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SUBSTITUTION CRITERIA AND POLICY FOR MAJOR ITEMS

LOGISTICS STUDIES OFFICE

PROJECT NUMBER 810



FINAL REPORT

JANUARY 1979

BY: ULDIS R. POSKUS

LOGISTICS STUDIES OFFICE
US ARMY LOGISTICS MANAGEMENT CENTER
FORT LEE, VIRGINIA 23801

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The lack of adequate guidance and policy and, in some cases, conflicting guidance in the processing of major items that are used as substitutes for authorized items have created problems in the management of these items. This report investigates the existing condition and proposes alternate solutions. The primary recommendation is that a listing of authorized and viable substitutes by Line Item Number be compiled from input provided by Item Managers and that this information be documented in an Army publication. Concurrently, it is proposed that the Total Army Equipment Distribution Program (TAEDP) be used to (cont)

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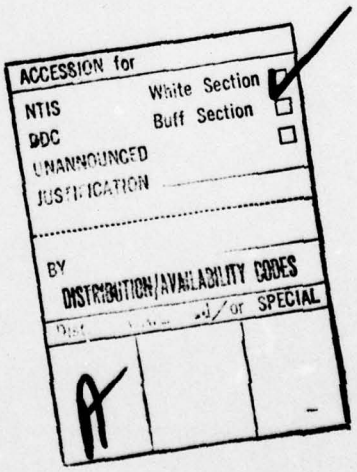
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investigate the impact of redistributing excesses and substituted major items to decrease the total number of existing substitutes. Other possible enhancements are also proposed.

The word "he" is intended to include both the masculine and feminine genders; any exception to this will be so noted.



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ABSTRACT

The lack of adequate guidance and policy and, in some cases, conflicting guidance in the processing of major items that are used as substitutes for authorized items have created problems in the management of these items. This report investigates the existing condition and proposes alternate solutions. The primary recommendation is that a listing of authorized and viable substitutes by Line Item Number be compiled from input provided by Item Managers and that this information be documented in an Army publication. Concurrently, it is proposed that the Total Army Equipment Distribution Program (TAEDP) be used to investigate the impact of redistributing excesses and substituted major items to decrease the total number of existing substitutes. Other possible enhancements are also proposed.

REPORT TITLE: Substitution Criteria and Policy for Major Items

STUDY NUMBER: LSO 810

STUDY INITIATOR AND SPONSOR: Director for Plans, Doctrine and Systems (DRCPS-S), US Army Materiel Development and Readiness Command

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EXECUTIVE SUMMARY

1. Authority for the Study. The sponsor of the study is the Director for Plans, Doctrine and Systems, US Army Materiel Development and Readiness Command (DRCPS-S). Tasking was per letter, DRCPA-S, 6 June 1978, subject: LSO Study 810, Substitution Criteria and Policy for Major Items.

2. Problem Statement. Policies and procedures exist for substituting major items within a Line Item Number (LIN), but often line item numbered major items are substituted between LINs creating apparent shortages within the logistics system and a sometimes negative impact on the mission performance of recipients and users of the substituted items. Policies and procedures are required for more effective substitution of major items between LINs.

3. Objective. To investigate the existing situation in the Army and, based on the findings, develop recommended policy and criteria which will improve the control of and the functional processes involved in the substitution of major items at the Line Item Number level (i.e., between LINs).

4. Scope. This study concerns all aspects of between-LIN major item substitutions Army-wide.

5. Methodology. Regulations pertaining to major items were reviewed for current policy and guidance on the handling of between-LIN item substitutes. Additionally, a questionnaire was distributed to determine how and how well substitutes were processed now and to get opinions on how improvements

could be made. Finally, knowledgeable individuals were consulted and interviewed for their opinions. An Army Equipment Status Reporting System (AESRS) report titled, "AESRS Substitution Data", was analyzed to determine the magnitude of substitute use in the Army and subsequently indicated the possibility of redistribution of some existing substitutes.

6. Findings and Conclusions.

a. In 1978, 1711 different LINs were used as substitute items and 1790 authorized LINs had substitutes used in their place.

b. Almost 50 percent of the existing Army units, to include Active, Reserve, and National Guard units, had one or more substitutes on hand.

c. Very little policy or guidance exists for the substitution of one LIN for another. In spite of this, the personnel involved in the requisitioning and the filling of requisitions appear to have performed admirably in that the existing situation was not as chaotic as it could be.

d. If substitution of major items between LINs is to continue, procedures and controls are required to do this more effectively. The availability of a listing of authorized substitute LINs for Standard A and Standard B items should provide the necessary control and a much needed tool for all personnel involved in major item management. Guidance on how to use this listing and how substitutes are to be processed should be incorporated in an Army publication such as AR 700-120. Also, AR 710-2 should be changed to remove the conflict that exists between paragraphs 2-5b and 2-18f in that regulation.

e. A limited simulation using the Total Army Equipment Distribution Program will provide information with which to determine the feasibility of redistributing excess and substitute items. If it proves to be feasible, more units will have the items that they are authorized and the total number of existing substitutes can be decreased.

f. Other procedures, such as changes to MTOEs/TDAs, not authorizing new items until they are actually available, and the screening of LINs by the item managers with an end to removing unneeded ones, should be investigated to decrease requirements for substitution of major items.

7. Recommendations. It is recommended that:

a. DARCOM direct the preparation of a listing of authorized substitute major items and after staffing and review by MACOMs, the approved list be published in a Supply Bulletin and distributed to MACOMs and MRCs.

b. All procedures dealing with the listing of authorized substitute major items and the procedures for requisitioning authorized items or authorized substitutes be prepared and incorporated in an Army publication such as AR 700-120.

c. Conflicting paragraphs in AR 710-2 be changed as outlined in paragraph 6e of the Main Report.

d. DARCOM direct that a feasibility simulation study on redistributing excess and substitute major items be performed by the TAEDP system and that where a redistribution proves feasible, it be carried out.

MAIN REPORT

1. Problem and Background.

a. When a US Army unit is authorized a major item but does not have this item or an adequate substitute on hand, it requisitions the authorized item. If the item or an adequate substitute is not available on the unit's installation or area overseas, the requisition is processed to the National Inventory Control Point (NICP). At the NICP, the item manager for that item verifies the authorization and determines the availability of the item. If the item is available for distribution and the unit's priority is high enough, the item is made available to the unit. If the item is not available, and depending on the advice code, the item manager will offer the unit a substitute item or will place the requisition on backorder.

b. An Army Equipment Status Reporting System (AESRS) report dated October 1978 indicated that there were 1711 separate major items (Line Item Numbers (LINs)) used as substitutes and there were 1790 separate major items (LINs) that had substitutes. FM 38-2, Inventory Management, states in paragraph 2-2: (The underlining is that of the author.)

> "The objective of inventory control is effective, efficient, and economical supply to the military forces in their assigned missions. With the many compromises and trade-offs that are necessary in the operation of Army logistics, this ultimate objective can become obscure, for at all levels of the supply system there are limitations or restrictions in availability of moneys, transportation, facilities and labor, as well as materiel. Logisticians specify standards for materiel support that will insure an acceptable level of service to supported units, and inventory

managers continually examine every function in the system in an attempt to balance available resources to reach or surpass the defined standards of performance. However, even with the best possible management practices, emergency supply actions are necessary to meet unpredictable contingencies. The standards set for any function serve as guidelines for operating personnel and control indicators for management. The ultimate criteria for evaluating the inventory management system is success in supporting the soldier in the field with what is needed, when, where, and in the condition and quantity required at minimum expenditure of resources."

Substituted items are a response to the unpredictable contingency of a requisitioned item not being available when needed. The substitution of one LIN for another is not authorized in the formal sense, but nevertheless, substitution is relied on heavily to provide needed equipment. This study deals with the substituted item that may be offered the unit.

c. Substitution of major items happened as a result of need. Further, both supplier and recipient of the substitute assumed that the substitution process was a temporary condition which would correct itself in the near future, and therefore, was not a real problem. For example, the substituted item was originally intended for use by the receiving unit until the authorized item was provided. Thus, when the authorized item became available, it was to be provided to the unit having the substitute, the substitute was to be excessed, and the situation would be rectified. This does not usually happen. While the situation has potential for correcting itself, it concurrently also has potential for self-perpetuation.

d. Continued substitution becomes self-perpetuating when an item being used as a substitute by Unit A is an authorized item for some other unit, Unit B, and is required by Unit B. Unit B is, in turn, provided a

substitute item which may be an authorized item for Unit C, and so on. Because a unit may not requisition the authorized item if it has on hand a substitute that is better or equal in capability to the authorized item in accordance with AR 710-2, and because of delays in excessing substituted items and returning them to the pool of available assets, a shortage condition, at least to the participants in this process, is generated.

e. The example given above is a simple version of the situation. Within this process we have unit commanders who, for various reasons, choose to retain the substitute item and avoid receiving the authorized item. In some cases, a substituted item requires a component that is also a major item, but the authorized component may not be compatible with the substitute, so again, another substitute is accepted by the unit.

f. DARCOM has a central role in the processing of substitutes. The management of inventories in the Army is said to be the central hub from which all other logistical functions are driven. Within the Army, DARCOM is responsible for the management of wholesale inventories. This function is carried out worldwide by the DARCOM National Inventory Control Points (NICPs). These NICPs are located at the DARCOM Materiel Readiness Commands (MRCs).

g. It is the task of the Army inventory management system to provide materiel support to the Army in the field under all conditions of peace and war. This support must be provided at a minimum cost for the materiel itself and for the effort involved in supplying it.

h. Supply costs have an important effect on the degree of combat readiness that the Army forces can achieve since limited dollar resources impact on the number and types of weapons that can be acquired and maintained. Supply and maintenance account for a large portion of the total available resources.

2. Study Objective. The overall objective was to investigate the existing substitution situation in the Army and, based on the findings, develop policy and criteria which would improve the functional processes and controls involved in the substitution of major items at the Line Item Number (LIN) level.

3. Scope of Study. This study investigated only substitution of major items between LINs and only considered the aspects pertinent to the total United States Army hierarchy. The findings and recommendations impact all levels of the US Army hierarchy to include the Active Army, the Army National Guard, and the Army Reserve.

4. Discussion.

a. Methodology: The substitution environment was investigated to determine current procedures and how to improve on them. Also, regulations pertaining to major items were reviewed for current policy and guidance on the handling of substitutes between LIN items. In addition, a questionnaire was prepared and distributed to determine how and how well substitutions were processed and to get opinions on how improvements could be made. Finally, knowledgeable individuals were consulted and interviewed for their opinions. The Army Equipment Status Reporting System (AESRS) report titled

"AESRS Substitution Data" dated October 1978, was analyzed to determine the magnitude of substitute use in the Army, and subsequently indicated the possibility of redistribution of some existing substitutes.

b. Substitution Environment:

(1) Each Army unit has an authorizing document such as a Modified Table of Organization and Equipment (MTOE), or Table of Distribution and Allowances (TDA), which is a very carefully designed and balanced tabulation of personnel and equipment required for the distinct, stated mission of the unit (or for which the unit exists). For discussion purposes, this authorizing document will hereafter be referred to as the MTOE. The mission of any unit is a "stated mission" derived from the Table of Organization and Equipment. When not engaged in combat operations, the unit's "implied mission" is to train to be capable of performing its combat mission. Concurrent with training for its combat mission, the unit may be tasked with other missions; e.g., post support, civil defense, or disaster assistance, etc. Barring human error, the authorizing document is accepted as representing the best thinking available in specifying and balancing all of the elements that it contains.

(2) As stated in AR 310-49, the TOE specifies by LIN the types of equipment that are to be in the unit. Quantities are specified by various levels, dependent upon the Authorized Level of Organization (ALO) of the unit. In the MTOE, the required quantity is usually Level-One of the TOE while the authorized quantity is determined by the ALO. The regulation specifies that no TOE LIN may be deleted from the MTOE although the quantities

may be reduced to zero. Similarly, a LIN which is entered in the MTOE but which is not found in the TOE must show zero in the required column.

(3) The TOE dictates the mission of the organization/unit and the capabilities that it must have to perform the mission and then provides personnel and specific equipment needed. The personnel and equipment in relationship to capabilities and mission are the key to the whole discussion of substitutes. Because authorized equipment is not always available, substitution of other equipment is often necessary. In making substitutions, controls must be exercised to insure that high priority units are not deprived of necessary equipment and, at the same time, that lower priority units are not stripped of equipment necessary for training purposes.

(4) Because the total logistics system (except for modernization aspects) is basically a closed system (a zero sum situation), when a unit has a substitute that has capabilities equal to or better than its authorized item, some other unit is forced either to accept an item which has less capability than its authorized item or to do without. The implication is that better-than-authorized substitutes strain the logistics system because these items, on the whole, cost more than the authorized items.

(5) The constant modernization of equipment as a result of technological advances causes some equipment to become obsolete. The Department of the Army Master Priority List (DAMPL) determines the priority the unit has for obtaining equipment. This creates a need/priority hierarchy. The implication is that within the system, while high priority units must have all the needed equipment, efforts must be made to at least provide adequate

training equipment to lower priority units. AR 11-12 states that issue (and modernization) will be predicated upon the DAMPL sequence assigned to all units in the total Army. This, in fact, is the manner of issue. For example, some Army National Guard (ARNG) and United States Army Reserve (USAR) Roundout Units have a higher priority than some Active Army units and are equipped in consonance with their relative priority. AR 11-12 also states that the intent of the DAMPL is that the highest priority claimant will not receive a 100 percent fill until the lowest priority claimant has some equipment with which to train to accomplish its mission.

c. Terminology:

(1) The term "substitute" in this report will encompass those items that are equal to or better (EOB) than and those items that are worse than (WTA) the authorized item. For example, given a requisitioned item, a minimum of three different Line Item Numbers (LINs) might satisfy the requisition. That is, a substitute item, LIN XEEEEE, that is EOB may be supplied; the authorized item, LIN XAAAAA may be supplied, or a WTA item LIN XWWWWW may be supplied. These three LINs cannot be the same.

(2) Henceforth, in this report, for clarity, the following terminology will be used: a substituted item that is accepted throughout the Army as being EOB will be called a "Substitute Type 1 (ST1)"; a substituted item that is accepted throughout the Army to be a WTA will be called a "Substitute Type 2 (ST2)"; the item authorized by a unit's authorization document will be called an "Authorized Item (AI)".

(3) In most cases, the identification of which substitutes are ST1 and which are ST2 is straight forward. During the course of the study, it was determined that a substituted item should have the following characteristics:

(a) Same end use and purpose as AI.

(b) Compatible with existing items in unit.

(c) Compatible POL requirements.

(d) Compatible ammunition requirements.

(e) Authorized personnel are trained to use the item.

(f) Authorized personnel can perform organizational level maintenance of the item.

(g) Repair parts are available to the unit.

(h) Has the same type of mobility as AI.

(i) Unless DA exception is permitted, the substitute is managed by the same item manager as AI.

d. Current Procedures for Substitution of Items: Currently, there is very little guidance or policy at DA or DARCOM levels on the requisitioning and supplying of substitute items. In spite of this, the impact on the user (unit level) and supplier (Materiel Readiness Command (MRC)) has been minimal. This speaks well of the professionalism and calibre of the personnel involved at both the retail and wholesale levels of the Army logistics system. But it does not imply that improvements cannot and need not be made.

(1) Procedures at Unit Level: As stated earlier, the unit's MTOE/TDA specifies which items and how many of these are authorized. Paragraph 2-5b of Change 4 to AR 710-2 states that all units will have on hand or on requisition property listed in the authorized column of the applicable MTOE/TDA/JTA. Further, paragraph 2-18f of AR 710-2 states that requests for authorized major end items will not be submitted when acceptable substitute(s) is/are on hand. These two portions of AR 710-2 appear to be in conflict. Paragraph 2-5b states that the authorized item will be on requisition (if not on hand), yet paragraph 2-18f states that under some circumstances, the authorized item will not be requisitioned. Further, "acceptable substitute(s)" is not defined. By "acceptable" substitutes, it is interpreted that the AR refers to only Standard A and Standard B ST1 items. This means that once a unit has accepted an ST1 item, it will keep it until it is worn out, requires major maintenance, or is no longer authorized. If the unit has an ST2 item on hand, a requisition for the authorized item stays on backorder. Units generally are reluctant to go without an authorized item or a substitute because it affects their readiness and training capability. Often, a unit's need for an item is satisfied by a substitute that is acquired in the overseas area or at the installation level. These substitutions frequently compound the existing substitution problems because many of these do not meet one or more of the required characteristics as outlined in paragraph c(3) above. Examples of this situation are the substitution of 2-1/2-ton trucks for 1-1/4-ton and 5-ton trucks, and 5-ton trucks for 2-1/2-ton trucks. Often, and

especially in the Army Reserve and National Guard, contingency and training and obsolete equipment are used because that is all that is available.

(2) Procedures at Direct Support and Intermediate Levels: Continental United States units submit their requirements to their Direct Support Units (DSUs) which may be the Installation Director of Industrial Operations (DIO). Direct Support Units pass their requisitions either to the Installation DIO, Division Materiel Management Center (DMMC), and/or Corps MMC, as appropriate. The DIO or MMC validates the requisition and may fill the requisition if assets are available locally through lateral transfer. When assets are not available at the intermediate level, requisitions are passed to the NICP by the DIO or the Corps MMC. For reserve units, requisitions go through the Coordinator for Reserve Component Support (Coord of RCS) which is the point of contact for all reserve component support. Requisitions are screened to determine if the requisitioned materiel or substitute can be provided at this level through lateral transfers. In overseas areas, units requisition from their Direct Support Units (DSUs) who in turn forward the requisition (through the DMMC when appropriate) to the Support Command Materiel Management Center (MMC). The MMC validates the requisition and attempts to fill it with on-hand assets. If requisition cannot be filled, the requisition is passed to the Theater MMC. Again, where possible, the requisition is filled. If it cannot be filled, the requisition is sent to the CONUS NICP.

(3) Procedures at DARCOM/MRC Level: The major item manager responds to a unit's request for an item as outlined in paragraph 1a above. He provides the authorized item or offers as a substitute one of the other items

that he manages. Within any LIN, there are usually several NSNs. Supply Bulletin (SB) 700-20 lists these in order of their preference. The first items are Standard A and are the most modern available in the system. Standard A items are provided to fill a requisition for an authorized item. The next item or items listed are Standard B. The item manager provides these as within-LIN substitutes for the Standard A items. These items are still fully usable, but are not as modern as the Standard A items. Below these are listed the Contingency and Training items which are still used by units, mainly NG and USAR, but the item manager does not normally provide these to fill requisitions for authorized items. For example, for 2-1/2-ton trucks, LIN X40009 has 6 models, M35A2, M35A1, M34, M211, and M135 and M35. The M35A2 is Standard A, the M35A1 is Standard B, and the remainder are Contingency and Training items. Once an item manager has provided an ST1 item to a unit, he will not accept requisitions for the authorized item as a replacement for the substitute from this unit.

(a) In offering an ST1 item, the item manager must exercise a great deal of care, and in some cases, clairvoyance, to make sure that he is not satisfying the need of a low priority unit at the expense of a higher priority unit. The tools available to him (major item management ADP systems) for this foresight are limited and he often has to make his decision based on the hope, but not certainty, that it was the right one. The information on the availability and location of the items he manages, as provided by the major item management ADP systems, has limitations.

The existence of substitutes in the logistics system, and especially those substitutions made at the intermediate level, contributes a confusion factor to the information provided by the systems.

(b) The guidance and policy on substitutions that the item manager has in performing his job are found in AR 710-2. This guidance permits a great deal of subjectivity on his part. For example, some item managers when offering ST1 items will not offer those items that they may have on hand which have vastly superior capabilities to the authorized item though they would be completely valid ST1 items. In doing this, they are exercising supply economy and therefore making a wise decision.

(4) Procedures at DA Level: The total Army requirement for a major item is determined and budgeted for at this level. It appears that the asset information provided by the various ADP systems (CBS, AESRS, Theater Stock Status Report, SAMPAM) is not always accurate or compatible for any one item and that, because of budget restraints, the complete Authorized Acquisition Objective requirement is not always filled.

e. Advantages and Disadvantages of Substitutes:

(1) Substitutes have their advantages and their disadvantages. The most important advantage of substitutes is that, when the authorized item is not available to the unit requiring it, the unit can still maintain a readiness posture and fulfill training needs by having an item substituted for the authorized item.

(2) The more important disadvantages are:

(a) Substitution usually affects at least two, and often more, users/requestors simultaneously in a chain reaction to the first substitute. For example: Unit A has a need for authorized item LIN XXXXX; this LIN is not available so it accepts as substitute LIN YYYYY. Some time later, Unit B has a need for one item with LIN YYYYY. This LIN is not available because Unit A was issued the last available one as a substitute; therefore, Unit B gets some other LIN such as LIN AAAAA as a substitute.

(b) Procurement actions may be based on inaccurate requirements. For example, as in the situation above, although there appears to be a shortage of LIN YYYYY, there is not a real shortage. It is just that the wrong unit has the item in question.

(c) Providing a substitute item is costly. It is expected that the requesting unit will, whenever possible, accept a better-than-authorized item as a substitute rather than a worse-than-authorized item. Better-than-authorized items usually cost more, not only in original cost, but also in associated costs such as maintenance and parts. While this may not be true for all items substituted, the relevance of this can be shown by the following example:

> For 2-1/2-ton trucks, the most common substitution is a truck with winch for a truck without winch. The original cost of the truck with winch is greater than the original cost of the truck without winch by the cost of the winch and the cost for installing the winch. Associated costs include maintenance of this winch and parts to keep the winch in operating order.

These additional costs, when summed over the hundreds of such substitutes for 2-1/2-ton trucks only, are substantial.

(3) The end result of the advantages and disadvantages of substitutes is a trade-off of higher cost for an improved readiness posture. This additional higher cost is one that cannot be anticipated and budgeted for under the existing conditions. An argument can be made for the allocation of the funds represented by these unanticipated costs to the redistribution of existing assets with the resultant projected savings in future years. Without redistribution, substitutes remain a costly stop-gap measure. The cost of high readiness is without a doubt a worthwhile one, but without controls and limits on this cost, it becomes a sunk cost.

5. Results.

a. General: Three distinct alternative actions regarding the substitution problem became evident during the course of the study and were confirmed by interviews and questionnaires (see Appendix A).

- Change nothing; retain current procedures.
- Promulgate a new policy wherein no further substitutions between LINs are authorized and existing substitutes are classified as excess and redistributed.
- Develop a list of authorized substitutes between LINs and, unless an exception warrants it, permit only these substitutes to be used; redistribute existing substitutes if feasible.

Each alternative is discussed below:

b. Change Nothing: This is not an acceptable alternative since the current situation is not adequately controlled and existing procedures are not standardized.

(1) Advantages: There are no advantages to the current method of requisitioning or using substitutes.

(2) Disadvantages: Items are being held by the wrong units with some resulting impairment of mission capability. This impairment can be minimal where a better than authorized item is provided. However, when too many substitutes exist in a unit, while on paper the unit may have full readiness, it in fact would not be as fully able to carry out its mission as it would if it had the full complement of its authorized items.

c. Permit No Substitutes in Future and Redistribute Current Substitutes: For some major items, this alternative has much merit and would be workable. The major exception is in the area of new items. To completely eliminate substitutes here would not be practical. Redistribution and attrition of existing substitute items over about a two-year period is recommended. This would spread the cost of redistribution of substitutes and other excess items over the 24-month period and would permit orderly equipment exchanges. Unfilled authorized item requisitions would stay on backorder at the MRC until filled. New requisitions would be prepared for the authorized items not yet requisitioned but still needed.

(1) Advantages: The advantages of this action are the improved control of assets and some monetary savings and will primarily accrue at the wholesale level though the entire logistics system would benefit. Since

existing procedures are to provide a substitute that is better-than-authorized, the value of the assets held by any unit is often higher than it should be. This is a cost to the total logistics system in first, the cost of the asset, and second, cost of repair parts and maintenance. The individual units will be more assured of getting the items they are authorized and thus their readiness posture could improve.

(2) Disadvantages: Unless TOEs/MTOEs/TDAs were changed, there is a possibility that for a while many units would be without the full complement of authorized items. This would impair readiness.

d. Implement List of Authorized Substitutes and Redistribute Current Substitutes: A catalog of authorized Standard A and Standard B substitutes for each major item will provide a useful tool for item managers, MACOMs, and units. Only those substitutes authorized by the list would be available to the units. Exceptions could be made, as now, by request to DA. If the authorized item or the authorized substitute is not available and DA does not authorize an exception, the unit would not get an item until the authorized item became available.

(1) Advantages: The list of authorized substitutes would clearly indicate to item and materiel managers what can be substituted, and to the units, what types of items they could get if the authorized item was not available. This list would also decrease the types and numbers of substitutes thus permitting better control of assets.

(2) Disadvantages: While better order and control of assets is possible, the cost to the total logistics system of having substitutes is only slightly diminished.

6. Analysis and Interpretation of Proposed Policy and Procedures.

a. Since the total elimination of substitutes is not considered feasible at this time, the best alternative is to develop and implement a list of authorized substitutes. This listing would be a comprehensive list of existing major items, major items that have been authorized but are still in the production cycle (modernization items), and existing major items that will qualify as substitutes. This list should be compiled from input prepared by item managers. Each item manager would prepare a recommended list of substitutes for each LIN that he manages and would include both ST1 and ST2 types of substitutes. The LINs for substitute items in the listing should pertain only to Standard A and Standard B items. Contingency and Training items are not, and should not be, issued as substitutes. The proposed listing would be staffed and the approved list published in a Supply Bulletin. Guidance on how to use the list should be included in an Army regulation such as AR 700-120. See Table 1 for example of a proposed format for a list of authorized substitutes. Using 2-1/2-ton cargo trucks as an example, the rationale in Table 1 is this:

LIN X40009 is a straight side cargo truck
LIN X40077 is a drop-side cargo truck
LIN X40146 is a straight side cargo truck with winch
LIN X40214 is a drop-side cargo truck with winch

X40214 is an ST1 for the other three types since it has all their capabilities and more.

X40146 is an ST1 for X40009, but because its sides cannot be dropped, it is an ST2 for X40077 and X40214.

X40077 is an ST1 for X40009 because of the drop sides, but an ST2 for X40146 and X40214 because of the winch.

TABLE 1

PROPOSED FORMAT FOR LISTING OF AUTHORIZED SUBSTITUTES*

AUTHORIZED LIN	SUBSTITUTES ST1 LIN	ST2 LIN
X38562	X38592	-
X38592	-	-
X39429	X39432	-
X39432	-	X39429
X39435	X39447	-
X39438	X39435	-
X39441	-	X39432
X39444	X39447	-
X39447	-	X39444
X39450	X39453	-
X39453	-	-
X40009	X40146	-
	X40214	-
	X40077	-
X40077	X40214	X40146
	-	X40009
X40146	X40214	X40077
	-	X40009
X40214	-	X40077
	-	X40146
	-	X40009
X40794	X40931	-
X40831	X40968	-
	X40794	-
	X40931	-
X40968	X40931	X40831
	-	X40794
X40931	-	X40794
X41105	X41242	-
X41242	-	X41105

*This listing has not been staffed and has not been approved.

X40009 can only be used as an ST2 for X40077 because of the straight sides and for X40146 and X40214 because of the winch.

Exceptions will be evaluated on an individual basis as is now done at DA and, where warranted, exceptions will be made. Major items that are in development stages, that is, several years from production, will have substitutes drawn up by the Project Manager at the Materiel Development Command. The total draft listing will then be provided the MACOMs for staffing and review. This listing should preclude using 5-ton trucks as substitutes for 2-1/2-ton trucks at the installation level.

b. Where an unauthorized substitute is on hand, the unit would requisition the authorized item. If the authorized item is not available, an authorized substitute, if available, would be provided. The unauthorized substitute should be identified at unit level and would not be excessed until the authorized item or an authorized substitute is provided to the unit. Only those items listed as substitutes will be authorized as substitutes.

c. In addition to preparing a listing of substitutes, the feasibility of performing a redistribution of excess and substituted items should be investigated. The purpose of this action is to determine the costs and unearth problems that could be encountered in decreasing the number of LINs that are used as substitutes, the number of LINs that have substitutes and to reduce the total number of items that are used as substitutes. This action involves acquiring data on all major items that are genuine excesses or are substitutes. For this redistribution action to be successful, geographic location and NSNs only (not MACOMs) should be considered in

identifying these excess and substitute items. This may present problems since it goes against tradition and, where National Guard units are concerned, may have political overtones. Therefore, HQDA direction will be required if the feasibility of redistribution is validated. It is important to note that this redistribution, if feasible, is an interchange, one excess or substitute item taken away and the authorized item or an authorized substitute provided in its place.

d. An Army Equipment Status Reporting System (AESRS) report titled, "AESRS Substitution Data", dated October 1978, was analyzed. It contained a complete listing of major items, by LIN, that are used as substitutes and noted the LINs for which they are substituting. The report indicated that 1711 different LINs were used as substitutes, that 1790 LINs were substituted for, and that 5233 units were using substitutes. A detailed examination was made of how 1-1/4, 2-1/2, and 5-ton trucks were used as substitutes. It was found that 7247 5-ton trucks were used as substitutes for primarily 5 and 2-1/2-ton trucks, and that if a complete interchange (redistribution) of these substitutes could be made, that 58 percent of the 5-ton substitutes could be eliminated. Similarly, for 1-1/4-ton trucks, 2486 were used as substitutes, primarily for 1-1/4-ton trucks and that under a complete interchange, 44 percent of these substitutions could be eliminated. For 2-1/2-ton trucks, 12,550 were used as substitutes for 1-1/4, 2-1/2, and 5-ton trucks and about 29 percent of these could, ideally, be eliminated. This analysis indicated that many substitutes could be eliminated if a redistribution were performed. Tables and details of this analysis may be found in Appendix B.

(2) The Total Army Equipment Distribution Program (TAEDP) has a routine which can match up a unit that has a need for an item with a unit that has an excess of the item or has the item as a substitute. As the first step in a series of three, units co-located on the same installation can be selected for this redistribution simulation. The second step is to redistribute on a state level, between installations within a state and for Active Army and Army Reserves across state boundaries to nearby installations. The third step involves redistributing across state boundaries to more distant installations, and also redistribution within geographical areas such as Europe and Korea. The cost associated with each step, of course, increases because of the geographical distance that redistributed items must be moved. An optimal distribution plan is beyond the scope of this study, but the cost through step 2, above, is not expected to be prohibitive.

e. All procedures pertaining to substitution of major items and to the listing of authorized substitutes should be incorporated in an Army publication such as AR 700-120. The listing itself should be prepared as a Supply Bulletin and updated at least every six months. A change should be published to AR 710-2 to indicate how unauthorized substitutes at unit level should be identified and clarifying the requisitioning process if an authorized substitute is on hand. Paragraph 2-5b of AR 710-2 should be changed to read:

> "All units will have on hand property listed in the authorized column of the applicable MTOE/TDA/JTA or a DA authorized substitute for this property. If the property listed in the authorized column of the applicable MTOE/TDA/JTA or a DA

authorized substitute is not on hand, the authorized property must be on requisition.... A list of authorized substitutes will be found in Supply Bulletin _____."

Paragraph 2-18f of AR 710-2 should be changed to read:

"... Requests will not be submitted when a DA authorized substitute is on hand. Items with Logistical Control Codes (LCC) F, O, and S are not considered substitutes. A list of authorized substitutes will be found in Supply Bulletin _____."

f. There are some additional actions that can be taken on substitutes which may not have universal application but nevertheless are worth considering.

(1) Changes to MTOE, TDA: For those major items where a great many substitutes exist, the US Army Training and Doctrine Command (TRADOC) should investigate the advisability of changing the MTOEs and TDAs to incorporate these substitutes as authorized. This could be done on a unit basis by footnoting on the MTOE/TDA selected authorized items, and indicate that one or two authorized substitutes would be as acceptable as the authorized item and, once the substitute has been accepted, it becomes the authorized item.

(2) Authorization of New Items: New items of equipment should not be authorized on authorization documents before they are actually available or expected to be available within 6 months. Too often, a new item is authorized several years before the first such item is ever produced. It appears that work now being done at DESCOM on the Phased Equipment Modernization (PEM) program will solve this problem. PEM objectives are:

(a) To provide time-phased distribution requirements for modernization items.

(b) To establish redistribution phase-out schedules for items being replaced.

(c) To determine impacts on associated items.

(3) Elimination of LINs: Each item manager should screen the LINs he manages to determine where some may be eliminated. As an example, for 2-1/2-ton and 5-ton cargo trucks (tactical), configurations with-winch and without winch have separate LINs. Currently, the with-winch configuration is not produced except for foreign sales, and it is not expected to be produced in the future. When a truck with winch is requisitioned, the requisitioner is provided a without winch vehicle and must purchase a kit to add the winch to the vehicle.

7. Findings and Conclusions.

a. In 1978, 1711 different LINs were used as substitute items and 1790 authorized LINs had substitutes used in their place.

b. Almost 50 percent of the existing Army units, to include Active, Reserve, and National Guard units, had one or more substitutes on hand.

c. Very little policy or guidance exists for the substitution of one LIN for another. In spite of this, the personnel involved in the requisitioning and filling of requisitions appear to have performed admirably in that the existing situation was not as chaotic as it could be.

d. If substitution of major items between LINs is to continue, procedures and controls are required to do this more effectively. The availability of a listing of authorized substitute LINs for Standard A and

Standard B items should provide the necessary control and a much needed tool for all personnel involved in major item management. Guidance on how to use this listing and how substitutes are to be processed should be incorporated in an Army publication such as AR 700-120. Also, AR 710-2 should be changed to remove the conflict that exists between paragraphs 2-5b and 2-18f in that regulation.

e. A limited simulation using the Total Army Equipment Distribution Program will provide information with which to determine the feasibility of redistributing excess and substitute items. If it proves to be feasible, more units will have the items that they are authorized and the total number of existing substitutes can be decreased.

f. Other procedures, such as changes to MTOEs/TDAs, not authorizing new items until they are actually available, and the screening of LINs by the item managers with an end to removing unneeded ones, should be investigated to decrease requirements for substitution of major items.

8. Recommendations. It is recommended that:

a. DARCOM direct the preparation of a listing of authorized substitute major items and after staffing and review by MACOMs, the approved list be published in a Supply Bulletin and distributed to MACOMs and MRCs.

b. All procedures dealing with the listing of authorized substitute major items and the procedures for requisitioning authorized items or authorized substitutes be prepared and incorporated in an Army publication such as AR 700-120.

c. Conflicting paragraphs in AR 710-2 be changed as outlined in paragraph 6e above.

d. DARCOM direct that a feasibility simulation study on redistributing excess and substitute major items be performed by the TAEDP system and that where a redistribution proves feasible, it be carried out.

REFERENCES

AR 310-34	Equipment Authorization Policies and Criteria and Common Table of Allowances
AR 310-49	The Army Authorization Documents System (TAADS)
AR 700-120	Materiel Distribution Management
AR 710-2	Materiel Management for Using Units, Support Units, and Installations
AR 710-3	Asset and Transaction Reporting System

APPENDIX A

QUESTIONNAIRE RESULTS

A questionnaire was distributed to unit, MRC, and MACOM individuals. The purpose of the questionnaire was to solicit opinions on the processing of substitutes and how this process could be improved. Responses to the questionnaire were received from 34 individuals. Since respondents were drawn both from DARCOM and from FORSCOM, certain questions were not applicable to all respondents; thus, all respondents could not reply to all questions. Responses to selected questions follow.

QUESTION NUMBER		AVERAGE RANK
1	In your opinion, who is best qualified to determine what is an acceptable substitute. (Use ranks of 1 for best qualified, 2 for next best qualified, ..., 6 for least qualified, 7 for not qualified.)	
	MRC Personnel	2.6
	Unit Commander	2.6
	Major Item Manager	2.9
	DA Personnel	3.4
	MACOM Personnel	3.8
	Unit Property Book Officer	5.8

2	In your opinion what are the characteristics for a good substitution? (Free responses)	
	CHARACTERISTIC	NUMBER OF RESPONSES
	Does same or better job	14
	Can perform mission	13
	Same operating characteristics	9
	No special support requirements	7
	Same maintainability characteristics	6
	Little or no cost differential	5
	No new training required	4
	No difference in safety	1

QUESTION NUMBER		NUMBER OF RESPONSES
3	Under what conditions is the authorized item never requisitioned if a substitute is on hand? (Free responses)	
	When substitute is equal or better	6
	When substitute is an authorized substitute	1
	When substitute is in same SSN as authorized	1
	When acquisition of authorized is deferred	1
	When authorized item is not available	1
	When authorized stockpile is being protected	1
	When 100% fill of line	2
	When using unit has low priority	1
	When so directed by DA/MRCs	2
	To preclude rebuild program on prime item	1
	(No answer given by 19 of the 34 respondents)	
4	What problems have you experienced in performing your mission with a substituted item?	
	No problems encountered	3
	Supply and maintenance difficulties	5
	Item does not meet requirements	3
	Radios, kits, pumps, etc., not compatible with substitute	2
	ASL requires revision	1
	TMs need revision	1
	No standard policies	1
	No procedures for supportability	1
	Higher cost to acquire and maintain	1
	(No answer given by 24 of the 34 respondents)	
5	In what ways is the substitute worse than the authorized?	
	More breakdowns hence more maintenance required	7
	Repair parts shortages	6
	Does not fulfill function	6
	Older equipment, modifications not applied	7
	Lack of operator and maintenance experience	3
	TMs not available	1
	Increases to ASL/PLL	1
	Causes major item budget problems	1
	(No answer given by 16 of the 34 respondents)	

QUESTION NUMBER		NUMBER OF RESPONSES
6	In your opinion, what determines a substitute to be better than an authorized item?	
	Better mission performance	8
	Equal or greater capacity	4
	Less costly	4
	Technologically better	2
	Easier to operate	2
	More durable	1
	Safer	1
	More reliable	1
	Easier to maintain	2
	More cost-effective	1
	Better suited to units with special needs	2
	(No answer given by 16 of the 34 respondents)	
7	What percent of total major items on hand in your unit are substitutes?	
	0 percent	5
	5 percent	1
	10 percent	4
	20 percent	1
	40 percent	1
	No response	22
8	Based on your experience, is it better to accept a substitute or to wait for the authorized item? Why?	
	Better to accept because:	20
	Something is better than nothing	(6)
	Readiness posture better	(4)
	Authorized item may be delayed or never be issued to you	(3)
	Cannot be a substitute unless it can perform mission	(2)
	May be equal to or better than authorized	(1)
	Better chance to perform mission with something on hand	(2)
	Usually negligible difference between authorized and substitute	(1)
	Substitute has to be an Army-adopted item	(1)

QUESTION NUMBER		NUMBER OF RESPONSES
8 (Cont)	Better not to accept because:	1
	Some substitutes do not meet standards and cannot perform mission	(1)
	No answer	13
9	What would you recommend to better deal with substitutes in logistic systems?	
	Publish lists of authorized and substitute items, both one-way and two-way substitutions	5
	Identify authorized substitutes in TOE/MTOE/TDA	3
	Consolidate NSNs through LINs to SSNs	2
	Change MTOEs	1
	Delete substitutes from VSR and show as shortage	1
	Keep substitutes to a minimum	1
	Computer code items for easy identification of functionally acceptable substitutes	1
	Define parameters for substitutability	1
	Improve substitute reporting system	1
	Give authorized items to the high priority units	1
	No answer	17
10	What are reasons why authorized item is not available when requisitioned?	
	Lengthy procurement cycle	7
	Budget too small to buy AAO	6
	TOE changed before item available	2
	Poor procurement planning	2
	Inadequate supply control procedures	1
	Support systems not ready	1
	No answer	16
11	Are there ways to eliminate major item substitution?	
	Yes	13
	No	12
	No answer	9

QUESTION NUMBER		NUMBER OF RESPONSES
11 (Cont)	If yes, what are the ways?	
	Provide adequate funds to procure required quantity	6
	Do not change unit TOE until item available	2
	Do not show LIN on TOE/TDA until all required quantity available	2
	Eliminate LINs and consolidate in SSNs	1
	Bar any substitutes	1
	Do not sell to foreign governments until 100% fill in US Army	1
	If no, explain.	
	There will always be shortages and a need for substitutes	5
	Economically infeasible due to budget constraints	4
	Need to keep up with technology and threat means TOEs change; equipment quantities cannot keep up	3
12	How does an item manager determine what is a good substitute?	
	Suitability based on "Basis of Issue" as prescribed by DESCOM	2
	By calling on engineer and/or user expertise	4
	By calling on PM, QA, supply and maintenance expertise	3
	Through knowledge and experience with item	1
	Item manager cannot determine	1
	Engineer should determine	1
	Substitute will fulfill mission and functions	3
	Same performance, same equipment category, same price range, same maintenance	2
	Same SSN	1
	Substitute to be replaced by authorized in future	1
	No answer	15

APPENDIX B

ANALYSIS OF AESRS SUBSTITUTION DATA

The time period covered by this AESRS report was 20 June 1978 to 23 October 1978. The first page gave the following summary:

1. Number of items (LINs) used as substitutes 1711

2. Number of items (LINs) having substitutes 1790

3. Number of units affected by command:

Geographic Locations

1A	First US Army USAR	483
1B	Fifth US Army USAR	366
1C	Sixth US Army USAR	201
1D	FORSCOM	869
1E	TRADOC	455
1F	US Army Military District of Washington	11
2A	National Guard	1817
3A	USAREUR - Active Army	650
3B	USAREUR - USAR Schools	0
4A	FORSCOM, Hawaii, Active Army	47
4B	FORSCOM, Hawaii, USAR	4
4D	US Army, Japan	8
4E	US Army, Okinawa	5
4F	US Army, Support, Thailand	0
4G	Eighth US Army	125
5A	Alaska, Active Army	23
5B	Alaska, USAR	2
6A	Southern Command - Active Army	19
6B	Southern Command - USAR	0
1X	Communications Command World Wide	148

4. Total number of UICs affected 5233

There are, roughly, 11,250 UICs active at this time.

Table B-1 shows a typical page from the AESRS report.

Table B-2 summarizes all the five ton trucks that are used as substitutes.

TABLE B-1

SAMPLE PAGE FROM "AESRS SUBSTITUTION DATA"

DETAILED TROOP ASSET DATA
WORLDWIDE SUBSTITUTE ITEMS
CMC, LIN-OH, XMTR, CGC, JIC, NSN SEQUENCE

DATE 780628-780926
DESCOM RIN K6888Y4464Q
PAGE NO. K 298

LIN-OH	SUB-FOR	XMTR	CGC	JIC	LOCATION NAME	CA	ARMY AREA	IC	YR RFG	UNIT NO	BR	ABBREVIATED ORG NAME	NSN	ITEM NOMENCLATURE	AUTH QTY	QTY OH
X48889	X48145	AB	1A	WQ1ZAA	JAMAICA	1R	1NY	29		8487	CM	DET DECON	2320888771616	TRK CGO 2 1/2T M35A2		1
														UNIT TOTAL		1
X48889	X48214	AB	1A	WQ58AA	MADISON	1R	1FL	13		8273	CO	CO AMMO DS-	2320888771616	TRK CGO 2 1/2T M35A2		1
														UNIT TOTAL		1
X48889	X48877	AB	1A	WQ7VAA	FT BENNG	1R	1GA	13		8882	OD	CO AMMO DS-	2320888771616	TRK CGO 2 1/2T M35A2		3
X48889	X48794	AB	1A	WQ7VAA	FT BENNG	1R	1GA	13		8882	CD	CO AMMO DS-	2320888771616	TRK CGO 2 1/2T M35A2		1
														UNIT TOTAL		4
X48889	X48145	AB	1A	WRH8AA	GREENVILLE	1R	1SC	48		8457	CM	BN HHD SMK	2320885425633	TRK CGO 2 1/2T M35A1		1
														UNIT TOTAL		1
X48889	X48145	AB	1A	WRJBAA	ANNISTON	1R	1AL	57		8498	CM	BN HHD SMK	2320888771616	TRK CGO 2 1/2T M35A2		1
														UNIT TOTAL		1
X48889	X48145	AB	1A	WR4DAA	FLORENCE	1R	1SC	48		8432	CM	DET DECON	2320888771616	TRK CGO 2 1/2T M35A2		1
X48889	X48794	AB	1A	WR4DAA	FLORENCE	1R	1SC	48		8432	CM	DET DECON	2320888771616	TRK CGO 2 1/2T M35A2		1
														UNIT TOTAL		2
X48889	X48877	AB	1A	WSMTAA	AIKEN	1R	1SC	48		8458	CD	CO AMMO CON	2320888771616	TRK CGO 2 1/2T M35A2		1
X48889	X48214	AB	1A	WSMTAA	AIKEN	1R	1SC	48		8458	OD	CO AMMO CON	2320885425633	TRK CGO 2 1/2T M35A1		1
X48889	X48877	AB	1A	WSMTAA	AIKEN	1R	1SC	48		8458	CD	CO AMMO CON	2320885425633	TRK CGO 2 1/2T M35A1		3
														UNIT TOTAL		5
X48889	X48877	AB	1A	WSMJAA	CLARKSDALE	1R	1MS	57		8479	OD	CO AMMO DS-	2320888771616	TRK CGO 2 1/2T M35A2		4
														UNIT TOTAL		4
X48889	X48145	AB	1A	WSCUAA	BRONX	1R	1NY	29		8351	PO	CO TACTICAL	2320888771616	TRK CGO 2 1/2T M35A2		1
														UNIT TOTAL		1
X48889	X48146	AB	1A	WS46AA	FLOYD BENNET	1R	1NY	29		8411	EN	BDE HHC	2320888771616	TRK CGO 2 1/2T M35A2		1
														UNIT TOTAL		1
X48889	X41516	AB	1A	W8L3AA	SALEM	1R	1VA	53		W8L3	21	4 USA GARRISON	2320888771616	TRK CGO 2 1/2T M35A2		3
														UNIT TOTAL		3

TABLE B-2

CURRENT 5-TON TRUCK SUBSTITUTIONS

LIN NO.	40794	40831	40931	40968	41105	41242	41310	41327	41615	41633	41653	43297	43434	43708	43845	TOTAL	Can Provide	No. Satisfied	Left Over	Still Need
40009	8	11	2	12	-	1										34	0	0		34
40146	4	-	-	8												12	0	0		12
40165	-	2														2	0	0		2
40214	-	2	1	1												4	0	0		4
40283	-	-	-	3	2	4										9	0	0		9
40794	-	124	18	120	1	10								1		274	1314	274	1040	
40831	573	-	190	1039	39	73	2	1	1	-	21			15	3	1957	1020	1020		937
40931	162	18	-	95	-	9									1	285	406	285	121	
40968	468	792	140	-	4	97	2	2								1505	1403	1403		102
41105	45	45	38	75	-	61										264	60	60		204
41242	9	2	-	8	8											27	263	27	236	
41310	18	16	8	13	-	-	-	67						1		123	4	4		119
41379	2	1														3	0	0		3
41615	24	6	9	29	3	6				7	116					200	2	2		198
41653									1							1	137	1	136	
43297													46	2	14	62	38	38		24
43434												32			1	33	53	33	20	
43571														5		5	0	0		5
43589															3	3	0	0		3
43708												3			1247	1250	893	893		357
43845												1	7	202		210	1577	210	1367	
44391															5	5	0	0		5
44393														11		11	0	0		11
44403												2		621	303	926	0	0		926
56586														5		5	0	0		5
58093	1															1	0	0		1
59326					1									27		28	0	0		28
D11049		1														1	0	0		1
K27486					2	2										4	0	0		4
Z93601														3		3	0	0		3
TOTAL	1314	1020	406	1403	60	263	4	70	2	7	137	38	53	893	1577	7247	7170	4250	2920	2997

All LINs have "X" prefix except where designated otherwise.

EXPLANATION OF TABLE B-2

The contents of Table B-2 are to be interpreted as follows:

1. The LINs across the top of the table, starting with 40794 and ending with 43845, are those for 5-ton trucks which are being used as substitutes.

2. The LINs ranged vertically at the left of the table, starting with 40009 and ending with Z93601, are those authorized LINs for which the 5-ton trucks are used as substitutes.

3. The cells within the body of the table indicate how many 5-ton trucks of a particular LIN are used as substitutes for some other LIN. For example, the cell where the column headed by LIN 40794 intersects the row for LIN 40009 contains the number 8. This indicates that eight 5-ton trucks with LIN 40794 are used as substitutes for eight 2-1/2-ton trucks with LIN 40009. The next cell below indicates that four 5-ton trucks with LIN 40794 are used as substitutes for four 2-1/2-ton trucks with LIN 40146.

4. The cell at the bottom of the column headed by LIN 40794 contains the number 1314. This indicates that a total of 1314 five-ton trucks with LIN 40794 are used as substitutes and the cells in that column indicate how many of these are substituting for each LIN in the left hand column.

5. The five header cells at the top of the table to the right of the last LIN (43845) provide the following indication of the column contents:

a. Total - this is a count of the number of each LIN in the left-hand-most column that has a 5-ton truck as a substitute. For example: thirty-four 2-1/2-ton trucks with LIN 40009 have 5-ton substitutes as follows:

8 5-ton trucks with LIN 40794
11 5-ton trucks with LIN 40831
2 5-ton trucks with LIN 40931
12 5-ton trucks with LIN 40968
1 5-ton truck with LIN 41242

b. Can Provide - this is the total number of those LINs in the top header columns (starting with LIN 40794 and ending with LIN 43845) which are being used as substitutes and which could be used to fill existing authorized requirements.

c. Number Satisfied - this is the number of items in the total column that could be provided or satisfied out of the "Can Provide" column.

d. Left Over - this is the number of items that are left over after subtracting the "Total" column from the "Can Provide" column (ignoring negative numbers).

e. Still Need - this is the number of items that are still needed after all available items with the same LIN have been reallocated. Mathematically it is the result of subtracting the "Number Satisfied" column from the "Total" column.

Of the 7247 items that are using substitutes, the total number which could be satisfied if a complete redistribution were made is 4250, which is 58.64 percent.

For 2-1/2-ton and 1-1/4-ton trucks, similar tables are presented in Tables B-3 and B-4. The interpretation is the same as for the 5-ton trucks, above.

Tables B-5 through B-8 present more detailed location information for 1-1/4-ton trucks. Using the Army Area Code in the AESRS report, a sample manual redistribution as was done in Tables B-2, B-3, and B-4 was performed on 1-1/4-ton trucks within Army Code GE (Germany). The results are shown in Table B-5. Table B-6 shows the same analysis for all Army Area Codes beginning with 1 (First Army). Table B-7 analyzes Army Area Code 1NY (New York State), and Table B-8 analyzes Army Area Code 1NJ (New Jersey State).

TABLE B-3

CURRENT 2-1/2-TON TRUCK SUBSTITUTIONS

*LIN NO.	40009	40077	40146	40214	40283	40420	40694	TOTAL	Can Provide	No. Satisfied	Left Over	Still Need
39050	6		7					13	0	0	0	13
39429	1							1	0	0	0	1
39432			4					4	0	0	0	4
39447	2		3					5	0	0	0	5
39453			17					17	0	0	0	17
40009		1638	7726	28	34	33		9459	1709	1709	0	7750
40077	757		405	18				1180	1856	1180	676	0
40146	427	163		11		4		605	8574	605	7969	0
40214	9	9	15		1	1	1	36	57	36	21	0
40283	1		1			249		251	54	54	0	197
40420			3		10			13	299	13	286	0
40577						3		3	0	0	0	3
40794	50	1	60		2	2		115	0	0	0	115
40831	169	14	133		1	1		318	0	0	0	318
40931	11	1	14		2	1		29	0	0	0	29
40968	173	20	124		4	4		325	0	0	0	325
41105			2			1		3	0	0	0	3
41379	15		15					30	0	0	0	30
41516	5		5					10	0	0	0	10
41615	3	7	2					12	0	0	0	12
43708			3					3	0	0	0	3
44403	1							1	0	0	0	1
53856			1					1	0	0	0	1
56449	17		11					28	0	0	0	28
56483	1							1	0	0	0	1
56586	10		2					12	0	0	0	12
58250			1					1	0	0	0	1
59326	3	3						6	0	0	0	6
62340	2							2	0	0	0	2
D11049	25		12					37	0	0	0	37
D11538	4							4	0	0	0	4
H01855			1					1	0	0	0	1
Q90100	5		2					7	0	0	0	7
S72024	7		2					9	0	0	0	9
T10138	4		1					5	0	0	0	5
V13101			1					1	0	0	0	1
Z57082	1		1					2	0	0	0	2
TOTAL	1709	1856	8574	57	54	299	1	12550	12549	3597	8952	8953

*All LINs have "X" prefix except where designated otherwise.

TABLE B-4

CURRENT 1-1/4 TON SUBSTITUTIONS

*LIN NO.	39429	39432	39435	39438	39441	39444	39447	39450	39453	39735	39872	39883	39906	39940	Total	Can Pro'd	No. Sat.	Left Over	Still Need
38592										1					1		0		1
38776												2			2		0		2
39429		72		1	1					20	10	42	6		152	133	133		19
39432	76				93	3	11	6	36	109	54	168	27	32	615	237	237		378
39435	30	1					6			4		4			45	15	15		30
39441		2					2		1	21	3	15			44	121	44	77	0
39444	1	49		1			7	47		8	3	2	5		123	4	4		119
39447	4	21	8		3			8	7	210	46	165	27	9	508	36	36		472
39450							5					3	6		14	71	14	57	0
39453	5	9			22		1	4		66	30	78	19	9	243	56	56		187
39598										1		4			5		0		5
39735	3	17	7			1					37	295	33		393	518	393	125	0
39872	2									11		14	7	3	37	201	37	164	0
39879								1							1		0		1
39883	2	20							12	2	1		4		41	887	41	846	0
39893	3														3		0		3
39906		2										27			29	148	29	119	0
39940	3	22			1		3	2		15	5	32	4		87	57	57		30
39941												1	1		2		0		2
44739										1					1		0		1
53572		1								9	2				12		0		12
53709	2	1													3		0		3
55627	2	9										2	4		17		0		17
60833					1		1			1		18	1	4	26		0		26
61655										18	6				24		0		24
61705		2													2		0		2
T10138		6						3		21	4	14	4		52		0		52
W95537		3										1			4		0		4
TOTAL	133	237	15	2	121	4	36	71	56	518	201	887	148	57	2486	2484	1096	1388	1390

*All LINs have "T" prefix except where designated otherwise.

TABLE B-5

REDISTRIBUTION OF 1-1/4 TON TRUCKS WITHIN GERMANY

LIN NO.*	39429	39432	39438	39441	39447	39735	39872	39883	39906	39940	TOTAL	CAN PRO-VIDE	NO. SATIS-FIED	LEFT OVER	STILL NEED
39429		9						4			13	19	13	6	0
39432	2				2			4			8	32	8	24	0
39435	8	2			6						16	0	0	0	16
39444	1		1		3				5		10	0	0	0	10
39447		6				1		22	2		31	12	12	0	19
39450								1	6		7	0	0	0	7
39453	1			1				30	5		37	0	0	0	37
39598								2			2	0	0	0	2
39735	1						2	2			5	3	3	0	2
39872	2										2	3	2	1	0
39883	2	2				2	1				7	87	7	80	0
39906		1						5			6	18	6	12	0
39940	1	8						1			10	3	3	0	7
55627	1	2									3	0	0	0	3
60833		2		1	1			16		3	23	0	0	0	23
TOTAL	19	32	1	2	12	3	3	87	18	3	180	177	54	123	126

All LINs have "X" prefix except where designated otherwise.

TABLE B-6

REDISTRIBUTION OF 1-1/4 TON TRUCKS WITHIN 1ST ARMY AREA

LIN NO.*	39429	39432	39435	39438	39441	39444	39447	39450	39453	39735	39872	39883	39906	39940	TOTAL	CAN PRO-VIDE	NO. SATIS-FIED	LEFT OVER	STILL NEED
39429		23		1						11	6	24			65	24	24	0	41
39432	19				66	1		1	28	57	39	72	4	8	295	79	79	0	216
39435		1								4		1			6	3	3	0	3
39441										6	2	11			19	78	19	59	0
39444		24					1	27		7	3	1			63	1	1	0	62
39447		9	3					1		102	29	101	12	1	258	2	2	0	256
39453	1	7			11		1			48	18	18	6	1	111	28	28	0	83
39735	1	3									3	141	12		160	240	160	80	0
39872										2		8	4		14	100	14	86	0
39906		1										5			6	45	6	39	0
39940	1	10			1					2		20	4		38	11	11	0	27
53709	2														2	0	0	0	2
60833		1								1		2		1	5	0	0	0	5
T10138												7	3		10	0	0	0	10
TOTAL	24	79	3	1	78	1	2	29	28	240	100	411	45	11	1052	611	347	264	705

*All LINs have "X" prefix except where designated otherwise.

TABLE B-7

REDISTRIBUTION OF 1-1/4 TON TRUCKS WITHIN ARMY AREA 1 NY

LIN NO.*	39429	39432	39450	39735	39872	39883	39906	TOTAL	CAN PRO-VIDE	NO. SATIS-FIED	LEFT OVER	STILL NEED
39429					3	3		6	4	4	0	2
39432	4			9	25	29		67	4	4	0	63
39435				4				4	0	0	0	4
39441					1			1	0	0	0	1
39444		2	8					10	0	0	0	10
39447				47	8	23		78	0	0	0	78
39453		2		12	9	1		24	0	0	0	24
39735						32		32	73	32	41	0
39872							1	1	46	1	45	0
60833				1		1		2	0	0	0	2
TOTAL	4	4	8	73	46	89	1	225	127	41	86	184

*All LINs have "X" prefix except where designated otherwise.

TABLE B-8

REDISTRIBUTION OF 1-1/4 TON TRUCKS WITHIN ARMY AREA 1NJ

LIN NO.*	39429	39432	39735	39872	39883	39906	TOTAL	CAN PRO-VIDE	NO. SATIS-FIED	LEFT OVER	STILL NEED
39429			5	3	5		13	1	1	0	12
39432	1		11	2	4		18	1	1	0	17
39447		1		3		1	5	0	0	0	5
39453			8	2			10	0	0	0	10
39735				1	26		27	26	26	0	1
39872			2		7	2	11	11	11	0	0
TOTAL	1	1	26	11	42	3	84	39	39	0	45

*All LINs have "X" prefix except where designated otherwise.