3.2 | 0 | 0 | No |

[a] GBLOC = government bill of lading office code.

[b] Carriers with EDI capability claim to be able to send or receive at least one ANSI ASC X12 transaction set, not necessarily invoice or shipment information transaction sets.

TABLE 5

**ARMY TRAFFIC PROFILE – ROCK ISLAND HUB (Continued)**

**(March 1991 – February 1992)**

| Depot (GBLOC)[a]/ total shipments | Carrier | Shipments | % of total depot shipments | GT shipments | % of total depot GT shipments | EDI capability[b] |
|---|---|---|---|---|---|---|
| | Federal Freight Systems | 63 | 2.6 | 0 | 0 | No |
| | Farley, Tony | 63 | 2.6 | 0 | 0 | No |
| | C. I. Whitten Transfer Co. | 62 | 2.5 | 0 | 0 | No |
| | Union Pacific Railroad | 61 | 2.5 | 0 | 0 | Yes |
| | Yellow Freight System | 60 | 2.4 | 0 | 0 | Yes |
| **2,450** | | **1,981** | **80.9** | **0** | **0** | |
| **Pueblo, Col. (KIAQ)** | Federal Express | 253 | 15.1 | 0 | 0 | Yes |
| | Roadway Express, Inc. | 206 | 12.3 | 0 | 0 | Yes |
| | Yellow Freight System | 157 | 9.4 | 0 | 0 | Yes |
| | Tri-State Motor Transit | 113 | 6.7 | 0 | 0 | Yes |
| | Northwest Transport Service | 106 | 6.3 | 0 | 0 | Yes |
| | C. I. Whitten Transfer Co. | 88 | 5.3 | 0 | 0 | No |
| | Consolidated Freightways | 72 | 4.3 | 0 | 0 | Yes |
| | T. F. Boyle Transportation | 57 | 3.4 | 0 | 0 | Yes |
| | Independent Freightway | 43 | 2.6 | 0 | 0 | No |
| | Baggett Transportation | 42 | 2.5 | 0 | 0 | No |
| | Arrow Trucking | 41 | 2.4 | 0 | 0 | No |
| | Ranger Transportation | 41 | 2.4 | 1 | 0.1 | Yes |

[a] GBLOC = government bill of lading office code.

[b] Carriers with EDI capability claim to be able to send or receive at least one ANSI ASC X12 transaction set, not necessarily invoice or shipment information transaction sets.

TABLE 5

ARMY TRAFFIC PROFILE – ROCK ISLAND HUB (Continued)

(March 1991 – February 1992)

| Depot (GBLOC)[a]/ total shipments | Carrier | Shipments | % of total depot shipments | GT shipments | % of total depot GT shipments | EDI capability[b] |
|---|---|---|---|---|---|---|
| | Schneider Specialized | 39 | 2.3 | 18 | 1.1 | Yes |
| | Knox Truck Lines | 35 | 2.1 | 0 | 0 | No |
| | Three Coast Carriers | 35 | 2.1 | 0 | 0 | No |
| **1,674** | | **1,328** | **79.3** | **19** | **1.1** | |
| Sierra, Cal. (LDAQ) | Diable Transportation | 286 | 20.0 | 0 | 0 | No |
| | Tri-State Motor Transit | 213 | 14.9 | 0 | 0 | Yes |
| | Consolidated Freightways | 188 | 13.1 | 6 | 0.4 | Yes |
| | Ranger Transportation | 171 | 11.9 | 3 | 0.2 | Yes |
| | Baggett Transportation | 102 | 7.1 | 0 | 0 | No |
| | C. I. Whitten Transfer Co. | 88 | 6.2 | 0 | 0 | No |
| | T. F. Boyle Transportation | 75 | 5.2 | 0 | 0 | Yes |
| | Knox Truck Lines | 45 | 3.1 | 0 | 0 | No |
| **1,432** | | **1,168** | **81.6** | **9** | **0.6** | |
| **Rock Island total 10,365** | | **8,349** | **80.6** | **34** | **0** | |

[a] GBLOC = government bill of lading office code.

[b] Carriers with EDI capability claim to be able to send or receive at least one ANSI ASC X12 transaction set, not necessarily invoice or shipment information transaction sets.

Table 6 presents the Army's 20 largest carriers. Those 20 carriers represented 78 percent of the Army's depot shipment volume, and all but 3 are EDI capable. Guaranteed traffic volume for those Army depots has been insignificant in the past but is expected to change as more Army depots are transferred to DLA management.

TABLE 6

ARMY'S 20 LARGEST FREIGHT CARRIERS

(March 1991 – February 1992)

| Carrier | Total shipments | EDI capability[a] |
|---|---|---|
| Consolidated Freightways | 23,220 | Yes |
| Yellow Freight System | 9,527 | Yes |
| Roadway Express, Inc. | 7,016 | Yes |
| Overnite Transportation | 6,785 | Yes |
| Arkansas Freightways | 3,822 | Yes |
| Central Freight Lines | 3,140 | Yes |
| Tri-State Motor Transit | 2,975 | Yes |
| Baggett Transportation | 1,712 | No |
| Carolina Freight Carriers | 1,678 | Yes |
| C. I. Whitten Transfer Co. | 1,419 | No |
| T. F. Boyle Transportation | 1,313 | Yes |
| Ranger Transportation | 1,148 | Yes |
| St. Johnsbury Trucking | 1,139 | Yes |
| ABF Freight System, Inc. | 978 | Yes |
| Preston Trucking | 936 | Yes |
| Old Dominion Freight Line | 848 | Yes |
| Emery Worldwide | 799 | Yes |
| Watkins Motor Lines | 726 | Yes |
| Universal Transportation | 679 | No |
| Federal Express | 565 | Yes |
| Total | 70,425 | — |

[a] Carriers with EDI capability claim to be able to send or receive at least one ANSI ASC X12 transaction set, not necessarily invoice or shipment information transaction sets.

## DFAS-IN EDI Implementation Plan and Schedule

The DFAS-IN is promoting a plan that focuses initially on DoD's freight transportation. That plan depends on the ability of DoD shippers and freight carriers to transmit shipment and invoice information to DFAS-IN electronically. Assuming that DLA and Army shippers are able to implement their EDI plans described earlier and that DFAS-IN continues aggressive promotion of the carrier industry as described in the next section, DFAS-IN will be receiving more than 40 percent of its freight shipment information and more than 30 percent of its invoice information electronically by the time it implements DTRS in January 1994. Table 7 shows DFAS-IN's projected EDI volumes for freight transportation. If Sharpe Army Depot and New Cumberland Army Depot figures were included in Table 7, DFAS-IN would receive 56 percent of freight shipment information electronically and electronic freight invoice information would be as high as 45 percent.

## FREIGHT CARRIER IMPLEMENTATION PLAN

In the previous section, we showed that 45 percent of all carrier invoices for shipments originating at EDI-capable shipping activities planned for DLA and the Army will be generated by EDI-capable carriers. The objective of our plan is to make it easy for those carriers to become DFAS-IN EDI trading partners. Our plan has three components: promotional and instructional materials for carriers, general freight carrier workshops, and target solicitation.

### Carrier Materials

The following materials have been developed and are available to freight carriers:

- LMI Report DF101LN9, *Doing Business with DoD Using Electronic Data Interchange – An Information Package for Freight Carriers*, W. Michael Bridges and Theresa Yee, March 1993.
- *Freight Carrier Billing Instructions for the Defense Finance and Accounting Service – Indianapolis Center*, published by and available from Transportation Operations, DFAS-IN.
- LMI Report PL205LN4, *EDI Trading Partner Agreement for Defense Transportation: Freight*, W. Michael Bridges, Harold L. Frohman, William R. Ledder and Theresa Yee, March 1993.
- LMI Report PL205LN1, *DoD Electronic Data Interchange (EDI) Convention – ASC X12 Transaction Set 858 Freight Government Bill of Lading Shipment Information (Version 003010)*, February 1993.
- LMI Report DF101LN2, *DoD Electronic Data Interchange (EDI) Convention – ASC X12 Transaction Set 859 Generic Freight Invoice (Version 003020)*, April 1993.

TABLE 7

PROJECTED DFAS-IN EDI VOLUMES FOR FREIGHT TRANSPORTATION

| Activity | 1993 | | | | |
|---|---|---|---|---|---|
| | Aug | Sep | Oct | Nov | Dec |
| **DLA activity** | Ogden | Columbus | Tracy | Memphis | Richmond |
| GBLs (000) | 41 | 41 | 75 | 116 | 68 |
| Invoices (000) | 35 | 28 | 58 | 90 | 49 |
| **Army activity** | | | | | Chambersburg |
| GBLs (000) | | | | | 20 |
| Invoices (000) | | | | | 14 |
| **Total** | | | | | |
| GBLs (000) | 41 | 41 | 75 | 116 | 88 |
| Invoices (000) | 35 | 28 | 58 | 90 | 63 |
| **Accum. % of DFAS-IN total freight GBLs** | | | | | |
| GBLs (000) | 4 | 7 | 14 | 25 | 33 |
| Invoices (000) | 3 | 6 | 11 | 19 | 25 |

| Activity | 1994 | | | | |
|---|---|---|---|---|---|
| | Jan | Feb | Mar | Apr | May |
| **DLA activity** | Mechanicsburg | | | | |
| GBLs (000) | 94 | | | | |
| Invoices (000) | 86 | | | | |
| **Army activity** | | | Huntsville | | Rock Island |
| GBLs (000) | | | 63 | | 10 |
| Invoices (000) | | | 52 | | 5 |
| **Total** | | | | | |
| GBLs (000) | 94 | 0 | 63 | 0 | 10 |
| Invoices (000) | 86 | 0 | 52 | 0 | 5 |
| **Accum. % of DFAS-IN total freight GBLs** | | | | | |
| GBLs (000) | 41 | 41 | 47 | 47 | 48 |
| Invoices (000) | 33 | 33 | 37 | 37 | 38 |

*Notes:* GBLs – Projected annual shipments generated by EDI-capable DoD shipping activities. Invoices – projected annual shipments generated by EDI-capable DoD shipping activities and invoiced by EDI-capable carriers. Table does not include Sharpe Army Depot and New Cumberland Army Depot.

- LMI Report DF101LN4, *DoD Electronic Data Interchange (EDI) Convention – ASC X12 Transaction Set 110 Air Freight Invoice (Version 003020)*, March 1993.
- LMI Report DF101LN6, *DoD Electronic Data Interchange (EDI) Convention – ASC X12 Transaction Set 210 Motor Carrier Invoice (Version 003020)*, March 1993.
- LMI Report DF101LN7, *DoD Electronic Data Interchange (EDI) Convention – ASC X12 Transaction Set 410 Rail Carrier Invoice (Version 003020)*, March 1993.

The first document listed above, LMI Report DF101LN9, provides guidance to carriers on how to initiate and conduct EDI freight business with DoD. That document provides an overview of EDI, describes the DoD EDI operating concept, introduces standards and DoD conventions, and briefly identifies components necessary to initiate EDI. It is designed to be promotional and does not include detailed instructions. It is the first document that DFAS-IN should send to carriers inquiring about doing EDI business with it. EDI capability is not a prerequisite for the document.

The next document, *Freight Carrier Billing Instructions for the Defense Finance and Accounting Service – Indianapolis Center*, is a detailed instructional guide. It presents the steps required for becoming a DFAS-IN EDI trading partner and details the electronic invoicing process. It also identifies new requirements for submission of billings using the traditional paper process. DFAS-IN should send it to any carrier that has serious intentions of becoming a DFAS-IN EDI trading partner.

In LMI Report PL205LN4, we prescribe the general procedures and policies to be followed by DoD Components and their commercial trading partners when using EDI to transmit freight shipment or billing information. It also provides the mechanism for trading partners to exchange administrative information that is required by the translation software. The trading partner agreement must be signed by any carrier who wishes to conduct business with DFAS-IN.

In LMI reports DF101LN1, DF101LN2, DF101LN4, DF101LN6, and DF101LN7, we provide conventions for carrier use of public standards when submitting electronic invoices.

In a previous study, we reported that MTMC has assumed the role of Defense Transportation's EDI Trading Partner Administrator.[2] Part of that role will be to maintain inventory and distribute all of the documents described above with the exception of the billing instructions, which should be DFAS-IN's responsibility.

## Freight Carrier Workshops

Carrier workshops present an excellent opportunity to promote EDI trading partners. The information available in the carrier materials can be briefed firsthand, and carriers will have a mechanism to offer feedback and raise questions.

The first freight carrier/DoD EDI invoicing workshop was held on 24 March 1993 in Indianapolis, Ind. Sponsored by DFAS-IN and organized by LMI, the workshop was extremely successful, with over 125 participants, including representatives from 29 motor carriers, 2 rail carriers, 3 air freight carriers, and a host of EDI vendors prepared to serve the industry. Ten of the top 20 carriers that serve DLA and the Army were present, including the top 5: Carolina Freight Carriers, Consolidated Freightways, Yellow Freight Systems, Overnite Transportation, and Roadway Express, Inc. Those 5 carriers alone are responsible for more than 30 percent of DFAS-IN's DLA and Army freight invoices.

The workshop was announced nationally to the freight carrier industry through trade magazines, direct mail, the American Trucking Association (ATA), and the ANSI ASC X12 Transportation Subcommittees.

An announcement promoting the workshop was sent to *Traffic World*, a magazine with one of the largest exposures to the carrier industry. A letter was sent to the top 100 freight carriers, according to statistics kept by Transportation Operations at DFAS-IN. Rankings were determined based on the number of annual shipments for 1992. The list included the top 20 motor freight carriers that served DLA and Army depots. In addition, the ATA, our country's largest association of motor freight carriers, was contacted and encouraged to place the workshop announcement in its association magazine, *Transport Topics*. Finally, a letter of invitation was presented to each member of the ASC X12 Motor, Air, and Rail

[2]LMI Report DF101LN8, *Formalizing an EDI Trading Partner Relationship with Freight Transportation Service Providers for the Defense Finance and Accounting Service – Indianapolis Center*, W. Michael Bridges and Theresa Yee, May 1993.

Transportation Subcommittees, made up of EDI-capable carriers that work together to maintain transportation EDI standards.

Promotion was not biased with regard to size of carrier or EDI capability. Every carrier representative who expressed interest was accommodated. A complete carrier workshop list, including those who could not attend but expressed interest in DFAS-IN's EDI program, is included in the appendix. This list will become important as carriers are targeted for initial implementation. The list includes points of contact with telephone numbers and addresses and should evolve into DFAS-IN's master list of carriers interested in EDI.

### Selective Carrier Targeting

We call the final stage in our carrier implementation plan selective carrier targeting. By the time DFAS-IN completes testing in December 1993, several carriers representing significant shipment volumes should be EDI-qualified and ready to submit electronic invoices. While selective targeting takes place, DFAS-IN must be cautious not to show favoritism toward large EDI-capable carriers. It made two announcements at the workshop that affect selective targeting: first, carriers may submit electronic invoices only for shipments originating from EDI-capable shipping activities, and second, DFAS-IN will qualify carriers for submitting EDI invoices on a first-come, first-served basis. In keeping with those policies, DFAS-IN should distribute a general announcement identifying when it will begin qualifying carriers and accurately identifying dates when various shipping activities will be EDI capable. It should do so as soon as firm dates are known.

About 4 months before DTRS is scheduled to begin production, DFAS-IN should contact all carriers shown in Tables 1, 3, 4, and 5, assuming each shipping activity meets the planned EDI implementation schedule, and solicit their EDI business. DLA's Ogden, Utah, depot is scheduled to be the first EDI-capable shipping activity (see Table 7) and its carriers should be targeted first. According to our plan, DFAS-IN should begin qualifying carriers associated with Ogden around September 1993. That approach has two advantages. DFAS-IN will spread the workload associated with qualifying carriers over several months prior to implementation, carriers will have the time they require to customize their systems to meet DFAS-IN's EDI requirements, and those carriers qualified early will not be inactive for a long time period.

The process of qualifying a carrier for EDI should include completing a trading partner agreement, setting up the trading partner's profile (administrative information) in the translation software, and testing to include the transmission of several electronic invoices to DFAS-IN. The qualification process is described in detail in the billing instructions mentioned previously.

## APPENDIX

## FREIGHT CARRIER EDI CONTACT LIST

The freight carrier industry is mature with respect to electronic data interchange (EDI) capability. Many carriers are interested in transmitting electronic invoices to Defense Finance and Accounting Service – Indianapolis Center (DFAS-IN). This appendix includes a list of carrier representatives that either attended the first DFAS-IN EDI workshop for freight carriers on 24 March 1993 or called to express interest.

## FREIGHT CARRIER EDI CONTACT LIST

Mr. Joe Brinson
Ranger Transportation
P.O. Box 19060
Jacksonville, FL 32245
(800) 872-9400

Mr. Dave Caplan
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Ralph Owens & Miller Trucking
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The Defense Finance and Accounting Service – Indianapolis Center (DFAS-IN) is preparing to receive invoice information electronically from freight carriers. The success of DFAS-IN's new transportation payment system depends on the availability of EDI-capable freight carriers to serve as its trading partners. In this report, we propose a three-step plan for soliciting freight carrier trading partners for DFAS-IN. First, we have prepared promotional and instructional materials and recommend their widespread distribution throughout industry; second, we suggest a series of freight carrier workshops; and third, we propose a process of selectively targeting carriers that represent large shipment volumes.

**14. SUBJECT TERMS**
EDI; electronic data interchange; transportation; electronic invoicing

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