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JAN 79 6 DERRINGER, R COTE, J WRAY, S PORTER F-33657-77-A-0003

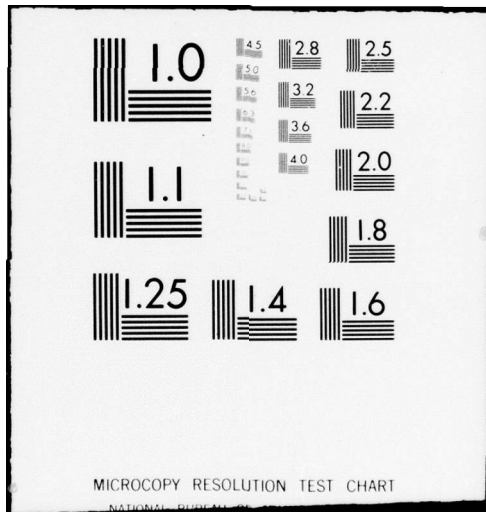
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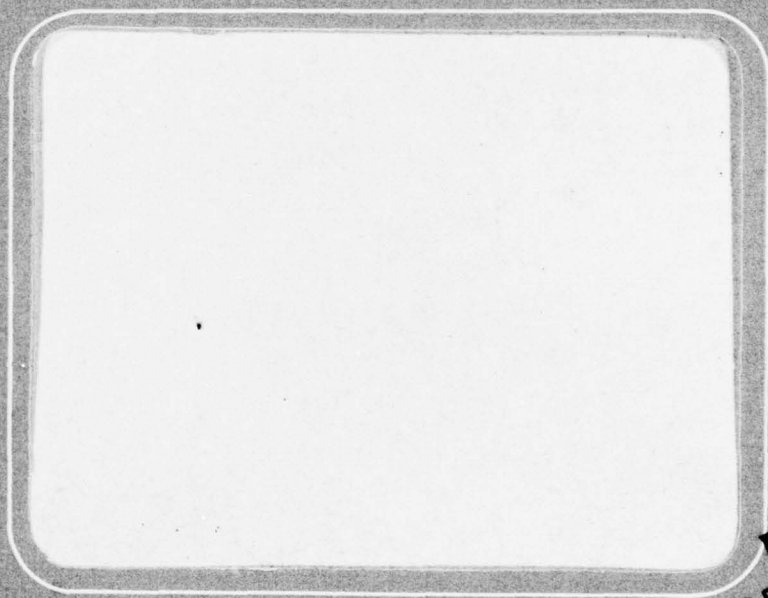


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9 FINAL REPORT

on

6 LOGISTICS PACKAGING ENVIRONMENT
to
HQ AFLC/LOTPP
WRIGHT PATTERSON AIR FORCE BASE

Contract Number F-33657-77-A-003

Order Number 4

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ABSTRACT

EXECUTIVE SUMMARY

This report is the end product of an effort to quantify the USAF logistics environment for use by engineers and specialists to determine packaging design goals. The environment is quantified in terms of shipment and storage conditions expected to be encountered by USAF centrally managed and procured material. The final data are presented in the form of matrices which were derived from historical data available in various USAF and DOD computer data bases. Some of the data were used as received, however, most were restructured into usable formats and statistically analyzed and validated during each phase of the derivation. The final matrices quantify the environment in terms of length of storage, climatic data, corrosion data, mode of shipment and overseas shipments at 4 levels of risk: 1%, 5%, 10%, and 20%. These matrices when used in conjunction with packaging engineering techniques will provide USAF packaging specialists with the capability to package AF material to an identifiable risk level and perform both life cycle cost and risk versus cost analysis.

To make this report even more valuable, appendices provide detailed information concerning each of the major areas. In fact, enough detail is provided so that additional risk levels or different matrix elements can be generated for specific items.

ABSTRACT

ACKNOWLEDGEMENTS

This project is the result of efforts by many people in the Air Force, Department of Defense and Battelle Columbus Laboratories. This section identifies those individuals and groups that contributed information, research effort, or suggestions in the successful completion of this task. Certainly the PRAM office should be acknowledged for the resources provided to conduct this study.

Key Battelle personnel involved in the research and in preparing this report are G. Derringer, R. Cote, J. Wray and S. Porter (technical consultant). Other Battelle contributors include W. Boyd, J. Hassell, W. Mueller, W. Young, and personnel of the Battelle Computer Center.

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- Air Force Waterport Liaison Office, Oakland, California
- Warner Robins Air Logistics Center, Robins AFB: Service Engineering personnel.
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FINAL REPORT
on
LOGISTICS PACKAGING ENVIRONMENT
to
HQ AFLC/LOTPP
Wright Patterson Air Force Base
Contract Number F-33657-77-A-003
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January 26, 1979

LOGISTICS PACKAGING ENVIRONMENT

INTRODUCTION

This report summarizes a major effort to integrate the different environmental factors that affect the design of packaging protection.

The report addresses the environmental factors in three categories: climate and corrosion, transportation, and storage. It represents the accumulation of millions of pieces of information arranged into various segments of a complex data system for subsequent computer analysis and validation.

Because of the complexity of the task, the report has been arranged to present logically the results of the study. The body of the report contains background information, a general overview of the three major categories, a discussion on the approach to analysis, the accumulated data, conclusions and recommendations. Appendices are used to provide details concerning the development and analysis of the data in each specific category. Each appendix covering a major category is written so that it is a mini-report and can be used as a single self-sufficient entity.

During the course of the project, numerous meetings and discussions were held between BCL and AF personnel so that the effort was directed to useable final products.

BACKGROUND

Selection of adequate packaging protection for DOD material is based on the application of packaging techniques and materials to protect an item against known or anticipated logistics environment conditions.

In order to provide this protection, three factors must be known to the package designer; (1) the physical and mechanical properties of the item, (2) the technical capabilities of the packaging design to protect the item, and finally, (3) the conditions or environment to protect against.

Currently, the conditions or environment to protect against is in the form of broad, ambiguous, criteria such as "--all extremes of climate--", "--extended storage--", "--limited tenure--" or "multiple rough handling". A copy of the complete definitions extracted from AFR 71-6, Packaging of Material, 19 May 1976 is included in Appendix A. The use of these definitions results in the selection of a packaging design based on subjective decisions which are a product of individual or collective experience. Further, without a systematic quantification of the logistics environment, risk analysis or life cycle cost predictions are at best an educated guess.

The objective of this project is to define the USAF logistics environment in quantifiable terms such as length and type of storage, climate conditions, corrosibility, and distribution conditions to be expected in routine Air Force logistics operations.

There are two basic approaches which can be used to develop the information needed to complete a project such as this. First, an experiment could be designed which would follow or anticipate the flow of supplies and material, and generate data according to statistical experimental design. The second approach is the accumulation of vast amounts of historical data which are generated and stored in various computer systems or historical archives. In either case the accumulated data could then be analyzed and presented in the form of probability distributions related to the various elements of the logistics environment.

It was a mutual Air Force-Battelle Columbus Laboratories agreement that the historical data approach be used where ever possible. As a result, with the exception of transportation shock and vibration data, all of the methodology, statistical analysis and final quantifications of the logistics environment contained in this report are based on historical data. The time base of this data ranged from point-in-time (data as of a specific date) to 30 years of data extracted from almanacs and climatology studies.

DATA COLLECTION

The historical data collected fall into three major categories: (1) climate and corrosion, (2) transportation, and (3) storage.

Climate and Corrosion Data

The climate and corrosion data were gathered from many sources and covered locations worldwide. Appendix B contains detailed information on climate and corrosion data sources and analysis. The initial climatology data was obtained from almanacs, climatology studies and an Army manual on climatology. The collected data represent 30 years of historical information concerning average mean temperature, historic high and low temperatures and world climatic regions. These data were supplemented by the USAF ETAC, Air Weather Service/MAC from data developed through hourly temperature and relative humidity readings over a 10 year period at 98 Air Force bases worldwide. The USAF ETAC data provided monthly frequency distributions of the readings related to daily low temperatures, daily high temperatures, calculated daily temperature ranges and relative humidity during both all weather and with no precipitation.

Corrosion data were gathered from existing studies related to corrosion index factors and industrial pollution. The corrosion index factors were obtained from an Air Force "Pacer Lime" study. The factors were developed using an empirical model (see Appendix A) however, analysis and evaluation indicate that the Pacer Lime indices have a high degree of correlation with

the relative corrosivity of different areas/bases. The relative effects such as severe, moderate or mild corrosivity do not provide an absolute quantification of corrosion, however, they do provide far more packaging design quantification than was previously available.

Industrial Pollution data were obtained from an EPA study, National Air Quality and Emissions Trends Report, 1976. Two applicable pollutants quantified were photochemical oxidants and sulfur dioxide. Both were quantified in terms of Air Quality Standards.

Proximity to population/industrial complexes was also quantified to provide a third characterization of corrosivity.

Transportation Data

Transportation distribution data were obtained from the DOD Materiel Distribution System (DODMDS) Study Group whose task included a quantification of the material distribution system. Appendix C contains detailed information on transportation related data sources. The DODMDS study group had data tapes covering every DOD shipment made during calendar year 1975. One aggregated tape contained information depicting commodities, origin/destination of shipments, mode of shipment and the weight of the shipments. This condensed version of the DODMDS data contained over 200,000 records which were further reduced and analyzed in relation to Air Force centrally managed material. The result of this analysis was a series of shipping patterns that portrayed commodity distribution in terms of shipping destination and mode of shipment. These data were then used for two basic purposes: (1) to weight the base climate and corrosion values according to the distribution, and (2) to predict mode/destination of commodities for use in developing distribution patterns for use in developing an experimental design to gather shock and vibration data.

The development of an experimental design and related statistical analysis methods are discussed in detail in Appendix C. The experimental design prepared at the start of the project was not completed due to various unforeseen circumstances related to the shipment of the recorders through the DOD transportation system. In anticipation of this, it was mutually

decided that rather than postpone the completion of the project, Battelle would provide the rationale and the computer software necessary for the Air Force to complete the shock and vibration analysis on their own.

Storage Data

Information related to both length and type of storage was obtained from Air Force computer systems and is described in detail in Appendix D. Data related to the length of storage at Air Logistic Centers were obtained from the Distribution Quality Assurance Data System. Data for that system, generated each time a quality assurance report was written, included the date the item involved was packed. Over 37,000 reports were generated during the base period (calendar year 1977).

Base level length of storage was not directly available from any computer system. Instead, the length of storage was calculated from related data available in the Base 1050 II Supply Computer System. Eighteen bases with a total of more than 190,000 lines of data were used to develop the length of storage calculations.

Information on outside storage at the Air Logistic Centers was obtained by screening the D103 Materiel Locator System. The results of this screening were matched with dimensional data and then analyzed for trends.

Base level outside storage information was obtained by screening the Base 1050 II records for 32 Air Force Bases in combination with storage location data obtained by a mail survey. These data were matched with dimensional data and analyzed for trends.

STATISTICAL EVALUATION

The overall approach to analysis of the data involved (1) computer manipulation of data, (2) aggregation of data into logical groupings, (3) statistical evaluation, analysis and validation of the data at each iteration and finally, (4) the integration of the data into matrices displaying the pertinent environmental elements at different risk or probability levels.

Computer Manipulation of Data

All data obtained from the various sources were either received as computer tapes which were converted to Battelle Columbus Laboratory (BCL) computer compatible formats or as hard copy data which were converted to computer data files. Once all data were input to the BCL computer, all analysis and manipulation were performed through the use of both standard and specially prepared computer programs.

Aggregation of Data Into Logical Groupings

Data files established for each of the areas of study related to either distribution of a commodity or a distribution pattern related to bases. Therefore two key identification/aggregation elements were necessary to allow matching/merging of any or all data elements. The DOD Activity Address Code and a modification of the customer numbers developed by the DODMDS group were used as the Air Force Base identification elements. The first identifier is a discrete number assigned to all Air Force activities and listed in the DOD Activity Address Directory. The second identifier is a four digit number based for the most part on DODMDS customer number. The first three digits are exactly as DODMDS assigned however, a fourth digit (either a 1 or 2) was added to identify (1) DODMDS primary customers from (2) activities consolidated with primary customers. The second identity element related to the commodity/item identification. Initially, identity was maintained through the use of the National Supply Class and National Supply Group. As the project progressed, the most logical grouping was a variation of the Product Groups established by the DODMDS Group. A detailed discussion of the evolution of product groups and related product codes is contained in Appendix E.

Statistical Methods

Most of the statistical analyses and the data base organization and manipulation used in this project were accomplished by means of the Statistical Package for the Social Sciences (SPSS), a widely used computer

software product that is well suited for computer processing of large, complex data bases. The intent in this project was to make maximum use of available software, together with standard instruction to avoid unnecessary development of new software.

This package was used to perform statistical analyses including the the generation of frequency distributions of individual data elements, cross-tabulations among pairs of data elements, and several regression analyses including both simple linear regression and multiple regression.

SPSS was used extensively to perform numerous data manipulation and file organization functions. These functions included data transformation, recoding, data file editing, sorting, and writing new data files incorporating data base modifications and enhancements.

A Fortran program was written to test the equality of two or more frequency distributions at any specified percentile point. This program was used to compare frequency distributions of storage times among various product code groupings to allow for further combining of national supply classes into fewer product code groupings. The statistical method used was based on a nonparametric technique for contingency table analysis using the chi-square statistic.

In the problem being investigated here the contingency tables are formed so that the columns of the tables correspond to storage time categories and the rows of the tables correspond to the different product code groupings which we seek to combine. Thus, each row in the table represents a probability distribution of storage time for that product code.

The chi-square method used to analyze these contingency tables tests whether or not different rows in the table (different product codes) agree at some specified percentile. That is, for example, if storage time distributions of two products were such that the statistical test led to the conclusion that these distributions agree at the 90th percentile, the product codes were combined to form a single commodity group.

In this study we are generally concerned with extreme values of the various packaging environmental parameters. More precisely we are concerned not with the absolute maximum temperature, or storage time, etc., but rather with those values that are exceeded with some specified probability.

For example, when considering temperatures associated with a certain commodity group, we may speak of that temperature that is exceeded no more than five percent of the time. In statistical terminology, this value is called the 95th percentile of the distribution of temperature since 95 percent of the temperature values are less than that value (equivalently, five percent of the values exceed the 95th percentile). Figure 1 is a graphical illustration of a distribution for which the 90th, 95th, and 99th percentiles are indicated and labeled, respectively, $x_{.90}$, $x_{.95}$, $x_{.99}$.

Integration of the Data Files

The analysis and details of developing the climate and corrosion, transportation, and storage data are contained in Appendices B, C, and D. However, both the climate and corrosion data and the transportation data required several combinations and iterations to put them into a format necessary to develop the final matrices.

First, the distribution of product groups by AF bases was restructured to provide a frequency distribution listing with each line representing a discrete product code, the AF base involved, and the percent of the product shipped to that base (see Appendix C). This listing was then merged with AF base climate and corrosion data to form 26 discrete data files, one for each product code, listing all of the base climate and corrosion data and two added elements; the product code and the percent of that product code going to the base. This provided the basis for developing all of the climate and corrosion values. To obtain these values a separate computer run was made for each of the following.

Low temperature - 90th, 95th, 99th percentiles
 Number of months temperature was not above 0°F -
 90th, 95th 99th, percentiles
 High temperature - 90th, 95th, 99th percentiles
 Daily temperature range (highest month)-
 90th, 95th, 99th percentiles.
 Corrosion Index (Pacer Lime)
 Topography

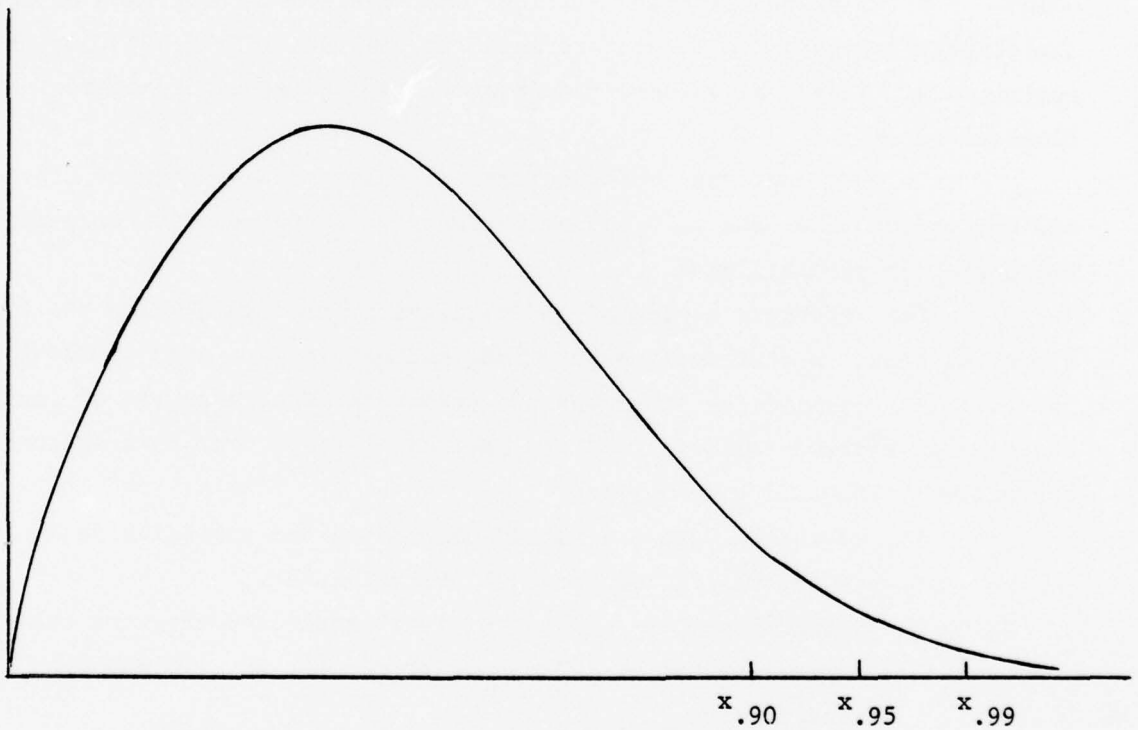


FIGURE 1. ILLUSTRATION OF PERCENTILE POINTS FOR A PROBABILITY DISTRIBUTION.

Photochemical oxidants

Sulfur dioxide

Proximity to population/industry

All weather humidity

Number of months the all weather humidity was greater than 70%

No precipitation humidity

Number of months the No precipitation humidity was greater than 70%

The result of this procedure was a set of values arranged in order of percentiles of distribution for each product code and each climate/ corrosion value. A total of 546 separate listings was developed. From each of these, the climate/corrosion value was extracted at the 99th, 95th, 90th, and 80th percentiles. These values were then accumulated and used to prepare the final matrices.

In addition, maps and gradients discussed in Appendix B (Climate and Corrosion) were used to graphically portray the values with respect to the different probabilities.

The important aspect of the methodology used to develop the final report matrices is that data computations and values were used to develop the various probabilities; the maps and gradients added a degree of insight and graphic representation. Data and matrices derived from this approach are contained in Appendix F. They are:

- 1) Corrosion Data - a matrix portraying the corrosion data at the 1%, 5%, 10% and 20% probabilities.
- 2) Climatology Data - A set of four matrices portraying the temperature and humidity data at the 1%, 5%, 10% and 20% probabilities.

DEVELOPMENT OF THE FINAL MATRICES

The set of matrices provided as a result of this project can be used as design goals for packaging and container requirements. They quantify the logistics environment in far more specific terms than were previously available to packaging engineers and specialists.

As with any set of quantifications, there are two prerequisites for their successful use. One must understand their derivation and the statistical significance of the probabilities, and one must use them within certain limitations. To this end, the following factors are intended to provide added insight to both the derivation and limitations.

The development of the final matrices involved decisions regarding the risk levels to address and the elements essential to the matrices. Four risk levels (probability levels) were established to provide for a larger risk spectrum than would normally be needed. A 20% risk is generally unacceptable for defense materiel planning, however, it was added to allow the 20 % risk which might be appropriate for inexpensive, common items not critical to the defense posture.

Selection of Values

Selection of the elements to be portrayed in each risk matrix was based in part on mutual agreement between Air Force and Battelle personnel and in part on the results of the regression analysis performed on the base climate and corrosion data.

Storage

The length of storage elements were developed through the use of categorization of commodities. While the categorization has been statistically validated from the standpoint of weapon systems and National Supply Classes, they still represent a group of like items and not an analysis of discrete individual items. Because of this, the length of storage values could be different for specific items which are in critical demand, subject to intensified management, etc. In these instances, the more logical approach would be to use minimum (or known) length of storage at both the base level and the ALC. When this approach is used, caution should be exercised to insure the design criteria contained in the final matrices are reapplied once the conditions on that specific item change.

The length of storage elements for base level and the Air Logistics Centers were developed independently, and should be treated that way even though an interdependence may exist. One thing is certain; the base level length of storage is not a subset of ALC storage. The additive combination is distorted by redistribution of assets between the bases and the ALC's due to changes in mission, etc., yet that would more closely reflect the actual condition.

Length of storage at base level and the other elements of the final matrices are directly related, therefore they can be used in combination with any other value. The range of climate and corrosion values at the ALCs is not necessarily the same as that contained in the final matrices. In no instance is the value more extreme, however, the conditions are generally milder at the ALCs. If a combination of ALC storage and a climate or corrosion element is needed for a specific design, the element values can be obtained from the climate and corrosion matrix (Appendix B).

The survey of items in outside storage and the storage capabilities at the AF bases are discussed in detail in Appendix D. These two factors were not selected for use in the final matrices because, at best, they would be a footnote. Very few items are stored outside. Exceptions appear to be 1) extremely large items such as air foils and communication vans, 2) larger items in metal or plastic containers such as engines or 3) items in open slotted angle crates.

Temperature/Humidity

The temperature and humidity elements contained in the final matrices were selected based on their interdependence with the corrosion index. Regression models specifically identified daily temperature range, and the two humidity elements used. The temperature values (95%) are also the result of larger regression equations which considered all twenty-five elements in the climate and corrosion data file (see Appendix B).

All of the climatology values in the final matrix were independently derived using the technique described earlier in the report.

Because of this most of the values should not be used in combination for a specific design. For example, a design to protect against a combination

of 110 F and 90% RH could be an overdesign since the combination would rarely, if ever, occur. In fact, the 110 F is representative of southwestern US where humidities are more in the 50-60-percent range.

Values which can be used in combination are:

- 1) Low temperature and number of months equal to or less than 0 and
- 2) Relative humidity and number of months with greater than 70% RH.

In fact, these values are mutually supportive. That is, the "number of months" element can be used to substantiate or reduce the stringency of the associated element.

Where combinations of values are needed, regression analysis provided the following relationships which can be used.

1. High Temperature = (1.20)Day Rng +(.10)Low Temp +.64.4
2. High Temperature = (1.07)Day Rng +(.10)Low Temp -(.14)RH +77.72
3. High Temperature = (.93)Day Rng - (.15) RH + 82.54
4. High Temperature = (1.07)Day Rng +68.93
5. High Temperature = 174.22 -(1.13)RH
6. Relative Humidity = 93.66 -(.95) Day Rng
7. Low Temperature = 46.88 -(.3)RH -(1.34)Day Rng

These relationships and derived variations of them can provide adequate combinational values where needed. However, they should not be used to reduce single value design parameters since there is a much higher statistical confidence in each of the matrix elements than the regression model of combinations will provide.

Corrosion

The corrosion index used in this report is a description of relative corrosivity rather than the quantification of corrosion. Because of this, a descriptive name rather than a specific value of corrosion was selected for the final matrices. The ranges of the corrosion factors were established by the Air Force through Project Pacer Lime and no reason was found to change the values they represent. The index should be used as a

caution flag to indicate that severe or moderate corrosion is a factor, however, the design criteria must be established using the other elements in the matrices. If values related to specific bases or areas are needed, they can be obtained from the climate and corrosion matrix (Appendix B).

Topography ranges assigned were based on two factors. First, a simple plot of AF bases vs. relative corrosion values indicated that the coastal-mountain-plain designations were a logical selection to differentiate topography. Second, studies of atmospheric corrosion indicate that the airborne salt is diminished to little or no effect 50 miles from the sea coast. Altitude of 3000 feet for the mountain designation is somewhat more arbitrary, however, the high correlation resulting from regression analysis appears to justify the choice.

The Photochemical Oxidant and Sulfur Dioxide elements were selected as a result of regression analysis. They do have quantifiable values, i.e., the Air Quality Standard. However, the values are not directly related to corrosion of material.

Storage Conditions

The climate and corrosion data relate to ambient conditions, and directly apply to outside storage. While there is a relationship between inside storage and ambient conditions, the following factors, a result of prior research, should be considered:

Climate:

- Low Temperatures - Offset by heated warehouse
- High Temperature - Could be more extreme
- Temperature Range - Will be slightly less
- Humidity - Generally same as ambient since Relative Humidity with "no precipitation" figures were used.

Corrosion:

- | | |
|----------------|--|
| Index | - Ususally will be less severe |
| Topography | - Coastal effect of salt air will be reduced |
| Photochemical | |
| Oxidants | - Less severe |
| Sulfur Dioxide | - Less severe |

As can be seen, two factors that most effect inside storage are heat and humidity. High temperatures can be even more extreme in the warehouse than ambient. In fact, 20 degrees higher would not be an unusual condition. Relative humidity in the warehouse might be somewhat less due to the higher temperatures, however, this can be deceiving since the potential for reaching the dew point is only offset by the slightly decreased daily temperature range. Therefore, where combinations of elements are needed as a design goal for the storage of items inside, the following adjustments should be made;

Climate:

- | | |
|-------------------|----------------------|
| Low Temperature | - disregard |
| High Temperature | - add 20 degrees |
| Temperature range | - Subtract 5 degrees |
| Humidity | - Use value provided |

Corrosion:

- | | |
|----------------|--|
| Index | - reduce one range |
| Topography | - disregard unless it is known that storage area is within 1 mile of sea coast |
| Photochemical | |
| Oxidants | - use standard |
| Sulfur Dioxide | - use standard |

Transportation Conditions

During transportation any commodity group will have less than the indicated probabilities of experiencing the climate and corrosion values contained in the final matrices. The length of time the material will be exposed to the values, that is, the length of time in transit, should be considered only

when the design element involved is critical to the protection of the item. Then the designated probabilities and values should be used.

CONCLUSIONS

Quantification of the logistics packaging environment in terms of climate, storage, and distribution has been accomplished. In addition, the results of this project have added information on the relative corrosivity of areas where USAF material is stored and used.

The final product, four matrices, covering four different risk levels, provide the design goals in terms of the packaging environment. The data in the four matrices are a result of statistical evaluation and represent far more information than was ever available to packaging engineers and specialists.

Savings in terms of both reduced packaging requirements and/or better protection of material will result when the design criteria is applied. In addition, life cycle cost and risk analysis related to packaging need no longer be an intangible factor.

To make this report even more valuable, appendices provide detailed information concerning each of the major areas. In fact, enough detail is provided so that additional risk levels or different matrix elements can be generated for specific items.

Transportation shock and vibration analysis was not completed. However, the efforts expended in this area by both the Air Force and BCL was not without benefit. Computer routines and methodology have been developed and provided to the Air Force Packaging Evaluation Agency. The task has thus been reduced to one of data collection (recorder/package calibration and shipment). Finally, the successful results of this project have proved the feasibility of reducing large amounts of historical data into statistically sound, meaningful information.

RECOMMENDATIONS

- (1) Complete the gathering of data for transportation shock and vibration.

This area requires immediate attention since the quantification of the logistics packaging environment is incomplete without this piece of information. The methodology and computer routines necessary to develop this area are complete. What is needed now is the gathering and computer analysis of data.

- (2) Quantify corrosivity in terms related to deterioration of materials in both warehouses and outside storage.

Work performed by Warner Robins ALC under project Pacer Lime and current efforts by the Air Force Materials Laboratory should provide a basis for further quantification of corrosivity. In addition, current efforts by the Air Force Logistics Command to perform cyclic inspections of material in warehouses, will, if properly refined and analyzed, add to information necessary to quantify the effects of corrosion. These effects must then be tied to the climatology/storage elements generated as a result of this project in order to provide the packaging engineer with criteria, in his terms, for uses in establishing packaging design parameters.

- (3) Expand the scope of this study.

The results of this project are directed to Air Force managed items being stored by, and distributed to Air Force activities. The results would be even more valuable if all Services had similar data so that DOD standardization efforts can be based on similar quantified logistics packaging criteria. Another area which would greatly benefit from similar quantifications is

Foreign Military Sales (FMS). While this area could be more difficult to quantify using historical data, the results of the quantification would greatly enhance FMS packaging planning and policy.

- (4) Determine the technical packaging requirements needed to meet the logistics packaging environment.

The current packaging methods contained in MIL-P-116, Method of Preservation-Packaging, provide a large variety of technically adequate packaging techniques ranging from physical protection to desiccated water-vapor-proof packaging. The requirement now is to match the proper packaging method to the design criteria. For example, if the product group will be stored for four years, will a waterproof barrier adequately protect a given item or will it require a water-vapor-proof package. The Air Force Logistic Command Cyclic Inspection Program should provide data which, when analyzed, will provide these answers.

- (5) Refine the application of the quantification using related management concepts.

The final matrices, by design, address generic groups of commodities. This approach does not treat exceptions such as an item in critical demand or of extremely high value where intensified management is applied. While these items would have to be identified on an individual basis, a management concept called ABC Management is currently being studied by the Air Force Logistics Command and could serve as an identification source.

This concept identifies material for intensified, normal, or minimal management and could prove to have an inverse relationship to packaging. That is, the more intense the management and control on items, the less the need for packaging exists.

EXPLANATION OF THE FINAL MATRICES

The final matrices (Tables 1, 2, 3, and 4) are entitled, "Levels of Environment" and represent the integration of the three major areas of study: climate/corrosion, transportation, and storage. Each of the tables represents a probability that supplies will experience conditions more extreme than the values indicated.

The matrices are all arranged numerically by product code. To assist in converting the product code to NSN or generic product groupings, three indices are provided. Table 5 is an index arranged numerically by product code. Table 6 is an index arranged numerically by NSN, and Table 7 is an index arranged alphabetically by product group generic name.

To assist further in using the matrices, the following description pertains to the matrix elements.

Storage Elements

Two storage elements, one for base level and one for ALC's are used. The figures represent the storage time to be expected at the probability expressed at the top of the matrix. For example, to protect 99% of the supplies in product group 104 (1% probability), they would require storage protection for 4 years at a base and more than 10 years at an ALC.

Temperature/Humidity

Six climate elements are used. The six were selected to provide needed design quantifications. The element values relate to the probability levels indicated at the top of the matrix. Specific element values selected were influenced by regression analysis results discussed in Appendix B. The elements are as follows.

Low Temperature at the 95th Percentile (low 95%).

This figure represents the lowest annual temperature to be expected with a 5% probability that in the coldest month the temperature could get lower. In other words, during the coldest month the temperature was colder than indicated 15 times in 10 years.

Number of Months Annually, the Temperature was 0° or Below (MO < 0).

This data element is added to contribute some insight to the low temperature. The number reflected relates to the same percentile (95%) as the low temperature. It can be used to substantiate or reduce the stringency of the low temperature design goal. For example, at the 1% probability, 7 months at temperatures below 0 (product code 141) would indicate that cold temperatures could be a problem and should carry more weight than the 2 months related to product code 719.

High Temperature at the 95th Percentile (High 95%).

This as with low temperature represents the highest ambient temperature to be expected at the 95% probability.

Daily Temperature Range (Daily Diurnal Extremes).

This element represents the annual mean daily temperature ranges (difference between daily high and low). The figure presented is derived from median low and high temperatures.

Highest Month Relative Humidity with No Precipitation (RH).

This element represents the high month median (50th percentile) relative humidity based on 10 years of hourly readings but with reading during precipitation eliminated. Selection of the no-precipitation reading rather than the all weather reading was based on two factors. First re-

gression analysis showed slightly better correlation for the selected element and secondly, the no precipitation value would seem more realistic for a design goal related to both inside and outside storage.

Number of Months When the Relative Humidity was Greater than 70 Percent (MO > 70).

This element is designed to weight the high month relative humidity element. As the number of months increase, the high figure takes on more significance.

Corrosion Elements

Four elements are presented concerning corrosion factors and relate to the probability levels at the top of the matrix. These elements all provide a degree of insight to corrosivity, however, they are not quantifications but instead depict the relative corrosion potential.

Corrosion Index (Index).

Only three relative values are provided. These three values relate to the corrosivity, potential of severe, moderate or mild. Values of 1.67 to 2.0 are considered severe, 2.01 to 2.85 moderate and 2.86 to 3.33 mild.

Topography (T).

Three differentiating values are used for this element, C for coastal, P for plains, and M for mountains. These three elements were selected based on a review of several sources related to atmospheric corrosion.

Photochemical Oxidants (PO).

The values of the element portrayed represent the multiple of the EPA standard. For Photochemical Oxidants, the EPA 1-hour primary national ambient Air Quality Standard is $160 \mu\text{g}/\text{m}^3$ which is not to be exceeded more than once per year. A value of 2 indicates the standard was exceeded twice.

Sulfur Dioxide (SD).

The values of the element portrayed represent the multiple of the EPA standard. For Sulfur Dioxide, the EPA 24-hour primary national ambient Air Quality Standard is $365 \mu\text{g}/\text{m}^3$ which is not to be exceeded more than once per year. A value of 2 indicates the standard was exceeded twice.

Transportation Mode Elements

These data elements represent direct relationships of the product group and the mode used for the first phase of shipment. The values are independent of the probability at the top of each matrix. They are repeated on each matrix for convenience. The values represent the percent of the commodity that is shipped less-than-truck-load, truck-load, car-load, small parcel air or surface, LOGAIR, Military airlift, and all other modes respectively.

Overseas Shipment Elements

These data elements represent direct relationships of the product group and the overseas destination.

Like the transportation mode elements they are independent of the probability level at the top of the matrix. The elements are an aggregation of the broader element breakdown contained in Appendix C and represent Northern Europe (includes Great Britain and Iceland), Southern Europe, Pacific (includes Hawaii), Alaska, and the Caribbean (includes Canal Zone) respectively.

TABLE 1.

PROD CODE	STORAGE (YEARS) BASE ALC	TEMPERATURE/HUMIDITY			LEVELS OF ENVIRONMENT			CORROSION INDEX			TRANSPORTATION MODE (PERCENT OF COMMODITY)			OVERSEAS SHIPMENTS (PERCENT OF COMMODITY)											
		LOW MO 95%	HIGH DAY 95%	RH MO >70	SEV	C	S	LTL	TL	CL	SP	L/A	MAC	MISC	N	EUR	S	EUR	PAC	ALA	CRIB	TOTAL			
104	4.0	10+	-17	4	111	30	90	12	SEV	C	3	2	53.2	3.7	0.0	14.2	28.4	.1	.4	4.29	1.48	10.91	.30	.03	17.01
121	4.0	8.0	-28	5	106	30	90	12	SEV	C	4	2	6.5	2.1	0.0	5.1	84.9	.2	1.2	1.30	.10	10.86	.19	.11	12.56
141	6.0	10	-50	7	111	30	90	12	SEV	C	4	3	15.8	14.8	.6	2.1	64.8	.3	1.4	7.00	1.42	11.40	1.10	.15	21.07
144	4.0	6.0	-28	5	106	30	90	12	SEV	C	3	2	43.1	.2	0.0	15.4	41.1	0.0	0.0	3.67	1.17	10.20	.47	0.00	15.51
153	4.0	10	-50	7	111	30	90	12	SEV	C	3	2	21.1	12.3	1.2	2.7	60.9	1.3	.5	3.92	1.47	9.61	2.73	.12	17.85
154	3.5	10+	-23	5	111	30	90	12	SEV	C	3	3	38.3	22.5	0.0	10.3	27.2	1.4	.3	3.51	.51	4.77	.06	.13	8.98
161	4.0	6.0	-17	4	111	30	90	12	SEV	C	3	3	20.6	20.4	0.0	.8	57.6	.6	0.0	2.36	.26	2.45	.23	0.00	5.30
179	4.0	5.0	-50	7	111	30	90	12	SEV	C	3	3	40.4	20.3	0.0	3.3	29.3	6.1	.6	7.00	1.65	5.11	1.16	.10	15.02
269	5.5	4.0	-28	5	111	30	90	12	SEV	C	3	3	18.9	4.6	4.7	.4	71.4	0.0	0.0	4.49	.86	11.62	.78	.15	17.90
289	2.0	8.0	-28	5	106	30	90	12	SEV	C	3	2	24.8	13.6	0.0	.9	60.6	.2	.1	4.21	.60	4.61	.91	.06	10.39
299	3.0	10+	-50	7	111	30	90	12	SEV	C	3	2	28.3	14.6	0.0	2.2	54.5	.1	.3	6.00	1.14	9.65	1.46	.02	18.27
491	4.0	8.0	-50	7	111	30	90	12	SEV	C	3	2	42.3	22.3	1.0	4.7	24.8	3.7	1.2	3.96	1.32	5.73	1.24	.11	12.36
494	3.5	10+	-50	7	111	30	90	12	SEV	C	3	2	33.6	15.6	0.0	10.3	37.7	1.6	1.2	6.42	2.14	10.56	1.17	.04	20.33
539	4.0	10+	-26	5	111	30	90	12	SEV	C	3	2	34.2	3.1	0.0	27.8	32.3	1.6	1.0	2.12	.51	4.44	.42	.01	7.50
549	5.0	10+	-17	4	103	30	80	12	SEV	C	3	1	6.1	31.7	1.0	7.6	12.7	40.5	.2	1.47	1.40	.35	.01	0.00	3.23
581	5.5	10+	-50	7	111	30	90	12	SEV	C	3	2	17.4	11.7	.1	8.5	57.9	2.7	1.7	6.32	1.53	7.34	1.41	.13	16.73
584	5.5	10+	-50	7	111	30	90	12	SEV	C	3	2	26.2	17.5	9.6	10.4	34.8	.8	.7	13.65	2.76	17.69	2.64	.07	36.81
591	5.5	9.5	-50	7	111	30	90	12	SEV	C	3	2	17.4	11.7	.1	8.5	57.9	2.7	1.7	6.32	1.53	7.34	1.41	.13	16.73
594	4.0	10+	-50	7	111	30	90	12	SEV	C	3	2	26.2	17.5	9.6	10.4	34.8	.8	.7	13.65	2.76	17.69	2.64	.07	36.81
611	6.0	8.0	-26	5	111	30	90	12	SEV	C	3	2	32.8	23.0	1.7	3.2	35.7	2.5	1.1	3.76	.83	3.67	.46	.13	8.85
614	3.5	8.0	-26	5	111	30	90	12	SEV	C	3	2	18.1	7.2	0.0	19.5	53.5	.1	1.6	3.06	.68	7.47	.65	.04	11.90
619	5.0	5.0	-28	5	111	30	90	12	SEV	C	4	2	24.4	23.2	0.0	4.4	47.7	0.0	.3	2.72	1.04	7.36	.69	.20	12.01
679	3.0	2.0	-11	3	111	30	90	12	SEV	C	3	2	31.2	.2	0.0	7.7	59.5	.6	.8	15.19	0.00	9.98	0.00	.06	25.23
689	3.0	7.5	-50	7	106	30	90	12	SEV	C	3	3	79.8	0.0	0.0	1.6	18.6	0.0	0.0	1.05	2.10	5.26	3.16	0.00	11.57
719	6.0	9.0	-6	2	105	30	90	12	SEV	C	3	3	17.6	62.4	0.0	6.7	13.2	.1	0.0	7.57	.13	14.61	.01	0.00	22.32
849	2.5	2.0	-50	7	111	30	90	12	SEV	C	3	3	48.4	1.1	0.0	19.4	30.4	.4	.3	9.01	1.81	8.04	2.26	.29	20.61

TABLE 2.

PROD CODE	STORAGE (YEARS) BASE ALC	TEMPERATURE/HUMIDITY			LEVELS OF ENVIRONMENT			15 PERCENT PROBABILITY TRANSPORTATION MODE (PERCENT OF COMMODITY)				OVERSEAS SHIPMENTS (PERCENT OF COMMODITY)													
		LOW MO 95% RING	HIGH DAY	RM MO >70	INDEX T	CORROSION P	S	LTL	TL	CL	SP	L/A	MAC	MISC	N	EUR	S	PAC	ALA	CRIB	TOTAL				
104	2.0	8.5	4	0	106	30	90	12	SEV	C	3	2	53.2	3.7	0.0	14.2	28.4	.1	.4	4.29	1.48	10.91	.30	.03	17.01
121	2.5	7.0	-19	4	104	25	90	12	SEV	C	3	2	6.5	2.1	0.0	5.1	84.9	.2	1.2	1.30	.10	10.86	.19	.11	12.56
141	3.5	9.5	-26	5	105	30	80	12	SEV	C	4	2	15.8	14.8	.8	2.1	64.8	.3	1.4	7.00	1.42	11.40	1.10	.15	21.07
144	2.0	5.0	-26	5	98	30	90	12	SEV	C	3	2	43.1	.2	0.0	15.4	41.1	0.0	0.0	3.67	1.17	10.20	.47	0.00	15.51
153	2.0	7.5	-17	4	105	30	80	12	SEV	C	3	2	21.1	12.3	1.2	2.7	60.9	1.3	.5	3.92	1.47	9.61	2.73	.12	17.85
154	2.0	9.5	-5	2	106	30	80	9	SEV	C	3	2	38.3	22.5	0.0	10.3	27.2	1.4	.3	3.51	.51	4.77	.06	.13	8.98
161	3.0	2.0	4	0	111	25	80	8	SEV	C	3	1	20.6	20.4	0.0	.8	57.6	.6	0.0	2.36	.26	2.45	.23	0.00	5.30
179	2.0	3.5	-6	3	101	30	80	12	SEV	C	3	2	40.4	20.3	0.0	3.3	29.3	6.1	.6	7.00	1.65	5.11	1.16	.10	15.02
269	3.0	2.5	-17	4	105	30	80	12	SEV	C	3	2	18.9	4.6	4.7	.4	71.4	0.0	0.0	4.49	.86	11.62	.70	.15	17.90
289	2.0	7.5	-14	3	106	25	80	11	SEV	C	3	1	24.8	13.6	0.0	.9	60.6	.2	.1	4.21	.60	4.61	.91	.06	10.39
299	2.0	7.0	-14	3	106	30	80	12	SEV	C	3	2	28.3	14.6	0.0	2.2	54.5	.1	.3	6.00	1.14	9.65	1.46	.02	18.27
491	2.5	5.0	-14	3	106	30	80	11	SEV	C	3	2	42.3	22.3	1.0	4.7	24.8	3.7	1.2	3.96	1.32	5.73	1.24	.11	12.36
494	2.0	9.5	-14	3	106	30	80	12	SEV	C	3	2	33.6	15.6	0.0	10.3	37.7	1.6	1.2	6.42	2.14	10.56	1.17	.04	20.33
539	2.0	8.1	-5	2	106	30	80	9	SEV	C	3	2	34.2	3.1	0.0	27.8	32.3	1.6	1.0	2.12	.51	4.44	.42	.01	7.50
549	2.0	1.0	8	0	101	30	70	5	MOD	P	2	1	6.1	31.7	1.0	7.8	12.7	40.5	.2	1.47	1.40	.35	.01	0.00	3.23
581	4.0	5.0	-14	3	106	30	80	12	SEV	C	3	2	17.4	11.7	.1	8.5	57.9	2.7	1.7	6.32	1.53	7.34	1.41	.13	16.73
584	2.5	10+	-23	5	106	25	90	12	SEV	C	3	2	26.2	17.5	9.6	10.4	34.8	.8	.7	13.65	2.76	17.69	2.64	.07	36.81
591	4.5	8.5	-14	3	106	30	80	12	SEV	C	3	2	17.4	11.7	.1	8.5	57.9	2.7	1.7	6.32	1.53	7.34	1.41	.13	16.73
594	2.0	10+	-23	5	106	30	90	12	SEV	C	3	2	26.2	17.5	9.6	10.4	34.8	.8	.7	13.65	2.76	17.69	2.64	.07	36.81
611	2.0	3.0	-19	4	106	30	80	9	SEV	C	3	2	32.8	23.0	1.7	3.2	35.7	2.5	1.1	3.76	.83	3.67	.46	.13	8.85
614	2.0	4.0	-14	3	106	30	80	12	SEV	C	3	2	18.1	7.2	0.0	19.5	53.5	.1	1.6	3.06	.68	7.47	.65	.04	11.90
619	2.0	3.5	-28	5	103	30	80	11	SEV	C	3	2	24.4	23.2	0.0	4.4	47.7	0.0	.3	2.72	1.04	7.36	.69	.20	12.01
679	2.0	1.5	-5	1	103	30	80	10	SEV	C	2	2	31.2	.2	0.0	7.7	59.5	.6	.8	15.19	0.00	9.98	0.00	.06	25.23
689	1.5	3.5	8	0	106	25	80	7	SEV	C	2	2	79.8	0.0	0.0	1.6	18.6	0.0	0.0	1.05	2.10	5.26	3.16	0.00	11.57
719	5.0	7.5	4	0	105	30	80	10	SEV	C	3	3	17.6	62.4	0.0	6.7	13.2	.1	0.0	7.57	.13	14.61	.01	0.00	22.32
849	1.5	1.5	-17	4	111	30	80	10	SEV	C	3	2	48.4	1.1	0.0	19.4	30.4	.4	.3	9.01	1.01	8.04	2.26	.29	20.61

TABLE 3.

PROD CODE	STORAGE (YEARS) BASE ALC	TEMPERATURE/HUMIDITY			LEVELS OF ENVIRONMENT			CORROSION INDEX				TRANSPORTATION MODE (PERCENT OF COMMODITY)				OVERSEAS SHIPMENTS (PERCENT OF COMMODITY)									
		LOW MO 95% RNG	HIGH DAY	95% RH MO >70	SEV	C	INDEX	T	P	S	LTL	TL	CL	SP	L/A	MAC	MISC	N EUR	S EUR	PAC	ALA	CRIB	TOTAL		
104	1.5	3.5	4	0	103	30	80	10	SEV	C	3	2	53.2	3.7	0.0	14.2	28.4	.1	.4	4.29	1.48	10.91	.30	.03	17.01
121	2.0	4.5	-14	4	103	25	80	12	SEV	C	3	1	6.5	2.1	0.0	5.1	84.9	.2	1.2	1.30	.10	10.66	.19	.11	12.56
141	1.5	6.0	-23	5	103	30	80	10	SEV	C	4	2	15.8	14.8	.8	2.1	64.8	.3	1.4	7.00	1.42	11.40	1.10	.15	21.07
144	1.5	4.0	-26	5	98	25	80	11	SEV	C	3	2	43.1	.2	0.0	15.4	41.1	0.0	0.0	3.67	1.17	10.20	.47	0.00	15.51
153	1.5	6.5	-10	3	103	25	80	10	SEV	C	3	1	21.1	12.3	1.2	2.7	60.9	1.3	.5	3.92	1.47	9.61	2.73	.12	17.85
154	1.5	6.0	0	1	106	25	80	6	SEV	C	3	1	38.3	22.5	0.0	10.3	27.2	1.4	.3	3.51	.51	4.77	.06	.13	8.98
161	2.0	1.0	4	0	111	25	70	5	MOD	P	3	1	20.6	20.4	0.0	.8	57.6	.6	0.0	2.36	.26	2.45	.23	0.00	5.30
179	1.5	2.5	4	1	101	25	80	9	SEV	C	3	2	40.4	20.3	0.0	3.3	29.3	6.1	.6	7.00	1.65	5.11	1.16	.10	15.02
269	2.0	1.5	-5	3	103	30	80	11	SEV	C	3	1	18.9	4.6	4.7	.4	71.4	0.0	0.0	4.49	.86	11.62	.78	.15	17.90
289	1.5	6.5	4	0	106	25	80	6	MOD	P	2	1	24.8	13.6	0.0	.9	60.6	.2	.1	4.21	.60	4.61	.91	.06	10.39
299	1.5	4.0	-5	1	106	25	80	9	SEV	C	3	1	28.3	14.6	0.0	2.2	54.5	.1	.3	6.00	1.14	9.65	1.46	.02	18.27
491	2.0	3.5	-2	1	106	25	80	8	SEV	C	2	1	42.3	22.3	1.0	4.7	24.8	3.7	1.2	3.96	1.32	5.73	1.24	.11	12.36
494	1.5	7.5	-5	2	106	25	80	9	SEV	C	3	1	33.6	15.6	0.0	10.3	37.7	1.6	1.2	6.42	2.14	10.56	1.17	.04	20.33
539	1.5	5.5	0	1	106	25	80	6	SEV	C	3	1	34.2	3.1	0.0	27.8	32.3	1.6	1.0	2.12	.51	4.44	.42	.01	7.50
549	2.0	1.0	8	0	100	30	70	5	MOD	P	1	1	6.1	31.7	1.0	7.8	12.7	40.5	.2	1.47	1.40	.35	.01	0.00	3.23
581	1.5	4.0	-5	2	106	25	80	9	SEV	C	3	1	17.4	11.7	.1	8.5	57.9	2.7	1.7	6.32	1.53	7.34	1.41	.13	16.73
584	1.5	8.0	-14	3	103	25	80	11	SEV	C	3	2	26.2	17.5	9.6	10.4	34.8	.8	.7	13.65	2.76	17.69	2.64	.07	36.81
591	3.5	6.0	-5	2	106	25	80	9	SEV	C	3	1	17.4	11.7	.1	8.5	57.9	2.7	1.7	6.32	1.53	7.34	1.41	.13	16.73
594	2.0	7.5	-14	3	103	25	80	11	SEV	C	3	2	26.2	17.5	9.6	10.4	34.8	.8	.7	13.65	2.76	17.69	2.64	.07	36.81
611	1.5	1.5	-5	2	106	25	80	8	SEV	C	3	1	32.8	23.0	1.7	3.2	35.7	2.5	1.1	3.76	.83	3.67	.46	.13	8.85
614	1.5	2.5	-10	3	104	25	80	8	SEV	C	3	1	18.1	7.2	0.0	19.5	53.5	.1	1.6	3.06	.68	7.47	.65	.04	11.90
619	1.5	3.0	-26	5	103	30	80	10	SEV	C	3	1	24.4	23.2	0.0	4.4	47.7	0.0	.3	2.72	1.04	7.36	.69	.20	12.01
679	1.5	1.5	4	0	101	25	80	9	SEV	C	2	1	31.2	.2	0.0	7.7	59.5	.6	.8	15.19	0.00	9.98	0.00	.06	25.23
689	1.5	2.0	10	0	100	25	80	5	MOD	P	2	0	79.8	0.0	0.0	1.6	18.6	0.0	0.0	1.05	2.10	5.26	3.16	0.00	11.57
719	4.0	1.0	10	0	103	30	80	8	SEV	C	3	2	17.6	62.4	0.0	6.7	13.2	.1	0.0	7.57	.13	14.61	.01	0.00	22.32
849	1.5	1.0	-11	3	106	30	80	9	SEV	C	3	2	48.4	1.1	0.0	19.4	30.4	.4	.3	9.01	1.01	8.04	2.26	.29	20.61

TABLE 4.

PROD CODE	STORAGE (YEARS) BASE ALC	TEMPERATURE/HUMIDITY			LEVELS OF ENVIRONMENT			TRANSPORTATION MODE (PERCENT OF COMMODITY)				OVERSEAS SHIPMENTS (PERCENT OF COMMODITY)													
		LOW MO 95%	HIGH DAY 95%	RM MO >70	INDEX	T	P	S	LTL	TL	CL	SP	L/A	MAC	MISC	N	EUR	S	EUR	PAC	ALA	CRIB	TOTAL		
104	1.0	1.5	4	0	100	25	70	6	MOD	P	2	1	53.2	3.7	0.0	14.2	28.4	.1	.4	4.29	1.48	10.91	.30	.03	17.01
121	1.0	1.0	4	2	101	25	70	5	MOD	P	2	0	6.5	2.1	0.0	5.1	84.9	.2	1.2	1.30	.10	10.86	.19	.11	12.56
141	1.0	1.5	-6	2	100	30	80	8	SEV	C	2	1	15.8	14.8	.6	2.1	64.8	.3	1.4	7.00	1.42	11.40	1.10	.15	21.07
144	1.0	2.0	-17	4	96	25	80	11	SEV	C	2	1	43.1	.2	0.0	15.4	41.1	0.0	0.0	3.67	1.17	10.20	.47	0.00	15.51
153	1.0	5.5	4	0	101	25	80	6	SEV	C	2	1	21.1	12.3	1.2	2.7	60.9	1.3	.5	3.92	1.47	9.61	2.73	.12	17.85
154	1.0	3.0	4	0	106	25	70	4	MOD	P	2	0	38.3	22.5	0.0	10.3	27.2	1.4	.3	3.51	.51	4.77	.06	.13	8.98
161	1.0	1.0	4	0	106	25	70	4	MOD	P	2	0	20.6	20.4	0.0	.6	57.6	.6	0.0	2.35	.26	2.45	.23	0.00	5.30
179	1.0	1.5	10	0	106	25	80	6	MOD	P	2	1	40.4	20.3	0.0	3.3	29.3	6.1	.6	7.00	1.65	5.11	1.16	.10	15.02
269	1.0	1.0	6	0	100	25	80	6	SEV	C	2	1	18.9	4.6	4.7	.4	71.4	0.0	0.0	4.49	.86	11.62	.78	.15	17.90
289	1.0	2.0	10	0	106	25	70	4	MOD	P	2	0	24.8	13.6	0.0	.9	60.6	.2	.1	4.21	.60	4.61	.91	.06	10.39
299	1.0	2.0	6	0	106	25	70	5	MOD	P	2	0	28.3	14.6	0.0	2.2	54.5	.1	.3	6.00	1.14	9.65	1.46	.02	18.27
491	1.0	1.0	4	0	106	25	70	7	MOD	P	2	0	42.3	22.3	1.0	4.7	24.8	3.7	1.2	3.96	1.32	5.73	1.24	.11	12.36
434	1.0	4.5	4	0	106	25	80	8	SEV	C	2	0	33.6	15.6	0.0	10.3	37.7	1.6	1.2	6.42	2.14	10.56	1.17	.04	20.33
539	1.0	3.0	4	1	106	25	70	4	MOD	P	2	0	34.2	3.1	0.0	27.8	32.3	1.6	1.0	2.12	.51	4.44	.42	.01	7.50
549	1.5	1.0	8	0	100	25	70	5	MOD	P	0	1	6.1	31.7	1.0	7.8	12.7	40.5	.2	1.47	1.40	.35	.01	0.00	3.23
561	1.0	2.0	4	0	103	25	70	5	MOD	P	3	1	17.4	11.7	.1	8.5	57.9	2.7	1.7	6.32	1.53	7.34	1.41	.13	16.73
584	1.0	2.5	4	0	101	25	80	9	SEV	C	2	1	26.2	17.5	9.6	10.4	34.8	.8	.7	13.65	2.76	17.69	2.64	.07	36.81
591	2.0	4.5	4	0	103	25	70	5	MOD	P	3	1	17.4	11.7	.1	8.5	57.9	2.7	1.7	6.32	1.53	7.34	1.41	.13	16.73
594	1.5	3.0	4	0	101	25	80	9	MOD	C	2	1	26.2	17.5	9.6	10.4	34.8	.8	.7	13.65	2.76	17.69	2.64	.07	36.81
611	1.0	1.0	10	0	106	25	70	4	MOD	P	3	0	32.8	23.0	1.7	3.2	35.7	2.5	1.1	3.76	.03	3.67	.46	.13	8.85
614	1.0	1.5	8	0	103	25	70	5	MOD	P	3	0	18.1	7.2	0.0	19.5	53.5	.1	1.6	3.06	.68	7.47	.65	.04	11.90
619	1.0	1.0	-17	5	97	30	70	6	MOD	P	2	0	24.4	23.2	0.0	4.4	47.7	0.0	.3	2.72	1.04	7.36	.69	.20	12.01
679	1.0	1.0	4	0	96	25	80	9	SEV	C	2	1	31.2	.2	0.0	7.7	59.5	.6	.8	15.19	0.00	9.98	0.00	.06	25.23
689	1.0	1.5	18	0	97	25	70	5	MOD	P	0	0	79.8	0.0	0.0	1.6	18.6	0.0	0.0	1.05	2.10	5.26	3.16	0.00	11.57
719	3.0	.5	18	0	103	25	80	6	MOD	P	3	1	17.6	62.4	0.0	6.7	13.2	.1	0.0	7.57	.13	14.61	.01	0.00	22.32
849	1.0	.5	4	0	101	25	80	8	MOD	P	2	1	48.4	1.1	0.0	19.4	30.4	.4	.3	9.01	1.01	8.04	2.26	.29	20.61

TABLE 5.

P/C	GENERIC NAME	PRODUCT CODE INDEX		ERRC
		NATIONAL	SUPPLY CLASSES	
104	ARMS AND FIRE CONTROL PARTS	10XX 12XX		XF/B
121	FIRE CONTROL COMPONENTS	12XX		XD
141	MISSILE COMPONENTS	14XX 18XX		XD
144	MISSILE PARTS	14XX 18XX		XF/B
153	AIRCRAFT STRUCTURAL COMPONENTS	1560 16XX		XD
154	AIRCRAFT STRUCTURAL PARTS	1560 16XX 2810 2840 2845 2915 2925 2935 2945 2995		XF/B
161	AIRCRAFT ENGINES AND MAJOR COMPONENTS	2810 2840 2845 2915 2925 2935 2950		XD
179	GROUND SUPPORT EQUIPMENT AND PARTS	17XX		ALL
269	TIRES AND TUBES	26XX		ALL
289	NON AIRCRAFT ENGINES, COMPONENTS, AND PARTS	2815 2820 2825 2830 2835 2850 2895		ALL
299	AUTOMOTIVE PARTS AND COMPONENTS	25XX 2640 2805 2910 2920 2930 2940 2990 30XX		ALL
491	SHOP EQUIPMENT AND INDUSTRIAL MACHINES	32XX 34XX 35XX 36XX 37XX 39XX 41XX 42XX 43XX 44XX 45XX 46XX 49XX		XD
494	SHOP AND INDUSTRIAL PARTS AND CONSUMABLES	32XX 34XX 35XX 36XX 37XX 39XX 41XX 42XX 43XX 44XX 45XX 46XX 49XX		XF/B
539	HAZARDWARE AND RELATED ITEMS	31XX 40XX 47XX 48XX 51XX 52XX 53XX		ALL
549	CONSTRUCTION AND PACKAGING MATERIALS	54XX 55XX 56XX 81XX 93XX 96XX		ALL
581	COMMUNICATIONS EQUIPMENT AND COMPONENTS	58XX		XD
584	COMMUNICATIONS EQUIPMENT PARTS	58XX		XF/B
591	COMPUTER AND ELECTRONIC COMPONENTS	59XX 70XX		XD
594	COMPUTER AND ELECTRONIC PARTS	59XX 70XX		XF/B
611	ELECTRICAL EQUIPMENT AND COMPONENTS	6105 6110 6115 6120 6125 6130 6150 62XX 63XX 66XX		XD
614	ELECTRICAL EQUIPMENT PARTS	6105 6110 6115 6120 6125 6130 6150 62XX 63XX 66XX		XF/B
619	BATTERIES, FUEL CELLS, ETC	6116 6135 6140 6145		ALL
679	PHOTO EQUIPMENT AND SUPPLIES	67XX		ALL
689	CHEMICALS, PAINTS, AND PETROLEUM PRODUCTS	68XX 7930 80XX 91XX		ALL
719	HOUSE AND OFFICE EQUIPMENT AND SUPPLIES	71XX 7240 73XX 74XX 75XX 76XX 7910 7920		ALL
849	CLOTHING AND TEXTILES	83XX 84XX 7210 7220 7230 7290		ALL

TABLE 6.

NSC	ERRC	INDEX NATIONAL SUPPLY CLASS TO PRODUCT CODE		P/C	NSC	ERRC	P/C	
		NSC	ERRC					
10XX	XF/B	104	31XX	ALL	539	6115	XO	611
12XX	XO	121	32XX	XO	491	6115	XF/B	614
12XX	XF/B	104	32XX	XF/B	494	6116	ALL	619
14XX	XO	141	34XX	XO	491	6120	XO	611
14XX	XF/B	144	34XX	XF/B	494	6120	XF/B	614
1560	XO	153	35XX	XO	491	6125	XO	611
1560	XF/B	154	35XX	XF/B	494	6125	XF/B	614
16XX	XO	153	36XX	XO	491	6130	XO	611
16XX	XF/B	154	36XX	XF/B	494	6130	XF/B	614
17XX	ALL	179	37XX	XO	491	6135	ALL	619
18XX	XO	141	37XX	XF/B	494	6140	ALL	619
18XX	XF/B	144	39XX	XO	491	6145	ALL	619
29XX	ALL	299	39XX	XF/B	494	6150	XO	611
26XX	ALL	269	40XX	ALL	539	6150	XF/B	614
2640	ALL	299	41XX	XO	491	62XX	XO	611
2805	ALL	299	41XX	XF/B	494	62XX	XF/B	614
2810	XO	161	42XX	XO	491	63XX	XO	611
2810	XF/B	154	42XX	XF/B	494	63XX	XF/B	614
2815	ALL	289	43XX	XO	491	66XX	XO	611
2820	ALL	289	43XX	XF/B	494	66XX	XF/B	614
2825	ALL	289	44XX	XO	491	67XX	ALL	679
2830	ALL	289	44XX	XF/B	494	68XX	ALL	689
2835	ALL	289	45XX	XO	491	70XX	XO	591
2840	XO	161	45XX	XF/B	494	70XX	XF/B	594
2840	XF/B	154	46XX	XO	491	71XX	ALL	719
2845	XO	161	46XX	XF/B	494	7210	ALL	849
2845	XF/B	154	47XX	ALL	539	7220	ALL	849
2850	ALL	289	48XX	ALL	539	7230	ALL	849
2895	ALL	289	49XX	XO	491	7240	ALL	719
2910	ALL	299	49XX	XF/B	494	7290	ALL	849
2915	XO	161	51XX	ALL	539	73XX	ALL	719
2915	XF/B	154	52XX	ALL	539	74XX	ALL	719
2920	ALL	299	53XX	ALL	539	75XX	ALL	719
2925	XO	161	54XX	ALL	549	76XX	ALL	719
2925	XF/B	154	55XX	ALL	549	7910	ALL	719
2930	ALL	299	56XX	ALL	549	7920	ALL	719
2935	XO	161	56XX	XO	581	7930	ALL	689
2935	XF/B	154	58XX	XF/B	584	80XX	ALL	689
2940	ALL	299	59XX	XO	591	81XX	ALL	549
2945	XF/B	154	59XX	XF/B	594	83XX	ALL	849
2950	XO	161	6105	XO	611	84XX	ALL	849
2950	ALL	299	6105	XF/B	614	91XX	ALL	689
2995	XF/B	154	6110	XO	611	93XX	ALL	549
30XX	ALL	299	6110	XF/B	614	96XX	ALL	549

TABLE 7.

P/C	GENERIC NAME	INDEX GENERIC NAME TO PRODUCT CODE	NATIONAL SUPPLY CLASSES	ERRC
153	AIRCRAFT STRUCTURAL COMPONENTS	1560 16XX		X0
154	AIRCRAFT STRUCTURAL PARTS	1560 16XX 2810 2840 2845 2915 2925 2935 2945 2995		XF/B
161	AIRCRAFT ENGINES AND MAJOR COMPONENTS	2810 2840 2845 2915 2925 2935 2950		X0
104	ARMS AND FIRE CONTROL PARTS	10XX 12XX		XF/B
299	AUTOMOTIVE PARTS AND COMPONENTS	25XX 2640 2805 2910 2920 2930 2940 2990 30XX		ALL
619	BATTERIES, FUEL CELLS, ETC	6116 6135 6140 6145		ALL
689	CHEMICALS, PAINTS, AND PETROLEUM PRODUCTS	68XX 7930 80XX 91XX		ALL
849	CLOTHING AND TEXTILES	83XX 84XX 7210 7220 7230 7290		ALL
581	COMMUNICATIONS EQUIPMENT AND COMPONENTS	58XX		X0
584	COMMUNICATIONS EQUIPMENT PARTS	58XX		XF/B
591	COMPUTER AND ELECTRONIC COMPONENTS	59XX 70XX		X0
594	COMPUTER AND ELECTRONIC PARTS	59XX 70XX		XF/B
549	CONSTRUCTION AND PACKAGING MATERIALS	54XX 55XX 56XX 81XX 93XX 96XX		ALL
611	ELECTRICAL EQUIPMENT AND COMPONENTS	6105 6110 6115 6120 6125 6130 6150 62XX 63XX 68XX		X0
614	ELECTRICAL EQUIPMENT PARTS	6105 6110 6115 6120 6125 6130 6150 62XX 63XX 66XX		XF/B
121	FIRE CONTROL COMPONENTS	12XX		X0
179	GROUND SUPPORT EQUIPMENT AND PARTS	17XX		ALL
539	HARDWARE AND RELATED ITEMS	31XX 40XX 47XX 48XX 51XX 52XX 53XX		ALL
719	HOUSE AND OFFICE EQUIPMENT AND SUPPLIES	71XX 7240 73XX 74XX 75XX 76XX 7910 7920		ALL
141	MISSILE COMPONENTS	14XX 18XX		X0
144	MISSILE PARTS	14XX 18XX		XF/B
289	NON AIRCRAFT ENGINES, COMPONENTS, AND PARTS	2815 2820 2825 2830 2835 2850 2895		ALL
679	PHOTO EQUIPMENT AND SUPPLIES	67XX		ALL
494	SHOP AND INDUSTRIAL PARTS AND CONSUMABLES	32XX 34XX 35XX 36XX 37XX 39XX 41XX 42XX 43XX 44XX 45XX 46XX 49XX		XF/B
491	SHOP EQUIPMENT AND INDUSTRIAL MACHINES	32XX 34XX 35XX 36XX 37XX 39XX 41XX 42XX 43XX 44XX 45XX 46XX 49XX		X0
269	TIRES AND TUBES	26XX		ALL

APPENDIX A

BIBLIOGRAPHY
AND
REFERENCE MATERIALS

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EXTRACT FROM AFR 71-6, 19 MAY 1976

"2-2. MILITARY PACKAGING LEVELS OF PROTECTION. The following levels of protection apply equally to preservation and packing.

"a. Level A, maximum military protection. Level A is the degree of preservation or packing required for protection of materiel against the most severe conditions known or anticipated to be encountered during shipment, handling, and storage. Preservation and packing designated level A will be designed to protect materiel against direct exposure to extremes of climate, terrain, operational and transportation environments without protection other than that provided by the pack. The conditions to be considered include, but are not limited to--

"(1) Multiple handling during transportation and intransit storage from point of origin to ultimate user.

"(2) Shock, vibration and static loading during shipment.

"(3) Loading on shipdock, transfer at sea, helicopter delivery and offshore or over-the-beach discharge, to ultimate user.

"(4) Environmental exposure during shipment or during intransit operations where port and warehouse facilities are limited or nonexistent.

"(5) Extended open storage in all climatic zones.

"(6) Static loads imposed by stacking.

"b. Level B, minimum military protection. Level B is the degree of preservation or packing required for protection of materiel under known favorable conditions during shipment, handling and storage. Preservation and packing designated level B will be designed to protect materiel against physical damage and deterioration during favorable conditions of shipment, handling and storage. The conditions to be considered include but are not limited to--

"(1) Multiple handling during transportation and intransit storage.

"(2) Shock, vibration and static loading of shipment worldwide by truck, rail, aircraft, or ocean transport.

"(3) Favorable warehouse environment for extended periods.

"(4) Environmental exposure during shipment and intransit transfers, excluding deck loading and offshore cargo discharge.

"(5) Stacking and supporting superimposed loads during shipment and extended storage."

PACER LIME CORROSION FACTOR

CF = (2(RH) + 2(PS) + DP + HR + WV)/6 where:

a. CF is the corrosion factor for a given base. When the CF is 1.00 to 2.00 the environment of the base is classified as being severely corrosive; 2.01 to 2.85 is considered moderately corrosive; and 2.86 to 3.75 is mildly corrosive.

b. RH is the average relative humidity value for all weather conditions. Average relative humidity of 100.0 to 70.07 has a value of 1; from 70.00 to 50.00 has a value of 2; and from 49.99 to 0.00 has a value of 3. The higher the relative humidity the more likely the electrolyte will remain on the surface of the metals thus contributing to corrosion.

c. PS is the proximity to the sea value. Bases within five miles of the sea have a value of 1; from 5 to 80 miles from the sea have a value of 2; and bases over 80 miles from the sea have a value of 3. Aircraft and equipment close to the sea are more likely to be exposed to salt spray. A solution of salt and water is highly corrosive.

d. DP is the dew point value determined by how many days per month the temperature is within 4° F of dew point for 3 or more successive hours. More than 10 days a month is valued at 1; 5 to 10 days per month is valued at 2; and less than 5 days per month is valued at 3. The less time the temperature is close to the dew point the less time the electrolyte (condensation) will be in contact with the surface of aircraft and equipment.

e. NC is the no ceiling (sunshine) value; which is determined by the number of days per month with 6 or more hours with no ceiling. From 0.00 to 5.00 the value is 1; from 5.01 to 12.00 the value is 2; and over 12.00 the value is 3. The longer a metal surface is exposed to direct sunlight, the better the chance any electrolyte on equipment will evaporate.

f. HR is the moderate to heavy precipitation value. If there is 0.00 to 1.50 days of moderate to heavy precipitation per month the value is 1; 1.51 to 6.00 days the value is 2; and 6.01 or more days the value is 3. Heavy or moderate rain has the effect of rinsing dirt and contamination from the aircraft, thus reducing the possibility of concentration-cell corrosion.

g. WV is the wind velocity value. Average wind velocity of 0.00 to 1.50 miles per hour is valued at 1; from 1.51 to 6.00 miles per hours is valued at 2; and 6.01 and above is valued at 3. The higher the wind velocity the faster the condensate on metal surfaces will evaporate.

APPENDIX B
CLIMATE AND CORROSION

TABLE OF CONTENTS

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APPENDIX B

CLIMATE AND CORROSION

INTRODUCTION

This appendix describes the development of (1) the list of Air Force bases used in conjunction with climate, corrosion and distribution of supplies, (2) climatology data and (3) corrosion data.

The sections on Air Force bases, climatology and corrosion are first independently developed and then discussed as combined project data and combined analysis of the project data.

LIST OF AIR FORCE BASES

Source of Data:

Department of Defense Activity Address Directory (DODAAD).

Time Base as of 1 July 1977:

Description of the Data:

The DODAAD is a list of every DOD activity world-wide and provides Stock Record Account Numbers for each activity coded in such a way as to identify major supply accounts. This listing was used to identify every Air Force activity world-wide which has a Base Supply 1050 II Computer Account (FB) or a Depot Supply Account (FD).

Quality of the Data Source:

The original list of Air Force bases included both large and small activities since size of the supply account is not the sole requisite to having an "FB" account. As a result, 182 bases, representing 100 percent of the population, were initially included. The first screening of this list to eliminate closed and inactive bases resulted in a reduction of the list to 163 Air Force bases. This list was used as a starting point for all climatology, corrosion, and distribution data bases. A list of the 163 bases is attached along with maps portraying their location world-wide. (Attachment B-1)

CLIMATOLOGY - WEATHER

Sources of Data:

Almanacs, climatology studies, reference books, DOD Manuals, and the USAF ETAC, Air Weather Services/MAC (list of sources is contained in bibliography).

Time Base: Up to 30 years of data - ; Principle source: Summary of 10 years of hourly reading January 1968 to December 1977.

Description of the Data:

Temperature. The temperature data originally included absolute high and low temperatures, mean annual temperature, and the mean daily temperature range for 163 Air Force bases and stations. In addition, temperature data was obtained from the Air Weather Service for 98 major Air Force installations. (Attachment B-2) These latter data included the 1, 5, 10, 50, 90, 95, and 99 percentiles of minimum and maximum daily temperatures summarized by month. In addition, a daily temperature range was calculated by taking the difference between median (50th percentile) monthly low and high readings.

Humidity. The humidity data originally included the mean low, mean high, and average relative humidity for 163 Air Force bases and stations. In addition, humidity data was obtained from the Air Weather Service for 98 major Air Force Installations. This latter data included a 10-year summary of hourly relative humidity readings for both all weather and no precipitation. These readings were provided in a monthly frequency distribution table reflecting the 1, 5, 10, 50, 90, 95, and 99 percentiles.

Climatic Regions. Information related to climatic regions was developed based on the normally accepted climatology regions such as warm-wet, extremely cold, hot-dry and intermediate.

Quality of the Data Source. The data gathered from sources other than the Air Weather Service provided excellent summary data but left questions unanswered concerning both temperature and humidity. In some cases, proximity data had to be used because the data sources did not specifically relate to Air Force installations. The Air Weather Service data provided more specific and detailed information concerning Air Force installations and thus enhanced the degree of confidence in these data. Daily temperature ranges, one portion of the Air Weather Service data, had to be calculated. Since these data were derived rather than obtained through hourly reading, a degree of caution was

expressed by the Weather Service concerning the accuracy of the data provided. Sample calculations of 30 vs 10 years of data indicated as much as a 5 degree temperature difference.

The climatic regions did not differentiate the major areas under consideration (the 163 bases). Thus, except for bases in Alaska (cold) and South Pacific and Carribean (wet-warm), they were all hot-dry or intermediate. To differentiate locations within the intermediate classification, a sub-classification based on lattitude was established.

CORROSION

Sources of Data:

Almanacs, corrosion studies, reference books, DOD Manuals, EPA studies (list of sources is contained in the bibliography).

Time Base:

Corrosion Data - AF Pacer Lime - 1974-1975; Industrial Pollution - EPA Data - 1976.

Description of the Data:

Corrosion Data. The corrosion data base was obtained from Warner Robins Air Logistics Center as one of their efforts related to Project Pacer Lime. These data contained calculated corrosion factors for all of the major Air Force installations. A copy of the model used for these calculations is included in Appendix A. A numerical value ranging from 1.67 (most severe) to 3.33 (mildest) resulted from the model.

Industrial Pollutants. Information related to industrial pollution was obtained from an EPA report, National Air Quality and Emissions Trends Report, 1976, which contained maps related to photochemical oxidants and sulfur dioxide. The maps provided a graphic evaluation, by county, of industrial pollutants based on the EPA quality standard and varying percentages (more or

less) than the standard. While similar data were not available for overseas bases, estimated values were assigned using related weather/climatology data and informed Battelle environmental specialists.

Topography. Topography concerns the location of an Air Force installation with respect to sea coast, and its elevation. One of three values were assigned each installation: Coastal (C), Plains (P) or Mountains (M).

Proximity to Industrial/Population Centers. A set of numerical values were established to indicate the proximity of a base to population centers. Numerical values were derived using a world atlas and were used to indicate the proximity, in miles to small or large population centers.

Quality of the Data Source

Corrosion Data. Data relating to the quantification of corrosion is virtually non-existent. The corrosion data derived by Warner Robins Air Logistics Center is based on qualitative judgement and at best represents a factor describing relative corrosivity without any substantiated quantification in terms of how fast, slow, or to what degree something will corrode. As a result, the corrosion factor (index) was used only to establish relationships.

Industrial Pollutants. This data base was derived by the EPA and reflects all data collected by measuring stations across the United States. The measurements and EPA's data were established according to Air Quality Standards which primarily relate to quality of life rather than effects on material. A majority of the counties in the U.S. have no data on either photochemical oxidants, or sulfur dioxide. Logically, it follows that where there are significant pollution problems, monitoring equipment is available to measure it.

PROJECT CLIMATE AND CORROSION DATA

A master Climate and Corrosion data file was established to encompass all related data pertaining to the 98 Air Force bases selected for detailed study. The master data file includes information either extracted directly from data sources or derived from them.

Corrosion indicators include the Pacer Lime Corrosion Index, topography, photochemical oxidant, sulfur dioxide, and proximity to population/ industrial complexes.

Temperature data include the absolute high, low, and mean temperatures, the daily temperature range, and the highest and lowest temperatures at the 99th, 95th, and 90th percentiles. To add a weighting factor for low temperatures, a data element was added to reflect the number of months that the 99th, 95th, and 90th percentile temperature was equal.

Relative humidity data included three elements for both the humidity during all weather and the humidity when no precipitation was present. The three elements for each category are: the 50th percentile for the highest month, the annual mean of the 50th percentiles, and the number of months that the 50th percentile exceeded 70 percent RH. In all, the data file contained 25 elements pertaining to climate and corrosion.

ANALYSIS OF THE DATA

The matrix of climate and corrosion data contained in this appendix, supplemented by corresponding gradient maps, formed the basis for the logical development of the final report representation of climate and corrosion probabilities. (Attachment B-3). Several of the maps with climatology gradients are provided as examples of how the gradient data give a graphic picture of climatology (Attachment B-4). While only nine examples are included in the report, more than 100 different gradient maps were reviewed and studied using the much more economical approach of a computer remote terminal with a CRT display.

Analysis of the climate and corrosion data file as a unique entity was limited to evaluation of the 25 elements in terms of regression analysis. More specifically, a correlation was sought between the corrosion index and remaining 24 elements. Through various analysis procedures, including stepwise regression and examination of residuals, the following model was selected to best portray the correlation.

$$\text{Corrosion Index} = .022234 (A_1) - .022335 (A_2) + .279448 (A_3) - .008935 (A_4) - .028880 (A_5) + 2.7479.$$

where

- A1 = the photochemical oxidant rating
- A2 = number of months the RH (no precipitation) was greater than 70%
- A3 = topography, assigning a -1 to coastal, 0 to plains, and +1 to mountains.
- A4 = the highest month RH with no precipitation
- A5 = the mean annual daily temperature range.

While the above regression equation does not produce a quantification of corrosion, it does provide some insight to its relative severity and the nature of corrosive areas.

First, there are two elements that have a positive correlation: Photochemical oxidants and daily temperature range. It would seem that both these factors should contribute to corrosion rather than imply less severity, however, they must be taken in context of their development. That is to say, areas that are generally milder in terms of corrosion are characterized by, among other things, higher daily temperature ranges and photochemical oxidant pollutants.

Second, relative humidity has a negative effect on the model as does the number of months when the RH exceeds 70 percent, i.e. the higher the values, the more severe the corrosion. While this aspect of the model appears more in line with known corrosion factors, the same rationale as for the positively correlated elements must be used. The combination of humidity, temperature ranges and photochemical oxidant values adds some insight; generally, high humidity occurs where photochemical oxidants and daily temperature ranges are lower.

The last factor, topography, by design changes sign, therefore, coastal is a negative factor, plains a neutral factor, and mountains a positive factor.

While the interrelationship projected by the model and discussed above provides some insight to the interaction of the data elements, the main reason for performing the regression analysis was to provide rationale for selecting elements for the final matrices. The elements selected and attendant rationale are contained in that section of the report.

ATTACHMENT B-1

LIST OF AF BASES WORLD WIDE AND ASSOCIATED MAPS

This attachment includes a list of all bases considered during this project (Table B-1.1) and three maps illustrating the world wide coverage of the study by pinpointing each of the bases. (Figures B-1.1, B-1.2, B-1.3)

TABLE B-1.1.

BASE	BASE IDENTIFICATION		(BY DODMDS CUSTOMER NUMBER)		BASE	MDS	AAD	COORDINATES	
	MDS	AAD	COORDINATES	BASE					
MOODY	1311	4830	3059N	8311W	VANCE	2732	3029	3621N	9755W
RICHARDS	1611	3100	3851N	9433W	ALTUS	2741	4419	3440N	9916W
MCGUIRE	2011	4484	4002N	7435W	CARSWELL	2751	4689	3247N	9726W
PEASE	2021	4623	4306N	7049W	SHEPPARD	2752	3020	3358N	9830W
LORING	2041	4678	6754N	7117W	KELLY	2771	2059	2927N	9836W
HANSCOM	2051	2620	4226N	7117W	BROOKS	2772	2857	2926N	9830W
PLATTSBURG	2121	4615	4440N	7328W	LACKLAND	2772	3047	2927N	9837W
GRIFFIS	2131	4616	4314N	7546W	RANDOLPH	2772	3089	2932N	9816W
DOVER	2141	4497	3908N	7528W	ENGLAND	2781	4805	3120N	9233W
ANDREWS	2211	4425	3848N	7652W	BEKGSTROM	2791	4857	3012N	9740W
LANGLEY	2221	4800	3705N	7621W	LAUGHLIN	2792	3099	2922N	10047W
SEYMOUR-JOHNSON	2231	4809	3510N	7800W	F E WARREN	2801	4613	4106N	10451W
SHAW	2241	4803	3358N	8029W	PETERSON	2811	2500	3849N	10444W
MYRTLE BEACH	2242	4806	3341N	7856W	ENT	2812	2505	3850N	10443W
CHARLESTON	2251	4418	3248N	7957W	LOWRY	2812	3059	3943N	10501W
POPE	2261	4486	3450N	7900W	MOUNTAIN HOME	2821	4897	4303N	11552W
DOBBS	2311	6703	3354N	8432W	HILL	2831	2027	4107N	11201W
ROBINS	2321	2065	3237N	8336W	KIRTLAND	2841	4469	3502N	10637W
TYNDALL	2331	2586	3008N	9539W	LUKE	2851	4887	3326N	11221W
EGLIN	2341	2603	3025N	8630W	WILLIAMS	2852	3044	3515N	11211W
HOMESTEAD	2351	4829	3229N	8023W	GAVIS MONTHAN	2861	4604	3211N	11053W
MACGILL	2361	4814	2751N	8229W	CANNON	2871	4855	3423N	10318W
PATRICK	2371	2829	2815N	8036W	HOLLOWAN	2881	4801	3251N	10605W
MAXWELL	2381	3300	3223N	8621W	MELLIS	2891	4852	3614N	11502W
KEESLER	2391	3010	3024N	8953W	NORTON	2911	4448	3406N	11715W
COLUMBUS	2392	3022	3336N	8826W	MARCH	2912	4664	3354N	11715W
NEWARK	2411	4601	3948N	8256W	GEORGE	2912	4812	3435N	11722W
WRIGHT-PATT	2412	2006	4004N	8224W	VANDENBERG	2921	4610	3443N	12033W
GRISSOM	2421	2300	3959N	8403W	GLYTHEVILLE	2922	4634	3597N	9957W
WURTSMITH	2431	4654	4040N	8608W	EDWARDS	2931	2805	3454N	11752W
K I SAWYER	2441	4585	4427N	8323W	TRAVIS	2941	4427	3816N	12155W
KINCHELOE	2451	4515	4620N	8720W	CASTLE	2951	4672	3722N	12034W
ELLSWORTH	2452	4609	4615N	8428W	MCCLELLAN	2961	2049	3839N	12123W
GYARD FORKS	2511	4690	4408N	10305W	MATHER	2962	3067	3834N	12118W
DULUTH	2521	4659	4757N	9725W	BEALE	2971	4648	3908N	12126W
MIHOT	2522	2554	4647N	9206W	MUCHORO	2981	4479	4708N	12229W
MALMSTROM	2531	4528	4826N	10121W	FAIRCHILD	2991	4620	4738N	11738W
OFFUTT	2551	4626	4730N	11117W	WHITEMAN	3641	4625	3844N	9334W
MCCONNELL	2621	4600	4108N	9556W	KINGSLEY	4821	2560	4210N	12145W
DYESS	2701	4661	3225N	9951W	RAMEY	5001	9575	1830N	6703W
WEBB	2702	3005	3214N	10131W	ALL BASES	5011	0501		
REESE	2702	3060	3336N	10202W	NORVENICH	5012	5514	6200N	1000E
BARNSDALE	2711	4608	3230N	9343W	LAHK	5012	5527	4820N	752E
LITTLE ROCK	2721	4460	3455N	5210W	ZWEIGRUCKEN	5012	5529	4915N	721E
TINNEK	2731	2037	3525N	9724W	AHEHORN	5012	5545		
					KREMGARTEN	5012	5549	4721N	821E

TABLE B-1.1 (Continued)

BASE	BASE IDENTIFICATION COORDINATES		(BY DODMDS CUSTOMER NUMBER) BASE		MDS	AAD	COORDINATES
	MDS	AAD	MDS	AAD			
BOUDA	5012	5550	6717N	1423E	HICKAM	HI	2120N 15757M
EINDHOVEN	5012	5556	5126N	528E	ALL BASES	ALASKA	
ERDING	5012	5557	4818N	1154E	ELMENDORF	AK	6113N 14353M
FLESLAND	5012	5559			EIELSON	AK	6450N 14743M
GILZ RYEN	5012	5561	5133N	457E	KING SALMON	AK	5814N 15724M
GARDEMOEN	5012	5562	6013N	1106E	SHEHYA	AK	5243N 17405E
INGOLSTADT	5012	5568	4846N	1127E	GALENA	AK	5062 5060 6444N 15657M
KAKUP	5012	5569	5618N	910E	ALL BASES	E MED/E AFR	
KAUFBUEREN	5012	5572	4753N	1037E	CIGLI	TURKEY	5112 5531 3825N 2709E
LECHFELD	5012	5577	4810N	1050E	BATHAN	TURKEY	5112 5552 3752N 4107E
LEIPHEIM	5012	5579	4827N	1013E	TANAGRA	GREECE	5112 5565
SOLA	5012	5580	5853N	536E	MERZEFON	TURKEY	5112 5581 4053N 3529E
NOKDHOLZ	5012	5582			MURTED	TURKEY	5112 5584 4010N 3245E
RYGGE	5012	5590	5923N	1043E	GALIKESIR	TURKEY	5112 5592 3927N 3134E
SULLINGEN	5012	5593	5205N	1055E	NEA ANKHIALOS	GREECE	5112 5595
SEMBACK	5012	5604	4927N	1055E	SIVRISEHIR	TURKEY	5112 5685 3650N 3520E
BITEBURG	5012	5606	4958N	631E	TYMBAKION	GREECE	5112 5687 3758N 2343E
KAMSTEIN	5012	5612	4927N	733E	INCILLIK	TURKEY	5112 5692 3938N 2225E
RHEINMAIN	5012	5615	4945N	1100E	ATHENS	GREECE	5112 5693 3946N 3032E
SPANGDAHLEM	5012	5621	5100N	900E	LARISSA	TURKEY	5112 5695 4042N 2916E
TEMPLEHOF	5012	5622	5229N	1325E	ESKISEHIR	TURKEY	5112 5699 3804N 2346E
SOESTERBERG	5012	5683	5207N	517E	KARANURSEL	TURKEY	
ALL BASES	5021	0502			IRAKLION	CRETE	
MILDEN HALL	5022	5518	5221N	0030E	ALL BASES	W MED/W AFR	
UPPER HEYFORD	5022	5537	5150N	132W	LAJES	AZORES	5122 4400 3750N 2530M
BASCOMBE	5022	5551			GHEDI	ITALY	5122 5512 4524N 1016E
COLLISHALL	5022	5554	5244N	122E	BRINDISI	ITALY	5122 5517 4038N 1756E
FIRINGLEY	5022	5558	5330N	100M	GIOIA DEL COLLE	ITALY	5122 5564 4048N 1656E
FAIRFORD	5022	5560	5144N	147W	ZARAGOZA	SPAIN	5122 5571 4138N 53M
LAKENHEATH	5022	5537	5225N	0031E	TORREJON	SPAIN	5122 5573 4028N 328M
WADINGTON	5022	5598	5227N	031M	MORON	SPAIN	5122 5575 3708N 528M
WITTERING	5022	5599			PIACENZA	ITALY	5122 5588 4501N 940E
ALCOBURY	5022	5643	5219N	0012M	AVIANO	ITALY	5122 5682 4604N 1236E
BENTWATERS	5022	5644	5225N	32M	HOWARD	CANAL ZONE	5131 4810 905N 7930M
CHICKSANDS	5022	5650	5210N	030M	ALL BASES	N ATALANTIC	
ALL BASES	5031	0503			KEFLAVIK	ICELAND	5192 2647 6402N 2236M
KUNSAM	5032	5284	3558N	12641E	GOOSE	NEW FOUNDL	5192 7032 5319N 6024M
OSAH	5032	5294	3711N	12704E	ALL BASES	PHILIPPINES	5221 0522
ALL BASES	5041	0504			CLARK	PHILIPPINES	5222 5250 1511N 12013E
SUNG SHAN	5042	5225			JOHNSON ISLAND	SPAC	5222 5274 1710N 16910M
SHU LIN KOU	5042	5247	2325N	12110E	ANDERSON	GUAM	5241 4415 1335N 14456E
CHING CHUAN KAN	5042	5266	2430N	12130E	CRAIG	AL	8311 3057 3221N 8659M
KADENA	5051	5270	2622N	12745E	ALL BASES	ILLINOIS	8611 0861 4018N 8809M
ALL BASES	5061	0506			CHANUTE	IL	8612 3018 3832N 8952M
MISAWA	5062	5205	4045N	14123E	SCOTT	IL	8612 4407
YOKOTA	5062	5209	3545N	13921E			

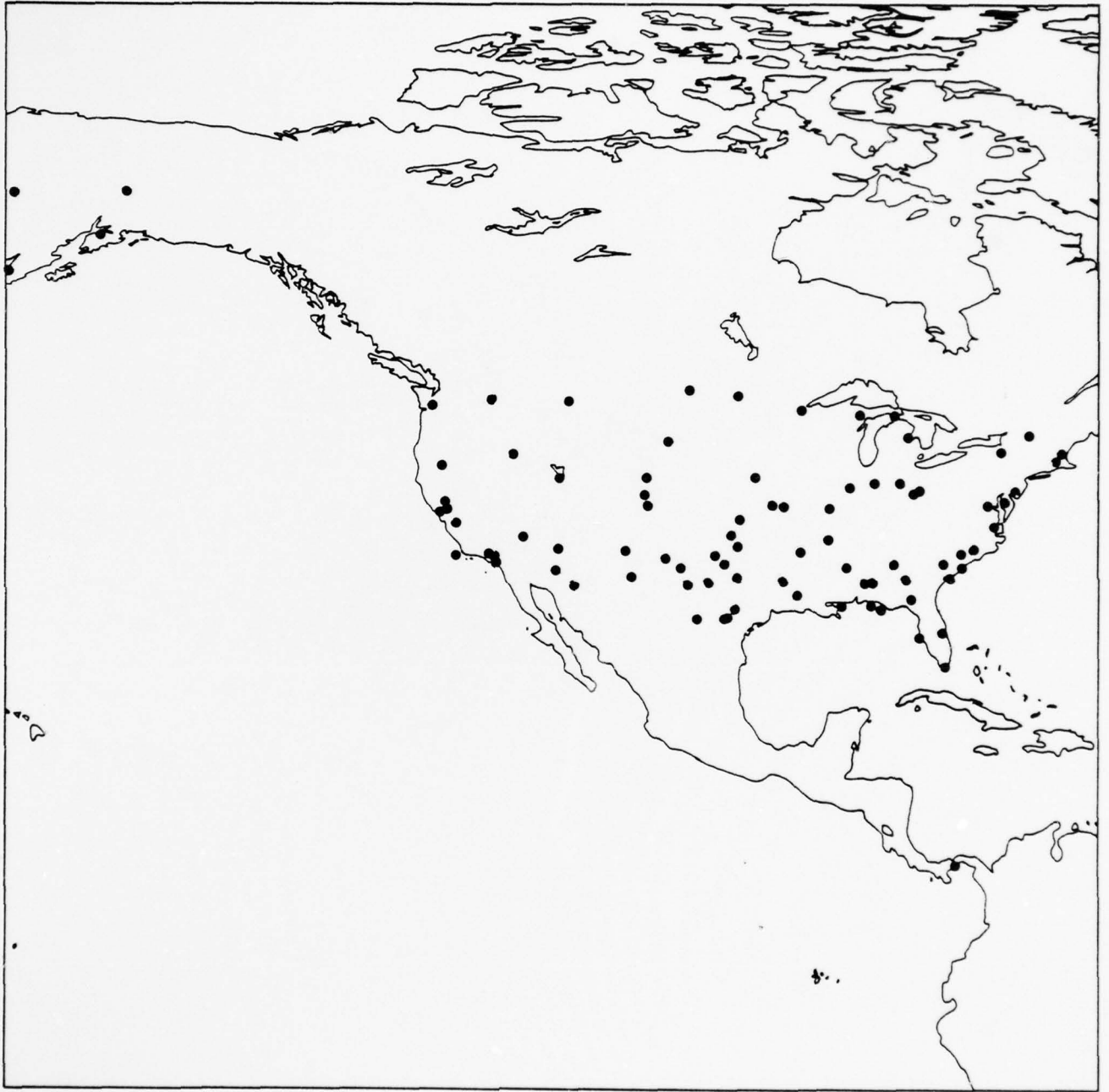


FIGURE B-1.1 AIR FORCE BASES - U.S.



FIGURE B-1.2 AIR FORCE BASES - EUROPE



FIGURE B-1.3 AIR FORCE BASES - PACAF

ATTACHMENT B-2

LIST OF AF BASES USED TO DEVELOP CLIMATE/CORROSION
DATA ALONG WITH ASSOCIATED MAPS

This attachment includes a list of all AF Bases considered during the development of the climate and corrosion development phase of this project. (Table B-2.1)

Also included are three maps illustrating the world wide coverage of the study by pinpointing each of the bases. (Figures B-2.1, B-2.2 and B-2.3)

TABLE B-2.1.

BASE IDENTIFICATION		BASE IDENTIFICATION		BASE IDENTIFICATION		BASE IDENTIFICATION	
(ALPHABETICAL)		(ALPHABETICAL)		(ALPHABETICAL)		(ALPHABETICAL)	
BASE	IDENT	COORDINATES	BASE	IDENT	COORDINATES	BASE	IDENT
	MDS	AAA		MDS	AAA		MDS
CONTINENTAL US	MD	2211 4425 3848N 7652W	RICKENECKER	OH	2411 4601 3948N 8256W	ALASKA	5082 5004 6450N 14743M
ANDREWS	OK	2741 4419 3440N 9916W	ROBINS	GA	2321 2065 3237N 8336M	AK	5082 5000 6113N 14953M
ALTUS	LA	2711 4608 3230N 9343M	SCOTT	IL	0612 4407 3832N 8952M	AK	5082 5040 5243N 17405E
BARKSDALE	CA	2971 4648 3986N 12126M	SHAW	SC	2241 4803 3358N 8029M		
BEALE	CA	2791 4857 3012N 9740M	SEYMOUR-JOHNSON	NC	2231 4809 3510N 7800M		
BERGSTROM	TX	2751 4689 3247N 9726M	TINKER	OK	2731 2037 3525N 9724M		
BEAL	TX	2951 4672 3722N 12034M	TRAVIS	CA	2941 4427 3816N 12155M		
CARSMELL	CA	2251 4418 3248N 7957M	TYNDALL	FL	2331 2586 3008N 8539M		
CASTLE	SC	2861 4604 3211N 11053M	VANDEBERG	CA	2921 4610 3443N 12033M		
CHARLESTON	AZ	2311 6703 3354N 8432M	WHITEHAN	MO	3641 4625 3844N 9334M		
DAVIS MONTHAN	GA	2141 4497 3908N 7528M	WRIGHT-PATT	OH	2421 2300 3999N 8403M		
DOBBINS	GA	2701 4661 3225N 9951M	WURTSMITH	HI	2441 4565 4427N 8123M		
DOVER	DE	2931 2805 3454N 11752M					
EDWARDS	CA	2341 2603 3029N 8630M	EIELSON	AK			
EGLIN	FL	2511 4630 4408N 10305M	ELMENDORF	AK			
ELLSWORTH	SD	2781 4805 3120N 9233M	SHENYA	AK			
ENGLAND	LA	2801 4613 4108N 10451M	CARIBBEAN				
F E WARREN	WY	2951 4620 4738N 11738M	HOWARD				
FAIRCHILD	WA	2912 4812 3435N 11722M	RAMEY				
GEORGE	CA	2521 4659 4797N 9725M	ATLANTIC/EUROPE				
GRAND FORKS	ND	2131 4616 4314N 7546M	ALCONBURY	ENG	5022 5643 5219N 0012M		
GRIFFIS	NY	2831 2027 4107N 11201M	ATHENS	GREECE	5112 5687 3758N 2343E		
HILL	UT	2081 4801 3251N 10605M	AVIANO	ITALY	5122 5682 4604N 1236E		
HOLLOMAN	NM	2351 4829 2929N 8023M	BENTWATERS	ENG	5022 5644 5225N 32E		
HOMESTEAD	FL	2451 4515 4620N 8720M	BITBURG	GERM	5012 5606 4958N 631E		
K I SAWYER	MI	2391 3010 3024N 8553M	INCIRLIK	GERM	5112 5685 3650N 3520E		
KEESLER	MS	2771 2059 2927N 9836M	ICELAND	TURKEY	5192 2647 6402N 2236M		
KELLY	TX	2221 4800 3705N 7621M	LAJES	ICELAND	5122 4400 3750N 2530M		
LANGLEY	VA	2721 4460 3455N 9210M	LAKENHEATH	AZORES	5022 5587 5225N 0031E		
LAUGHLIN	TX	2041 4678 4657N 6754M	MILDEN HALL	ENG	5022 5518 5221N 0030E		
LITTLE ROCK	AR	2812 3059 3943N 10501M	MORON	SPAIN	5122 5575 3708N 528M		
LORING	ME	2951 4887 3326N 11221M	KANSTEIN	GERM	5012 5612 4927N 733E		
LOWRY	CO	2361 4814 2751N 8223M	SENBACK	GERM	5012 5604 4927N 1055E		
LUKE	AZ	2551 4626 4730N 11117M	SPANGDAHLEM	GERM	5012 5621 5100N 900E		
MACOILL	FL	2981 4479 4708N 12229M	SOESTERBERG	NETH	5012 5688 5207N 517E		
MALMSTROM	MT	2621 4621 3734N 9715M	SOLA	NORWAY	5012 5580 5853N 536E		
MCCORD	WA	2961 2049 3819N 12123M	TORREJON	SPAIN	5122 5573 4028N 328M		
MCCLELLAN	CA	2912 4664 3354N 11715M	UPPER HEYFORD	ENG	5022 5537 5150N 132M		
MCCONNELL	KS	2011 4484 4002N 7435M	ZARAGOZA	SPAIN	5122 5571 4138N 53M		
MARCH	CA	2531 4528 4426N 10121M	ZHEIBRUCKEN	GERM	5012 5529 4915N 721E		
MCGUIRE	NJ	2821 4837 4303N 11552M	PACIFIC				
MIHOT	ND	2591 4852 3614N 11502M	ANDERSON	GUAM	5241 4415 1335N 14456E		
MOUNTAIN HOME	IO	2611 4600 4108N 9556M	CHING CHUAN KAN	TAIWAN	5042 5266 2430N 12130E		
MULLIS	NV	2371 2829 2815N 8036M	CLARK	PHILIPPINES	5222 5250 1511N 12033E		
OFFUTT	NE	2021 4623 4306N 7049M	HICKAM	HI	5071 5280 2120N 15757M		
PATRICK	FL	2121 4615 4440N 7328M	JOHNSON ISLAND	SPAC	5222 5274 1710N 16910M		
PEASE	NH	2261 4448 3450N 7900M	KADENA	OKINAWA	5051 5270 2622N 12745E		
PETERSON	CO	2121 4615 4440N 7328M	KUNSA	KOREA	5031 5284 3558N 12641E		
PLATTSBURG	NY	2702 3060 3316N 10202M	MISAH	JAPAN	5062 5205 4045N 14123E		
POPE	NC	1611 3100 3891N 9433M	OSAN	KOREA	5032 5234 3711N 12704E		
REESE	TX		YOKOTA	JAPAN	5062 5209 3545N 13921E		
RICHARDS GEBARD	MO						

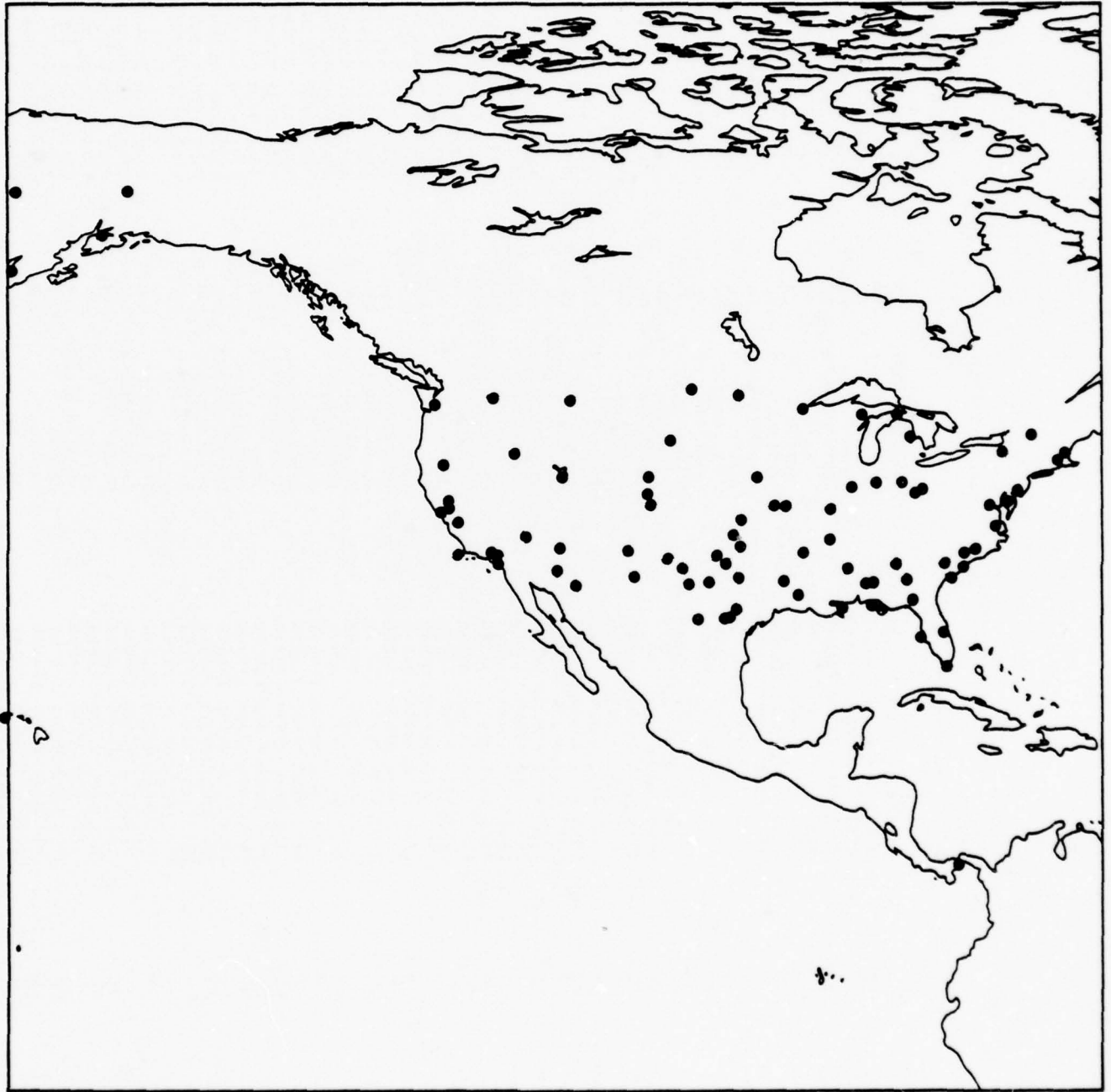


FIGURE B-2.1 AIR FORCE BASES WITH AIR WEATHER SERVICE DATA - U.S.



FIGURE B-2.2 AIR FORCE BASES WITH AIR WEATHER SERVICE DATA - EUROPE



FIGURE B-2.3 AIR FORCE BASES WITH AIR WEATHER SERVICE DATA - PACAF

ATTACHMENT B-3

BASE CLIMATE AND CORROSION DATA LISTING

This attachment contains a matrix of AF bases arranged alphabetically by Continental U.S., Alaska, Carribean, Atlantic/Europe and Pacific. (Table B-3.1)

The following data elements are provided for each Air Force Base.

DODMDS - the first three digits of this number is the customer number assigned by the DODMDS group. The fourth digit is either a "1" representing a principle DODMDS customer or a "2" indicating that the DODMDS panel had consolidated that base with the principle having the same first three digits. For example, George AFB (2912) and March AFB (2912) are consolidated with Norton AFB (2911) in the DODMDS study.

DODAAD - the DOD Activity Address Directory.

Coordinates - Degrees/minutesdirection of the base. (Latitude/Longitude)

Corrosion Indicators

A - The Pacer Lime Corrosion Index developed by Warner Robins ALC

1.67 - 2.00 Severe
2.01 - 2.85 Moderate
2.86 - 3.33 Mild

B - Topography

C = within 50 miles of the sea coast
P = more than 50 miles of the sea coast and less than 3,000 feet elevation
M = more than 50 miles of the sea coast and greater than 3,000 feet elevation

C - Photochemical Oxidant Rating - the one-hour national ambient air quality standard is $160 \mu \text{g}/\text{m}^3$ which is not to be exceeded more than once per year.

0 = less than standard or no observation

1 = standard

2 = twice the standard

3 = three times the standard

4 = four times standard or greater

D - Sulfur Dioxide - the 24-hour primary national ambient air quality standard is $365 \mu \text{g}/\text{m}^3$ which is not to be exceeded more than once per year

-1 = no data

0 = less than standard

1 = standard

2 = approximately twice the standard

3 = three times the standard or greater

E - Proximity to population/Industrial Centers

1 = rural

2 = more than 50 miles from small city (50-100 thousand)

3 = less than 50 miles from small city

4 = more than 50 miles from large city (100 thousand or more)

5 = less than 50 miles from large city.

Temperature Data - (All temperature data is in degrees Fahrenheit;)

Mean Temperatures

F - Annual Mean Temperature

High Temperatures

G - 10th percentile - temperature exceeded temperature shown 30 times in 10 years.

H - 5th percentile - temperature exceeded temperature shown 15 times in 10 years.

I - 1st percentile - temperature exceeded temperature shown three times in 10 years.

J - Historical high as of 1 Jan 1975.

Low Temperatures

G - 90th percentile - temperature was lower than shown 30 times in 10 years.

H - 95th percentile - temperature was lower than shown 15 times in 10 years.

I - 99th percentile - temperature was lower than shown three times in 10 years.

J - absolute - historical low as of 1 Jan 1975.

MO 0 - Number of months where the percentile of low temperature was equal to or below) -

G - 90th percentile

H - 95th percentile

I - 99th percentile

Day Rng (Daily diurnal extremes)

K - the highest monthly mean daily temperature range - (Difference between monthly 50th percentile high and low temperatures).

L - Annual mean daily temperature range.

Humidity Data

All WX - all weather humidity data.

M - the highest month - (50th percentile)

N - the mean of the monthly 50th percentiles

O - number of months where the 50th percentile was greater than 70%.

No Precipitation - Readings taken only when there was no precipitation.

P - the highest month - (50th percentile)

Q - the mean of monthly 50th percentiles

R - number of months where the 50th percentile was greater than 70%

TABLE B-3.1.

CONTINENTAL US	BASE	IDENT DOD MDS	COORDINATES	BASE CLIMATE AND CORROSION DATA										TEMPERATURE DATA										HUMIDITY DATA																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
				CORROSION INDICATORS										MEAN					HIGH					LOW					MO SO DAY					ALL MX					NO PRECI																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
				A	B	C	D	E	F	G	H	I	J	CO	SO	DAY	RNG	L	M	N	O	P	Q	R	M	N	O	P	Q	R	M	N	O	P	Q	R																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
ANDREWS	MD	2211	4425 3848N	7652W	2.50	P	3	0	5	57	92	93	97	102	12	8	4	1	0	0	0	20	17	72	65	4	66	58	0	OK	LA	2711	4608 3230N	9343W	2.83	P	0	-1	2	60	103	105	109	111	11	6	0	-6	0	0	1	25	21	68	62	0	65	59	0	LA	2711	4608 3230N	9343W	2.83	P	0	-1	2	60	103	105	109	111	11	6	0	-6	0	0	1	25	21	68	62	0	65	59	0	CA	2971	4648 3908N	12126W	2.83	P	3	0	3	64	101	104	108	110	27	25	23	28	0	0	0	0	33	24	86	61	5	82	59	4	TX	2791	4857 3012N	9740W	2.50	P	2	0	5	69	102	101	105	106	24	10	10	1	0	0	0	0	23	21	76	71	8	71	67	3	TX	2751	4635 3247N	9726W	3.00	P	3	0	5	66	102	103	106	111	19	13	10	1	0	0	0	0	22	21	68	62	0	66	59	0	CA	2951	4672 3722N	12034W	2.83	P	2	-1	1	62	102	104	110	111	28	27	23	18	0	0	0	0	32	24	87	62	4	78	58	4	SC	2251	4418 3248N	7957W	2.50	P	0	3	3	65	93	95	98	102	24	21	15	14	0	0	0	0	25	21	87	80	12	84	74	7	AZ	2861	4604 3211N	11053W	3.33	P	2	3	3	71	103	105	108	118	30	27	24	16	0	0	0	0	30	25	47	34	0	46	33	0	GA	2311	6703 3354N	8432W	2.50	P	2	1	5	62	95	96	98	102	20	12	9	3	0	0	0	0	24	21	78	74	11	74	69	6	DE	2141	4497 3908N	7528W	1.83	C	0	0	5	54	92	94	97	102	11	7	4	-4	0	0	0	0	19	16	77	70	6	71	64	2	TX	2701	4661 3225N	9551W	3.17	P	0	0	3	64	100	102	106	109	16	12	6	-3	0	0	0	0	26	23	62	55	0	60	54	0	CA	2931	2905 3454N	11752W	3.33	P	3	1	4	66	105	106	110	115	19	15	12	6	0	0	0	0	34	30	59	41	0	58	40	0	FL	2341	2603 3029N	8630W	1.83	C	0	-1	1	69	92	93	96	102	27	22	15	16	0	0	0	0	21	18	78	75	12	77	71	7	SD	2511	4630 4408N	10305W	2.67	P	0	-1	1	47	96	98	103	109	-10	-14	-19	-27	2	4	4	27	22	66	58	0	61	55	0	LA	2781	4805 3120N	9233W	2.50	P	0	0	3	66	96	98	99	100	23	19	12	7	0	0	0	0	25	21	79	76	12	76	72	10	WA	2801	4613 4108N	10451W	3.00	M	0	0	3	50	91	92	94	104	-5	-17	-23	-29	1	4	5	31	26	60	52	0	55	49	0	WA	2991	4620 4738N	11732W	2.67	P	2	0	3	48	92	95	100	108	7	3	13	-25	0	0	2	26	17	85	62	4	81	59	4	CA	2912	4812 3435N	11722W	3.33	P	4	0	4	66	102	104	108	115	23	21	17	-8	0	0	0	30	27	51	36	0	50	35	0	ND	2521	4659 4757N	9725W	2.50	P	0	-1	3	42	92	93	99	109	-25	-28	-33	-51	4	5	5	25	21	76	71	7	74	68	4	NY	2131	4616 4314N	7546W	2.50	P	2	0	3	49	89	91	95	102	-9	-14	-24	-27	3	3	4	24	19	78	72	8	72	66	3	UT	2831	2027 4107N	11201W	3.33	M	2	1	3	51	95	96	99	108	8	4	-4	-29	0	1	24	18	70	47	1	64	45	0	NM	2681	4801 3251N	10605W	3.33	P	0	1	1	64	98	100	104	109	14	8	0	-6	0	0	1	31	28	51	37	0	50	36	0	FL	2351	4829 2529N	8023W	2.00	C	0	5	75	90	81	93	99	99	40	42	36	34	0	0	0	16	12	79	75	12	79	74	12	MI	2451	4515 4620N	8720W	2.33	P	2	1	1	40	85	89	95	99	-16	-19	-23	-26	4	4	4	24	18	83	75	11	77	70	5	MS	2391	3010 3024N	8853W	1.83	C	0	0	3	70	94	96	98	102	29	26	15	18	0	0	0	19	16	79	77	12	76	73	11	TX	2771	2059 2927N	9836W	1.83	C	2	0	5	69	105	106	110	106	16	10	5	0	0	0	0	26	25	66	61	0	63	59	0	VA	2221	4300 3705N	7621W	1.83	C	0	5	58	92	93	96	104	18	15	9	-11	0	0	0	16	16	80	73	7	78	68	5	TX	2792	3099 2922N	10047W	3.00	P	0	-1	5	69	101	102	107	106	28	23	18	0	0	0	0	25	22	67	61	0	64	58	0	AR	2721	4460 3455N	9210W	2.83	P	0	0	5	62	99	100	104	108	15	9	-1	-6	0	1	24	20	75	69	6	71	64	1	ME	2041	4678 4657N	6754W	2.50	P	0	-1	1	39	83	85	91	97	-13	-17	-24	-42	3	4	4	20	18	81	72	7	76	67	5	CO	2812	3059 3943N	10501W	3.00	M	0	-1	5	50	93	94	96	104	-2	-9	-23	-29	2	2	5	29	27	60	51	0	55	48	0	AZ	2851	4887 3326N	11221W	3.33	P	3	1	5	71	110	111	114	118	31	28	24	18	0	0	0	32	27	53	35	0	51	34	0	FL	2361	4814 2751N	8225W	1.83	C	1	1	3	71	92	93	96	100	40	37	28	26	0	0	0	19	16	79	75	12	77	73	10	MT	2551	4626 4730N	11117W	3.17	M	0	0	3	46	93	95	101	106	-17	-23	-32	-44	4	5	5	30	23	65	55	0	63	52	0	WA	2981	4479 4708N	12223W	2.00	P	0	-1	3	53	85	88	92	100	24	20	11	10	0	0	0	22	17	89	77	8	85	73	8	CA	2961	2049 3839N	12123W	2.50	P	3	0	5	62	102	103	108	111	28	26	23	18	0	0	0	35	24	86	64	5	78	61	4	KS	2621	4621 3738N	9715W	3.00	P	0	0	5	56	101	103	107	113	5	0	-4	-13	0	1	2	23	21	73	66	3	70	63	1	CA	2912	4664 3354N	11715W	2.50	P	3	0	4	64	101	103	107	110	28	26	22	28	0	0	0	33	28	70	60	1	58	47	0	CA	2911	4484 4002N	7435W	2.33	P	0	0	5	54	91	93	97	104	9	6	2	-9	0	0	0	22	18	72	67	5	64	59	0	NJ	2531	4528 4826N	10121W	3.17	P	0	-1	3	42	93	95	99	109	-23	-26	-33	-51	4	5	5	27	21	74	67	4	72	65	4	IO	2821	4837 4303N	11552W	2.83	M	0	0	3	51	100	101	107	111	11	8	-10	-17	0	0	2	33	24	75	50	2	72	49	1	NV	2891	4852 3614N	11502W	3.33	P	2	-1	3	66	110	111	114	115	22	19	14	8	0	0	0	31	27	42	25	0	41	25	0	NE	2611	4600 4106N	9556W	3.00	P	0	0	3	51	94	96	101	115	-8	-11	-17	-20	2	3	3	23	19	77	69	5	73	65	1	FL	2371	2829 2815N	8036W	2.00	C	0	0	1	72	90	92	93	102	45	41	32	26	0	0	0	14	10	79	75	12	79	74	12	NH	2021	4623 4306N	7043W	2.00	C	0	0	3	45	89	92	95	100	1	-2	-10	-39	0	2	3	20	17	76	69	7	69	62	0	CO	2811	2500 3849N	10444W	3.17	M	0	-1	5	50	93	95	98	104	0	-6	-18	-29	1	2	5	31	29	55	48	0	49	44	0	NY	2121	4615 4440N	7328W	2.67	P	0	-1	3	49	85	88	95	100	-11	-16	-21	-31	3	3	4	22	18	74	68	4	72	64	1	NC	2261	4488 3450N	7900W	2.83	P	0	0	3	60	94	95	98	98	19	14	12	0	0	0	0	26	21	77	70	6	72	63	3	TX	2702	3060 3336N	10202W	3.33	P	0	0	3	53	100	101	104	109	17	13	0	-15	0	1	30	27	57	51	0	54	49	0	MO	1611	3100 3851N	9433W	2.83	P	0	0	5	56	93	96	100	113	-1	-5	-9	-13	1	2	3	22	19	75	69	7	71	65	2

TABLE B-3.1. (Continued)

BASE	BASE CLIMATE AND CORROSION DATA										TEMPERATURE DATA										HUMIDITY DATA										
	IDEN DOD AAD	DOD AAD	COORDINATES	CORROSION INDICATORS			MEAN F	TEMPERATURE DATA					MO 50	DAY	RNG	ALL		NO		PRECI P											
				A	B	C		D	E	J	G	H				I	L	K	M		N	O	P	R							
RICKENBACHER OH	2411	4601	3948N	8256W	2.67	P	2	1	5	52	89	91	95	98	0	-5	-13	-15	1	2	3	23	19	76	71	8	71	66	1		
ROBINS GA	2321	2065	3237N	8336W	2.83	P	0	-1	3	63	95	97	101	104	23	18	13	5	0	0	0	26	22	79	72	8	76	67	5		
SCOTT IL	6612	4407	3832N	8952W	2.50	P	0	1	5	56	94	96	103	111	1	-4	-10	-11	0	1	3	22	19	77	70	6	72	66	3		
SHAW SC	2241	4803	3358N	8029W	2.83	P	0	0	2	65	95	96	104	102	24	19	13	14	0	0	0	24	20	77	68	4	72	62	2		
SEYMOUR-JOHNSON NC	2231	4809	3510N	7800W	2.33	P	0	3	60	93	95	99	98	100	20	16	11	0	0	0	0	23	20	79	71	6	72	63	3		
TINKER OK	2731	2037	3525N	9754W	2.83	P	2	-1	5	60	100	101	105	111	10	4	0	-8	0	0	0	24	21	69	63	0	66	60	0		
TRAVIS CA	2941	4427	3816N	12155W	2.50	P	2	0	5	52	98	101	108	114	28	26	22	21	0	0	0	31	22	86	68	5	76	64	4		
TYNDALL FL	2331	2536	3008N	8539W	1.83	C	0	0	2	69	92	93	96	102	30	25	22	18	0	0	0	20	17	78	75	12	76	72	8		
VANDENBERG CA	2921	4610	3443N	12033W	1.67	C	4	1	4	64	81	88	97	109	35	34	30	28	0	0	0	17	14	86	80	12	78	74	11		
WHITEHALL MO	3641	4625	3844N	9334W	2.83	P	0	-1	4	56	95	97	103	113	0	-4	-10	-13	1	2	2	23	20	75	69	4	72	66	3		
WRIGHT-PATT OH	2421	2300	3999N	8403W	2.67	P	1	0	5	55	91	92	97	109	0	-5	-11	-17	1	1	3	23	13	75	71	9	71	65	1		
WURTSMITH MI	2441	4585	4427N	8333W	2.17	P	0	-1	1	44	88	91	96	100	-8	-10	-16	-26	2	3	4	21	17	79	72	9	74	68	6		
ALASKA																															
EIELSON AK	5082	5004	6450N	14743W	2.67	P	0	0	3	26	79	81	88	93	-46	-50	-57	-66	6	7	7	26	18	81	66	4	78	64	3		
ELMENDORF AK	5082	5000	6113N	14953W	1.83	P	0	0	3	35	71	73	75	86	-15	-20	-28	-38	5	5	6	15	12	80	73	8	78	70	7		
SHEPHERD AK	5082	5040	5243N	17405E	1.67	C	0	1	36	55	55	55	59	60	22	21	17	12	0	0	0	7	6	100	87	12	93	82	12		
CARIBBEAN																															
HOWARD CANAL ZONE	5131	4810	905N	7930W	1.83	C	0	0	3	80	94	95	96	97	71	70	68	63	0	0	0	15	12	85	79	12	85	79	12		
RAMEY PUERTO RICO	5001	9575	1830N	6706W	2.00	C	0	0	3	78	88	89	91	94	65	64	62	62	0	0	0	12	11	79	77	12	79	76	12		
ATLANTIC/EUROPE																															
ALCONBURY ENG	5022	5643	5219N	0012W	2.00	C	2	1	5	50	76	78	88	99	23	20	14	19	0	0	0	17	12	82	78	12	76	72	8		
GREECE ATHENS	5112	5687	3758N	2343E	2.50	P	1	0	5	64	68	70	72	109	69	65	64	20	0	0	0	16	13	74	65	5	73	63	3		
AVIANO ITALY	5122	5682	4604N	1236E	2.33	C	1	0	3	56	88	90	95	103	18	15	10	5	0	0	0	18	16	82	74	11	76	69	5		
BENTWATERS ENG	5022	5644	5225N	32E	1.83	C	2	1	5	50	74	76	84	99	27	23	14	19	0	0	0	14	11	83	79	12	76	72	10		
BITBURG GERM	5012	5606	4958N	631E	2.17	P	1	2	3	49	81	84	89	99	15	11	4	-10	0	0	0	17	13	86	79	12	82	73	8		
INCIRLIK TURKEY	5112	5685	3650N	3520E	3.00	P	1	0	3	66	65	66	68	109	68	64	64	19	0	0	0	24	20	69	64	0	68	62	0		
KEFLAVIK ICELAND	5192	2647	6402N	2236W	1.67	C	0	0	1	35	60	61	65	68	17	13	9	4	0	0	0	9	8	86	83	12	83	80	12		
LAJES AZORES	5122	4400	3750N	2530W	1.67	C	0	0	1	82	80	81	83	86	46	44	42	41	0	0	0	10	8	78	76	12	78	75	12		
LAKENHEATH ENG	5022	5587	5225N	0031E	1.83	C	2	1	5	50	77	80	90	99	21	15	8	19	0	0	0	17	14	86	80	12	79	73	9		
MILDEN HALL ENG	5022	5518	5221N	0030E	1.83	C	2	1	5	50	78	80	88	99	22	18	10	10	0	0	0	17	13	82	77	12	77	70	6		
MOKON SPAIN	5122	5575	3708N	528W	2.50	P	1	0	3	66	102	104	106	117	32	30	25	26	0	0	0	30	22	86	68	6	83	66	6		
RAMSTEIN GERM	5012	5612	4927N	733E	2.17	P	1	2	3	49	85	89	92	100	11	5	-4	-7	0	0	2	20	16	86	80	12	80	72	7		
SEMBACK GERM	5012	5604	4927N	1055E	2.17	P	1	2	3	49	84	85	92	95	14	9	4	-2	0	0	0	18	13	89	80	12	82	71	5		
SPANGDAHLEM GERM	5012	5621	5100N	900E	2.17	P	1	2	3	46	80	82	88	93	14	10	4	-3	0	0	0	16	12	89	81	12	82	74	9		
SPOESTERBERG NETH	5012	5688	5207N	517E	2.83	C	1	2	3	50	80	84	90	95	19	15	6	3	0	0	0	16	12	92	86	12	89	80	11		
SOLA NORWAY	5012	5580	5853N	536E	1.83	C	1	2	3	45	75	79	90	90	16	9	5	-14	0	0	0	15	11	82	79	12	82	75	12		
TORREJON SPAIN	5122	5573	4026N	328W	2.83	P	1	0	4	57	97	98	104	102	22	21	17	14	0	0	0	30	23	85	62	4	81	60	4		
UPPER HEYFORD ENG	5022	5537	5150N	132W	2.33	C	2	1	5	46	75	78	86	95	24	19	15	16	0	0	0	16	12	86	80	12	80	74	10		
ZAFAGOZA SPAIN	5122	5571	4136N	53W	2.83	P	1	0	3	57	97	99	101	102	27	23	20	14	0	0	0	24	18	78	65	5	71	62	3		
ZWEIBRUCKEN GERM	5012	5529	4915N	721E	2.17	P	1	2	3	49	84	85	91	99	16	11	6	-10	0	0	0	17	12	90	82	12	83	73	8		
PACIFIC																															
ANDERSON GUAM	5241	4415	1335N	14456E	2.17	C	0	0	1	80	87	88	89	90	73	72	70	66	0	0	0	8	7	82	80	12	82	80	12		
CHING CHUAN KAN TAIWAN	5042	5266	2430N	12130E	1.67	C	0	2	5	61	93	94	96	101	40	37	34	28	0	0	0	16	14	94	87	12	86	82	12		
PHILIPPINES	5222	5250	1511N	12033E	2.00	C	3	0	4	81	96	97	99	101	66	65	63	58	0	0	0	18	15	84	72	6	82	71	6		
CLARK HI	5071	5260	2120N	15757W	2.50	C	3	0	5	76	91	91	93	91	61	59	55	54	0	0	0	14	13	72	67	2	71	67	2		
HICKAM HI	5071	5260	2120N	15757W	2.50	C	3	0	5	76	91	91	93	91	61	59	55	54	0	0	0	14	13	72	67	2	71	67	2		
JOHNSON ISLAND SPAC	5222	5274	1710N	16910W	1.67	C	0	0	1	80	88	90	92	94	69	68	67	63	0	0	0	8	8	78	77	12	77	76	12		
KADANA OKINAWA	5051	5270	2622N	12745E	1.67	C	0	2	3	72	90	91	93	95	47	45	42	39	0	0	0	12	11	84	76	11	84	74	9		
KUNSA KOREA	5042	5234	3558N	12641E	1.83	C	0	2	3	57	90	92	94	97	13	10	6	7													

ATTACHMENT B-4

GRADIENT MAPS

This attachment contains representative examples of gradient maps used as an aid in developing corrosion and climate data. The first three maps represent low temperatures at the 95th percentile. The values used for the gradient lines on all three maps were -30, -15, 0, 15, and 30 degrees (F). Where less than five gradient lines appear, it means no data in that interval was found. (Figures B-4.1, B-4.2, B-4.3)

The last six maps relate to relative humidity with no precipitation. One set of three gradient maps traces the humidity levels of 70%, 80%, and 90% (highest month) and the (Figures B-4.4, B-4.5, and B-4.6) other set traces the number of months where the RH exceeded 70% at the two-month, six-month, and 12-month levels. (Figures B-4.7, B-4.8, and B-4.9)

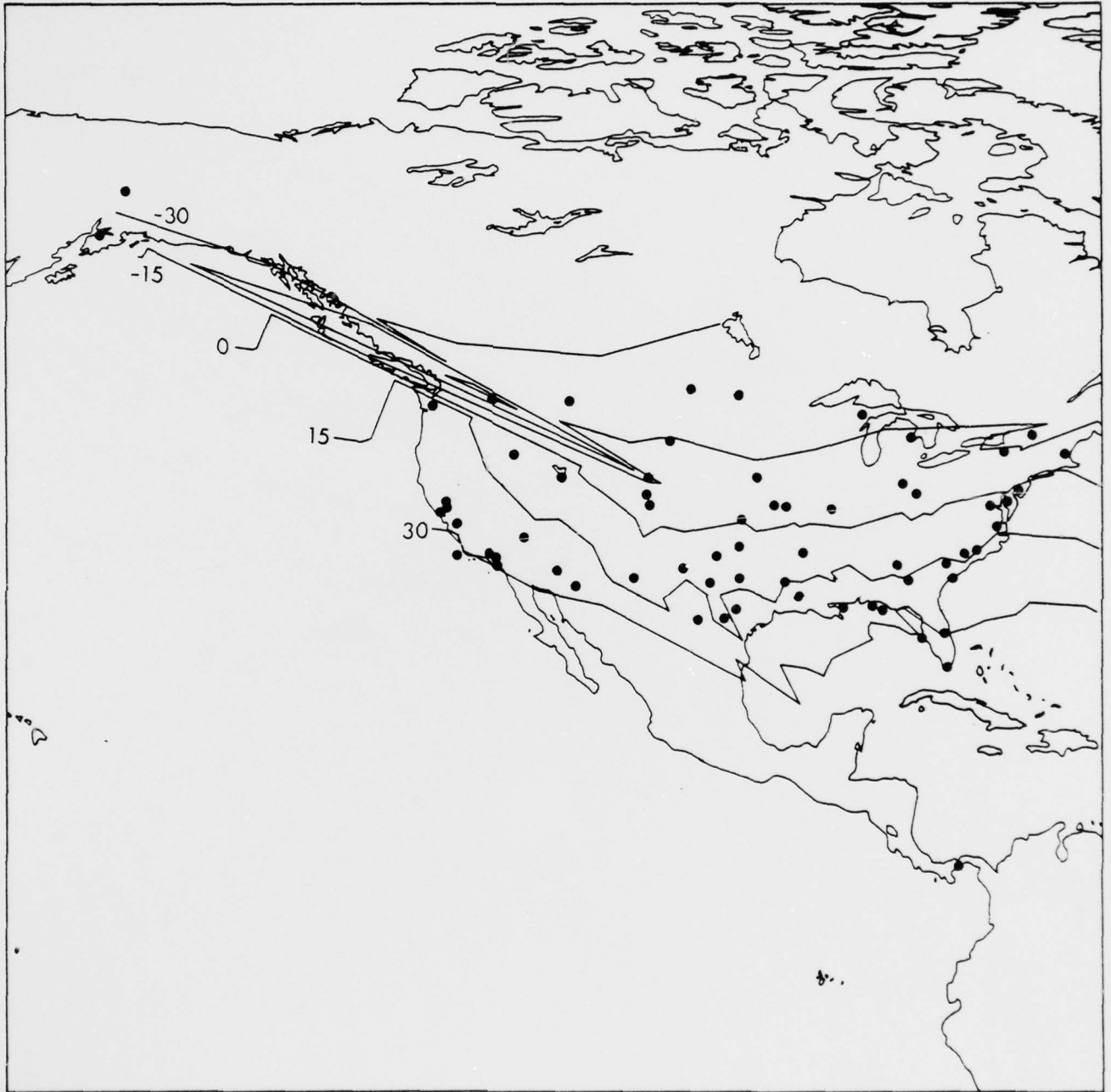


FIGURE B-4.1 LOW TEMPERATURE - 95th PERCENTILE



FIGURE B-4.2 LOW TEMPERATURE - 95th PERCENTILE

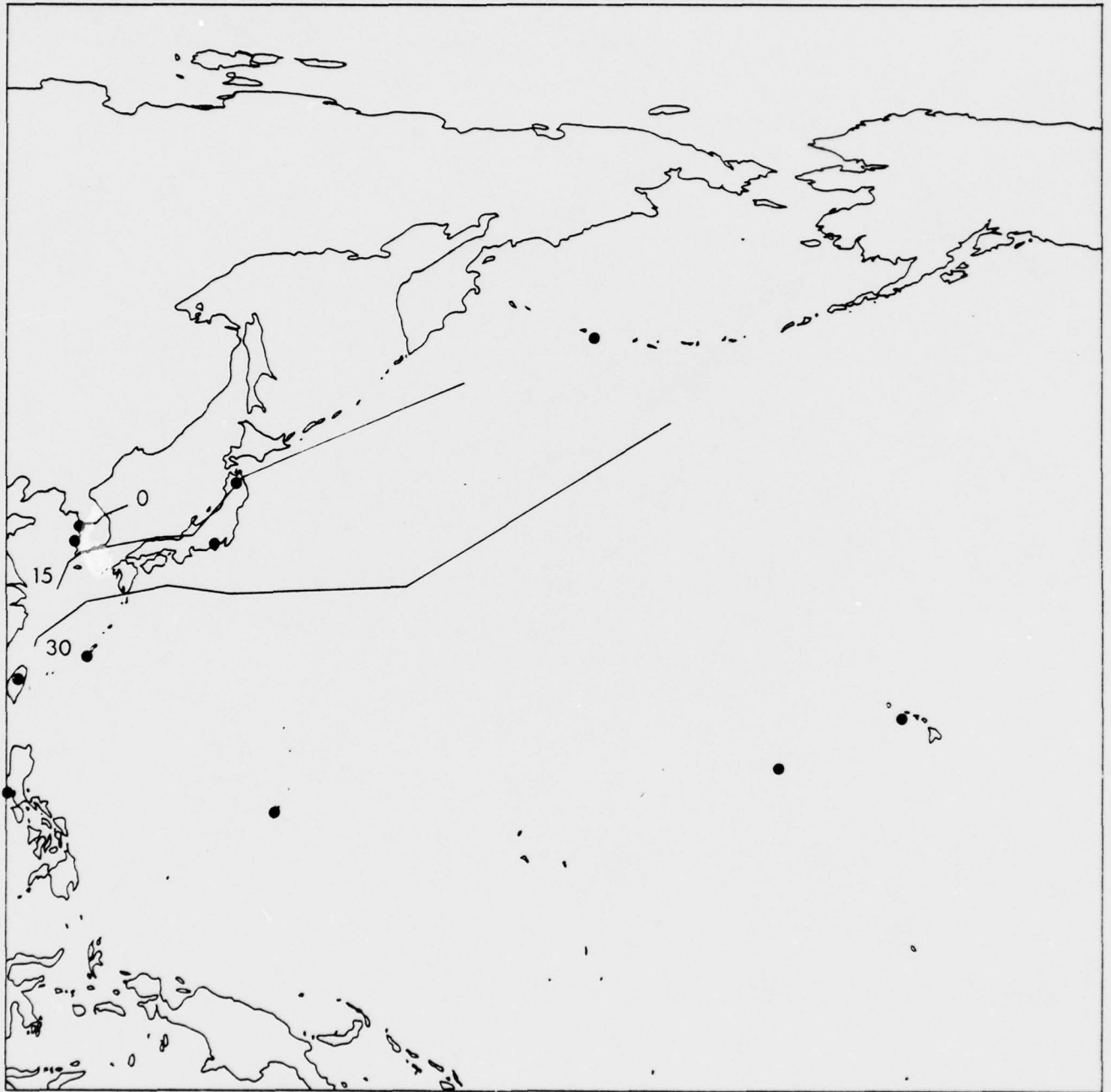


FIGURE B-4.3 LOW TEMPERATURE - 95th PERCENTILE

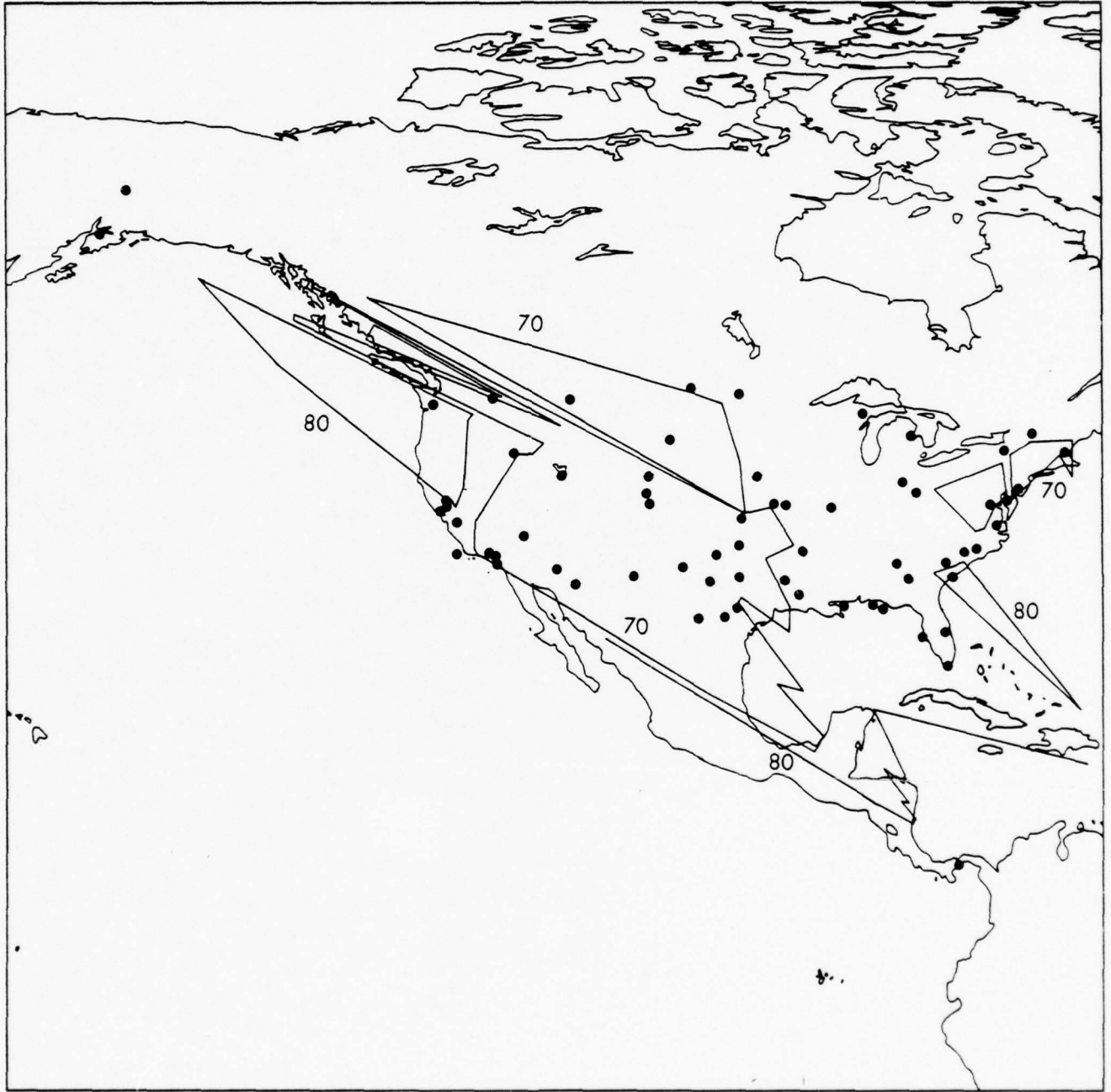


FIGURE B-4.4 MEDIAN RELATIVE HUMIDITY - NO PRECIPITATION



FIGURE B-4.5 MEDIAN RELATIVE HUMIDITY - NO PRECIPITATION

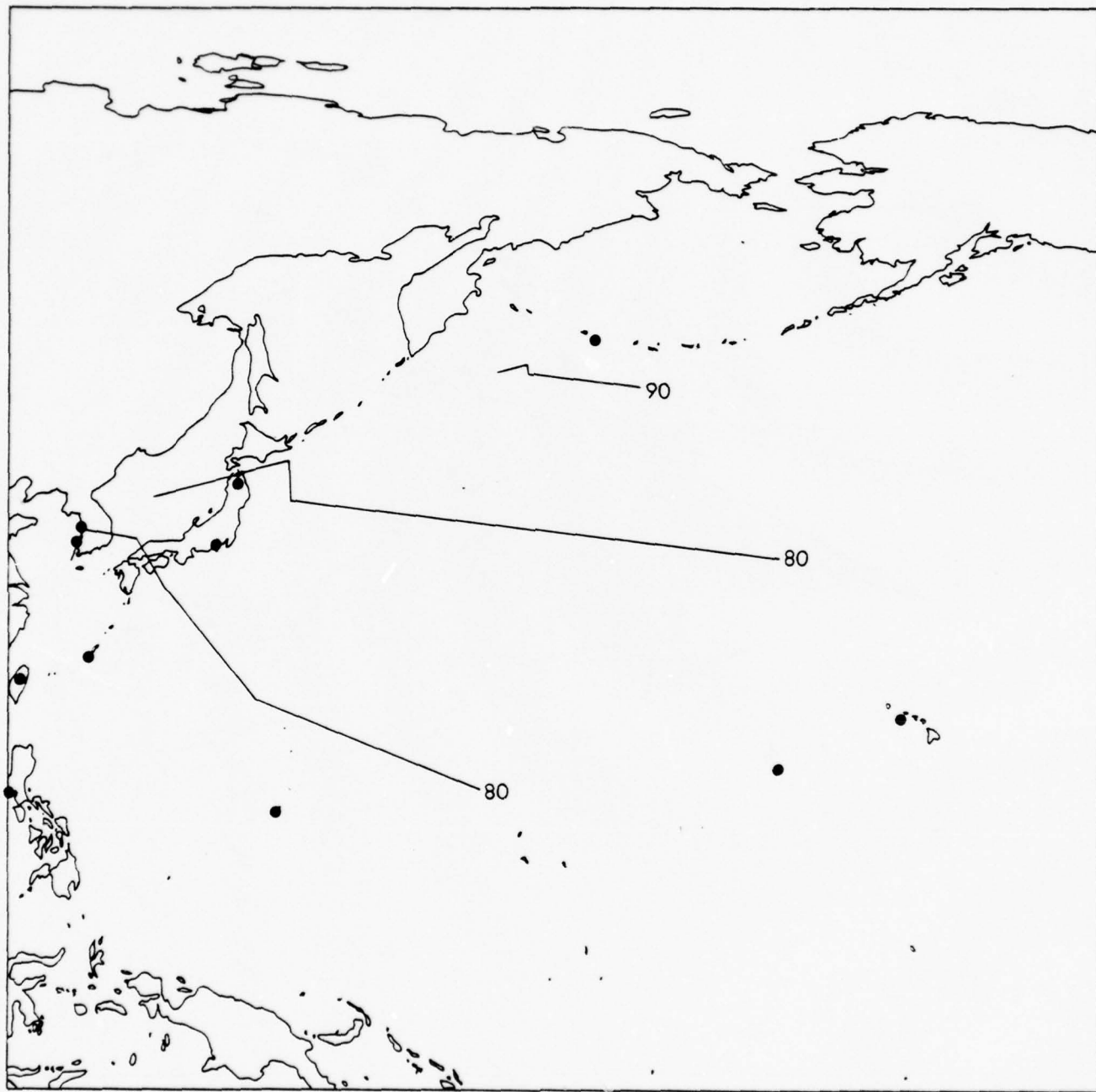


FIGURE B-4.6 MEDIAN RELATIVE HUMIDITY - NO PRECIPITATION

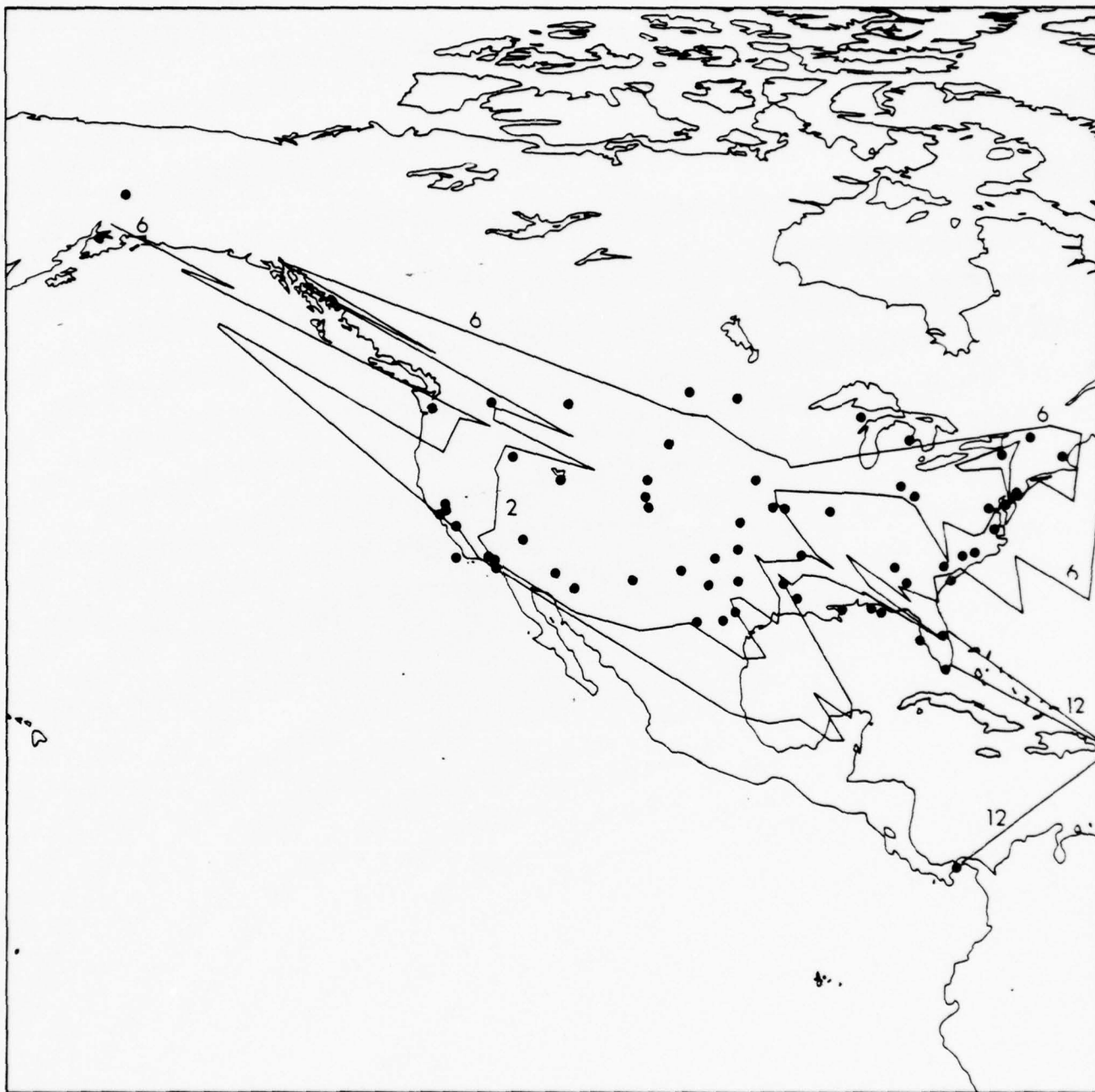


FIGURE B-4.7 NUMBER OF MONTHS RELATIVE HUMIDITY EXCEEDS 70%



FIGURE B-4.8 NUMBER OF MONTHS RELATIVE HUMIDITY EXCEEDS 70%

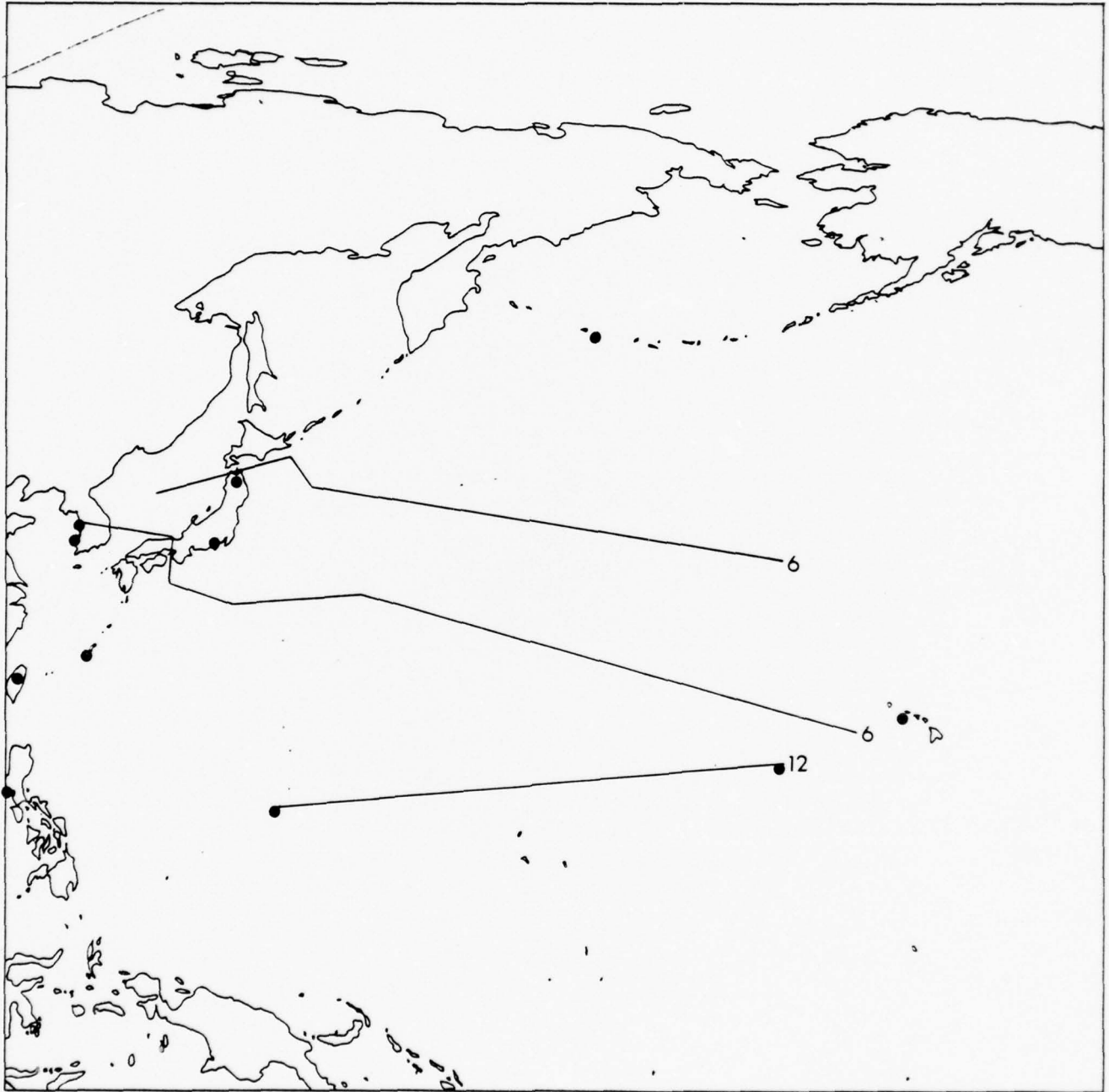


FIGURE B-4.9 NUMBER OF MONTHS RELATIVE HUMIDITY EXCEEDS 70%

APPENDIX C

TRANSPORTATION AND DISTRIBUTION OF MATERIAL

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TRANSPORTATION AND DISTRIBUTION OF MATERIAL

Introduction

This section contains background information on (1) material distribution and (2) shock and vibration experiments conducted during the program. The material distribution information relates to the accumulation and analysis of computer data generated through the DOD Material Distribution Study. Shock and vibration information is related to an experimental design prepared by Battelle Columbus Laboratories to generate data on shock and vibration during all modes of transportation.

Material Distribution

Source of Data

Summary tape (Transportation "R-File") prepared by the DOD Material Distribution System (DODMDS) Study Group.

Time Base: Calendar year 1975

Description of the Data Base:

The transportation "R-File" masterfile is an aggregated data file containing percentages of weight by freight condition that was shipped for all combinations of depot, customer, and product (commodity) during calendar year 1975. More than 215,000 aggregated cases are contained on this file, each with data elements related to 1) base (DODMDS customer), 2) prime manager, 3) product code, 4) mode of shipment, and 5) shipping weight in hundred weights.

Quality of the Data Source

The DODMDS master data file was created by collecting source documents related to the issue and subsequent shipment of all items during calendar year 1975. These data thus represent the total DOD logistics distribution for a calendar year.

Project Data Base:

The DODMDS "R-File" was reduced to reflect only shipments of Air Force-managed material to and from Air Force bases or geographical areas. It contains more than 16,000 aggregated cases. Two subfiles were derived from the project data base. The first related to the distribution of material by product code vs mode; the second related to distribution by product code vs base.

Analysis of the Data Base:

Due to the structure of the DODMDS data, all analysis performed on the data involved the use of product groupings and related product codes.

The product codes were developed by the DOD Material Distribution Study Group in order to reduce the volumes of data to a manageable size. The groups were selected based on generic compatibility and where necessary to DODMDS, categorized by item weight. A complete list of DODMDS Product Groups and a discription of them is contained in Appendix E.

The following preliminary analysis of Product Groups and their compatibility with other data bases were made:

a. A crosstabulation of all the DODMDS product codes versus a complete categorization of mode was prepared. This crosstabulation reflected that, while the expanded version would appear to offer advantages, the use of shipment consolidations distorted the information. For example, in a product grouping which represented items weighing one pound or less, the mode predominately used was less than truckload; yet, transportation procedures indicate few if any shipments under 70 lbs. are shipped by less-than-truckload.

b. Another aspect of product code versus mode highlighted through analysis was the fact that the indicated mode represented the first mode used for the shipment. In other words, if a shipment left an ALC via LOGAIR, switched to MAC and finally was trucked to an overseas destination, only the LOGAIR mode was identified.

c. Weight and cube were not used for length of storage analysis (in fact, were not available without a great deal of effort). Because of this, our intent to present product groups combining distribution and storage required consolidation of the DODMDS groups into one code representing a generic commodity.

Once preliminary analysis was completed, the appropriate product groups and customer numbers were rearranged into useable formats using the SPSS capabilities of the computer. Five different formats were prepared.

1) A frequency distribution of the amount of each product group shipped to/from each DODMDS customer. (Attachment C-1)

2) A frequency distribution of the amount of each product group by the first mode used to ship to/from DODMDS customers. (Attachment C-2)

3) A frequency distribution of the amount of each product group by the first mode used for shipment and the distribution to overseas customers. (This is a combined matrix derived from two other). (Attachment C-3)

4) A frequency distribution of the total material shipped by/to each DODMDS customer by first mode used for the shipment. (Attachment C-4)

5) A frequency distribution of the total amount of AF material shipped between each Air Logistic Center and DODMDS customers. (Attachment C-5)

These five distribution frequencies are presented in the form of matrices. They have two principle purposes: to provide frequency distribution data for integration into other report products and to provide information for use in preparing an experimental design to obtain transportation shock and vibration data.

Three of the above matrices are representations of the frequency distribution used to develop the transportation mode and overseas destination percentiles contained in the final matrices. these are: the product code by base, product code by mode, and distribution to overseas customers.

The crosstabulation of product code by base (1) is a representation of the frequency distribution data used to establish the distribution of material with respect to climatology and corrosion.

The crosstabulation of ALC by base (5) and the table portraying distribution of DODMDS customers (4) can be used to develop an experimental design discussed in the shock and vibration section of this attachment. The crosstabulation provides an excellent representation of the largest volume shipping patterns between ALCs and bases. The table provides the modes to be expected between those points.

Transportation Shock and Vibration

Historical data related to shock and vibration was not available in any computer system. Several studies, performed by Army Natick Laboratories, and the Air Force Packaging Evaluation Agency, do not provide enough data for trend analysis, nor did they address all modes of transportation. Because of this, an experimental design was prepared and coordinated with the Air Force (Attachment C-6). The ultimate goal of the experimental design was to develop equations (models) for the prediction of shock, etc. during shipment if given the mode, the number of times handled, manual vs mechanical handling, or other meaningful parameters as variables.

To perform this data collection (experiment), environmental recorders were used for obtaining the desired measurements. The Air Force owned recorders used were designed and manufactured by Bolt, Beranek, and Newman under military contract. Two basic models designated as Types 714 and 711 were used. The latter measures X, Y, and Z components of shock, and time distribution of temperature and humidity. The type 714 recorder replaced the capability to measure temperature and humidity with resultant shock vector measurements. Both types of recorders used digital storage bins which record the number of shocks in a specified range, i.e., 2-1/2 to 5 g or 40 to 50g.

Great care was taken to make the container appear typical with no distinctive markings to attract special attention which might tend to increase the probability of atypical treatment during handling. Several ALC's and bases were visited to observe the flow of material in both transportation and storage. Information was obtained as to the number of times handled, how to identify and monitor instrumental shipments as well as other pertinent information.

The number of packages as well as the proportion of small to large packages to be studied varied with mode of shipment. The DODMDS transportation and distribution records discussed earlier were to be used to determine relative amounts of material shipped by various modes and the distribution of instrumented packages was to be designed to reflect the relative importance of three modes. It was estimated that approximately 300 shipments would be required to develop the necessary data to validate the model. The actual sample size, however, is impossible to estimate without prior insight to various statistical parameters.

The experimental design was prepared for dictating shipping routes, number of shipments, number of replicates, number of intermediate stops (to vary the number of times handles, etc.). The first mode addressed was LOGAIR.

Numerous difficulties were encountered during this phase of the project, including batteries losing power before end of shipment, recorder malfunctioning, and inadvertent erasing of stored data. At the scheduled completion date for the project, not enough data were generated to perform any statistical evaluation. Anticipating this problem earlier in the project, it was decided to develop the necessary computer software for the minicomputer acquired for the Air Force so they could complete the shock and vibration task on their own. The minicomputer acquired for the Air Force was originally intended to provide recorder read-out data for both calibration and shipment histories on disc for use in BCL statistical analysis tasks. However, the computer has the capability of much more analysis work. To this end, project efforts were directed toward using the minimal data available to develop statistical routines to both calibrate the recorder/package combination and to use this calibration information in conjunction with shipment data to develop an analysis of shock experienced in each mode.

The computer hardware and routines were developed and provided to the Air Force Packaging Evaluation Agency (AFALD/PTP) at Wright Patterson AFB Ohio. The rationale used for the the computer routines follows.

Calibration of Environmental Recorders

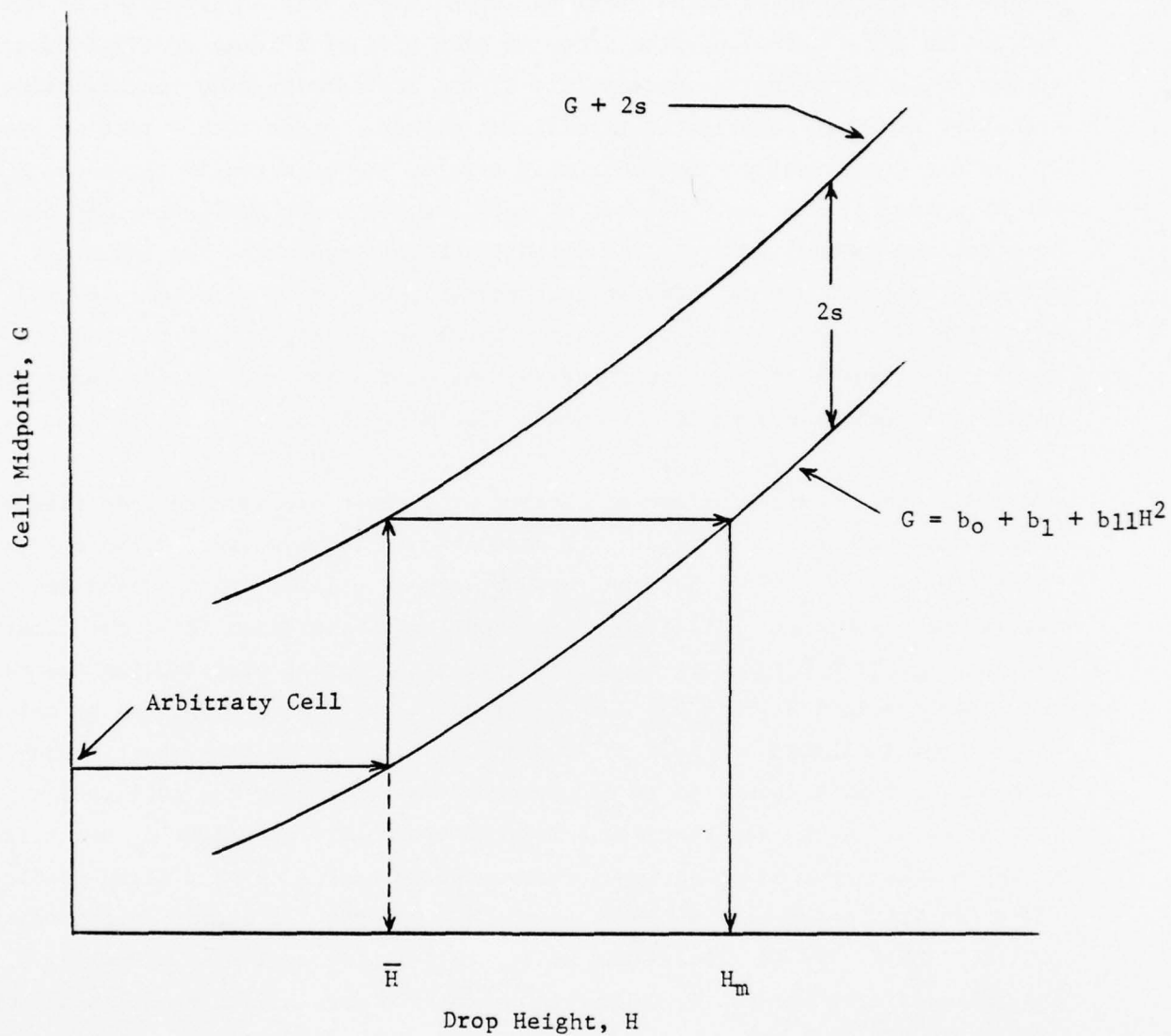
Calibration of environmental recorders is necessary to convert the recorder's memory readings (in g-units) to package drop heights. This conversion is essential because the packaging designs used in the experiment cushioned the recorder and its accelerometers, thus making the readings a function of both drop height and cushioning design. Additionally, drop height is considered the most useful unit for packaging design and evaluation procedures.

Accordingly, drop testing is required for each recorder/package combination to develop the calibration data. Since the recorder grouped the g-unit readings in ranges, it was originally anticipated that one set of calibration drops would produce enough discrete information to calibrate the recorders and evaluate the shipping results. This was not the case;

instead the calibration drops provided inconclusive data. Therefore, it was decided to try a series of five drops on each side of a large and small container to better characterize the variability of the recorder/package combinations and ascertain what constituted significant change. Since such a testing program involved a great deal of time consuming effort, it was mutually agreed by BCL and AF personnel that only one set of each the large and small recorder/package combinations be used to prove the validity of this approach. The important characteristic of the calibration is that replicate drops were included and all drops were conducted using a random ordering of drop height and package face. The results of these calibration runs generally took the form of a second degree polynomial leading to the choice of the equation,

$$G = b_0 + b_1H + b_{11}H^2 \quad (C-1)$$

where G is the predicted midpoint g value of a given storage register resulting from a drop height H in inches. The equation was fitted using multiple linear regression analysis with the usual assumptions of H fixed and G random and distributed normally. This form of the model was used since it is not feasible to fix G and have H a random variable. Employing normal distribution theory, the upper prediction limit for G for a given H, shown as $G + 2s$, can be calculated as pictured in Figure C-1. It is impossible, however, to make exact probability statements about H (since it is not a random variable) for the calibration designs used. As an alternative, a maximum probable drop height H_m was calculated as the H value from Equation (C-1) corresponding to the upper 2 sigma prediction limit for G, $G + 2s$, where s is the standard error for regression in fitting Equation (C-1). As is illustrated in Figure C-1, for each cell midpoint, G, the expected drop height, H, and maximum probable drop height H_m (with approximate probability of 95%) can be calculated from Equation C-1 and the corresponding standard errors for regression. A computer routine was developed to provide both the accumulation of calibration data and the required calculations to obtain the equation coefficients and the standard errors for regression. The routine calculates these for each side independently and for the combination of all sides to allow review and comparison of the two different approaches. Based on the analysis of the limited data available, use of the regression values of the combined sides appears the most feasible.



\bar{H} = expected mean drop height

H_m = maximum expected drop height with approximate probability of 95%

FIGURE C-1. ILLUSTRATION OF CALCULATION OF MAXIMUM PROBABLE DROP HEIGHT FROM EQUATION (2) AND STANDARD ERROR FOR REGRESSION, S .

To further evaluate the use of the regression approach to calibration, the "single drop" data originally provided were analyzed using a single-regression analysis with indicator variables for the different recorders. The results of this evaluation are provided in Table C. The standard error (S) and the second order regression coefficient (b_{11}) shown in that table are identical for the large recorder/package combination and the small recorder/package combination. This is the result of using the above procedure with limited data and would not necessarily result from calibrations when sufficient data were available to calibrate each recorder independently. Using these calculations, calibration tables were prepared for the nine recorder/package combinations (Tables C-2 to C-6). These tables serve to illustrate the utility of calibration curves for use in analysis of the data obtained from actual shipments of the container/recorder combinations. Both the regression values computed manually and those which will result from the computer routine are valid only within the range of heights used in this calibration. This can easily be seen by inspection of the regression values in Table C-1, if height is set to zero, the value of b_0 becomes the g-unit experienced; this is not a realistic value.

Analysis of Instrumented Shipments

The shipping data received during the project was too limited to provide any conclusive analysis, however, the data did provide insight to an approach to analysis. Using the calibration data developed (discussed earlier), the shipping data were analyzed, using manual methods, to demonstrate the method of analysis. Table C-7 provides a summary of data from small recorder/package combinations where resultant type recorders were used. The table displays the number of data occurrences in different data bins which have been converted to height in inches (expected and maximum probable) values instead of g-unit values. A computer program has been provided to read out the recorders and convert the data to expected and maximum probable heights using the regression data developed in the calibration phase and also store the results for future analysis. This computer program along with operating instructions were provided to the Air Force as a separate report.

The data displayed in Table C-7 or developed using the computer routine can be easily restructured to provide frequency distributions to portray probabilities in terms of percentiles. Such a portrayal is contained in Table

TABLE C-1. EQUATION COEFFICIENTS AND CORRESPONDING STANDARD ERRORS

Package Designation	Package Size	Recorder Type	Recorder Serial No.	Regression Coefficients		Regression Standard Error, s
				b_0	b_1	
L1	Large	711	SN 001	12.58	1.43	4.0
L2	Large	711A	SN 012	12.58	0.95	4.0
L3	Large	711A	SN 011	8.37	1.43	4.0
L4	Large	711A-2	SN 010	12.58	1.43	4.0
L5	Large	714*	SN 202	12.58	0.95	4.0
S1	Small	711	SN 002	11.33	0.11	7.16×10^{-3}
S2	Small	714*	SN 201	11.33	0.2256	7.16×10^{-3}
S3	Small	714*	SN 203	11.33	0.2256	7.16×10^{-3}
S4	Small	714*	SN 204	11.33	0.2256	7.16×10^{-3}

C-9. From tables such as these, approximate probability statements can be made. For example, the median expected drop height (12-inches on Table C-9) or the probability of expected drop height greater than 30-inches (90% on Table C-9).

Approach to Future Analysis

Problems discussed earlier precluded the gathering of enough data to draw conclusions concerning shock and vibration during shipment. The data received did serve as a valuable contribution to the project in that it provided the feasibility of the task and allowed the development of the computer routines and methodology for further work.

Three elements to future analysis are (1) selection and calibration of recorder/package combination, (2) development of shipping schedules to cover mode and destination, and (3) analysis of the results.

Selection and Calibration of Container Recorder Combinations

The use of resultant recorders in small packages/containers and the axis-oriented recorders in large containers is a logical approach to the selection of recorder/package combinations because of the high probability of corner and edge drops on the small containers during shipment. Redesign of the containers is advisable to provide more discrete drop height vs recorder bin numbers (g-units). The current containers, with three-inches of cushioning, provided a large range of recorder bin readings for a given drop height, thus forcing a wider calibration curve than desired. In any event, each recorder/package combination should be calibrated and individual and corresponding calibration curves developed. A minimum of five drops on each of six sides should be made using a random ordering. The regression constants and signal from these calibrations will dictate the extent to which the data can be combined. Analysis of the differences between different sides of the same recorder/package combination should be directed to combining the six calibration curves into one set of constants and sigma; even if it means redesigning the container or cushioning to provide to provide for a single curve. The requirement to use six calibration curves for each of 12 recorders would result in overwhelming complexity of further analysis.

Development of Shipping Schedules

Shipments of recorder/package combinations during the course of this project provided valuable experience as to the complexities related to such a task. As a result, the development of a shipping schedule should in part, be dictated by these complexities. For example, shipments should be originated/stopped only at locations where experienced personnel can start/stop the recorder.

Shipments between Wright Patterson AFB and any ALC or between ALC's is preferred from the standpoint of timeliness and control of the recorders even though these shipments might bias the experiment. Other possibilities should be considered, for example, a shipment made by AF Packaging people to an ALC or Wright Patterson from a TDY location. The selection of shipping conditions such as number of times handled or transit location should be the same for any group of shipments. Since there are so many other variables, addition of vastly different handling/transit factors could make the data difficult, if not impossible, to analyze. On the other hand, analysis of data with these factors held constant reduces the task to the development of a simple frequency distribution. This concept is expanded in the next section on analysis of results.

In all cases, the tables contained in Attachments C-4 and C-5 should be used to develop a scheme for shipments. Table C-4.1 (Attachment C-4) provides volume and mode data for each base, and can be used for selection of shipments and modes between bases and ALC's or Wright Patterson AFB. Selection based on volume between two ALC's and between ALC's and bases can be accomplished using Table C-5.1 (Attachment C-5). The earlier discussion in this appendix related to material distribution and the discussion at the beginning of each attachment provides insight to how these tables were developed.

Analysis of the Results

Shipping data obtained from the recorder/package combinations made during the project and the analysis of shipping data discussed earlier in this approach provide insight to the analysis of data. The first objective should be to develop prediction models based on frequency distributions of similar shipments (mode - number of times handled - number of transit points). The number of shipments needed to develop these models will be based on the "scatter pattern" of the accumulated data (should be used to develop a new prediction model and another set of shipments made to prove/disprove the model. A statistical technique which can be used to test the model vs the new sample is the Kolmogorov-Smirnov two-sample test. This test involves the difference between the accumulated step functions of the two samples (Column 4 of Table C-8 ÷ 100). When the largest difference is greater than the value of

$$1.36 \sqrt{\frac{n_1 + n_2}{n_1 n_2}}, \quad (C-2)$$

where n is the number of drops, the model should be rejected. (N_1 in Table C-9 is 118).

Once each mode model has been proven, the possibility of combining modes should be explored. The two-sample test above can also be used to accept or reject the candidate combinations.

TABLE C-2. CALIBRATION TABLE FOR LARGE PACKAGES, L1 AND L4

G	\bar{H} (inches)	H_m (inches)
13.75	0.8	6.4
16.25	2.6	8.2
18.75	4.3	9.9
21.25	6.1	11.7
23.75	7.8	13.4
26.25	9.6	15.2
28.75	11.3	16.9
31.25	13.1	18.65
33.75	14.9	20.4
36.25	16.6	20.1
38.75	18.3	23.9
41.25	20.1	25.7
43.75	21.8	27.4
46.25	23.5	29.4
48.75	25.3	30.9
51.25	27.1	32.6
53.75	28.8	34.4

NOTE:

G = cell mean in g's

 \bar{H} = expected or mean drop height in inches H_m = maximum expected drop height with approximate probability of 95%, in inches

TABLE C-3. CALIBRATION TABLE FOR LARGE PACKAGES
L2 AND L5

G	\bar{H} (inches)	H_m (inches)
13.75	1.2	9.7
16.25	3.9	12.3
18.75	6.5	14.9
21.25	9.1	17.5
23.75	11.8	20.2
26.25	14.4	22.8
28.75	17.1	25.4
31.25	19.7	28.1
33.75	22.3	30.7
36.25	24.9	33.3
38.75	27.5	35.96
41.25	30.2	38.6
43.75	32.8	41.2
46.25	35.4	43.9
48.75	38.1	46.5
55.00	44.6	53.0

NOTE:

G = cell mean in g's

 \bar{H} = expected or mean drop height in inches H_m = maximum expected drop height with approximate probability of 95%, in inches

TABLE C-4. CALIBRATION TABLE FOR LARGE PACKAGE, L3

G	\bar{H} (inches)	H_m (inches)
13.75	3.8	9.4
16.25	5.6	11.2
18.75	7.3	12.9
21.25	9.1	14.7
23.75	10.8	16.5
26.25	12.6	18.2
28.75	14.4	20.0
31.25	16.1	21.8
33.75	17.9	23.5
36.25	19.6	25.3
38.75	21.4	27.03
41.25	23.2	28.8
43.75	24.9	30.6
46.25	26.7	32.3
48.75	28.4	34.1

NOTE:

G = cell mean in g's

\bar{H} = expected or mean drop height in inches

H_m = maximum expected drop height with approximate probability of 95%, in inches

TABLE C-5. CALIBRATION TABLE FOR SMALL PACKAGE
S1

G	\bar{H} (inches)	H_m (inches)
16.25	19.63	31.23
18.75	25.41	35.49
21.25	30.32	39.36
23.75	34.67	42.93
26.25	38.61	46.27
28.75	42.24	49.42
31.25	45.62	52.40
33.75	48.8	55.23
36.25	51.81	57.95
38.75	54.68	60.56
41.25	57.42	63.07
43.75	60.05	65.50
46.25	62.58	67.84
48.75	65.5	70.12
55.00	70.79	75.54
65.00	79.24	83.55

NOTE:

G = cell mean in g's

 \bar{H} = expected or mean drop height in inches H_m = maximum expected drop height with approximate probability of 95%, in inches

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LOGISTICS PACKAGING ENVIRONMENT. TO HQ AFLC/LOTPP WRIGHT PATER--ETC(U)
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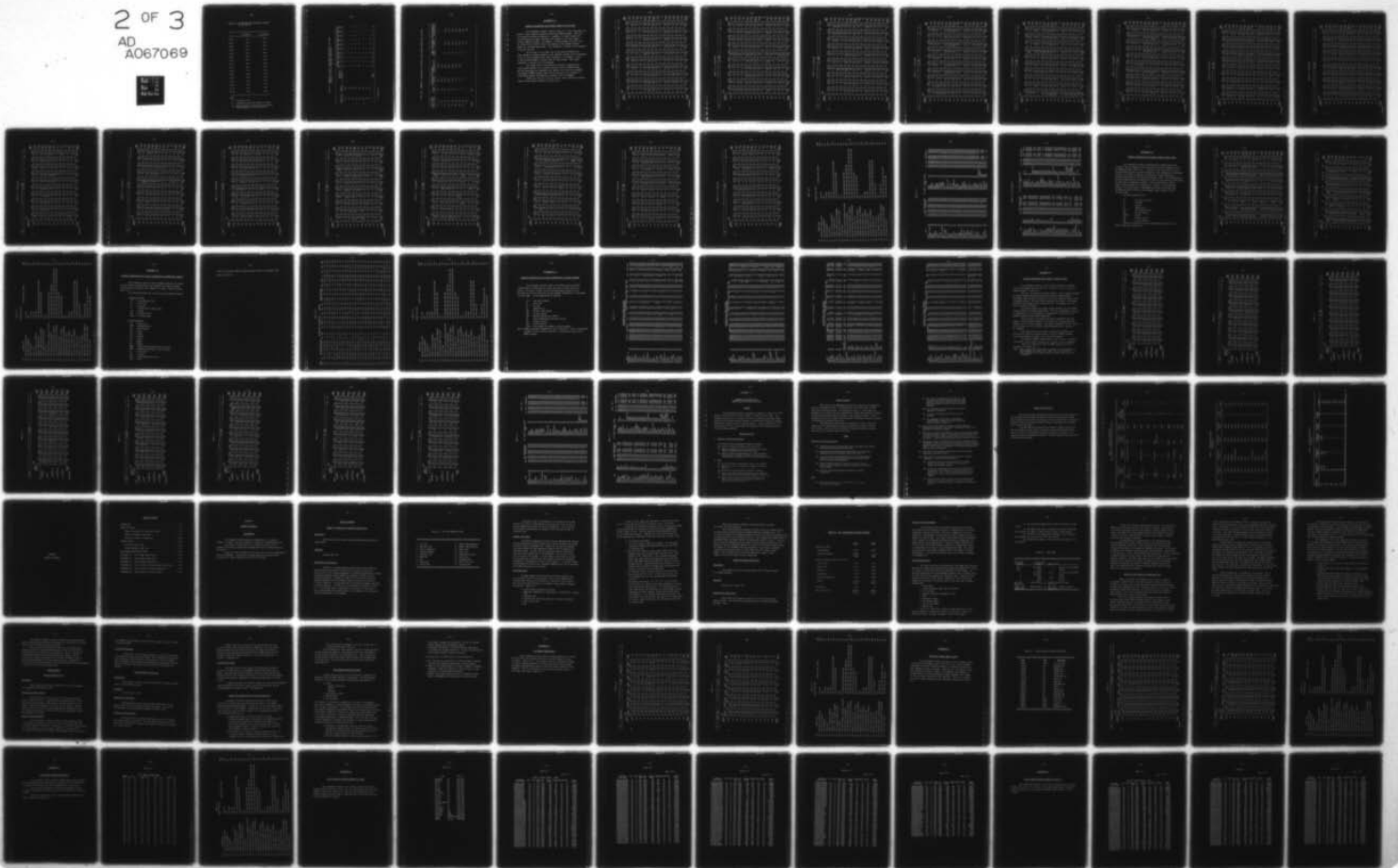
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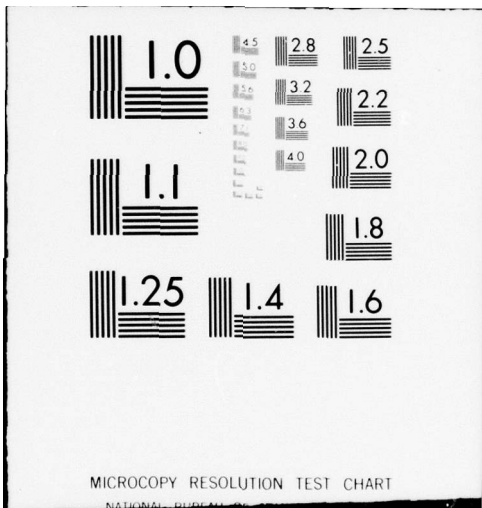


TABLE C-6. CALIBRATION TABLE FOR SMALL PACKAGES
S2, S3, AND S4

G	\bar{H} (inches)	H_m (inches)
13.75	8.5	21.0
16.25	14.8	25.5
18.75	19.6	29.2
21.25	24.7	33.3
23.75	28.2	36.7
26.25	32.5	40.0
28.75	36.0	43.0
31.25	39.3	45.9
33.75	42.4	48.7
36.25	45.3	51.3
38.75	48.1	53.9
41.25	50.8	56.3
43.75	53.4	58.7
46.25	55.8	61.0
48.75	58.2	63.3
55.00	63.9	68.6

NOTE:

G = cell mean in g's

 \bar{H} = expected or mean drop height in inches H_m = maximum expected drop height with approximate probability of 95%, in inches

TABLE C-7. SUMMARY OF LOGAIR SHOCK AND VIBRATION DATA FOR SMALL PACKAGES 52, 53, 54 (Resultant Data Only)

Design Run	Package	Number of Drops for Given Values of \bar{H} and H_m												
		Inches H_m	16	21	26	29	33	37	40	43	46	49	Inches \bar{H}	
3a	S4	3	1	2	2	0	3	-	-	-	-	-	-	-
3b	S3	3	1	2	0	1	-	-	-	-	-	-	-	-
1c	S3	7	5	4	2	2	0	1	1	1	1	0	0	0
* 1a	S2	8	6	5	2	1	1	1	1	1	0	2	2	2
1b	S4	10	3	1	2	2	0	3	-	-	-	-	-	-
2a	S3	1	3	2	1	1	-	-	-	-	-	-	-	-
* 2c	S4	1	2	3	3	1	-	-	-	-	-	-	-	-
6a	S2	4	3	2	0	0	0	2	-	-	-	-	-	-
TOTAL		37	24	21	12	8	4	7	2	1	2	2	1	2

* Replicates

TABLE C-8. SUMMARY OF LOGAIR DATA FOR SPECIFIC DROP HEIGHT RANGE SMALL PACKAGES

Drop Height Range, inches	Expected Drop Height		Max. Drop Height (95% Probability)	
	Number	Percent	Number	Percent
0 - 6	37	31.4	-	-
6 - 12	24	20.3	-	-
12 - 18	21	17.8	37	31.4
18 - 24	12	10.2	24	20.3
24 - 30	12	10.2	33	17.8
30 - 36	9	7.6	8	10.2
36 - 42	3	2.5	11	10.2
42 - 48	0	0	3	7.6
< 48	-	-	2	2.5
TOTAL	118			

Accumulative %

Accumulative %

ATTACHMENT C-1MATERIAL DISTRIBUTION DATA LISTING (PRODUCT CODE BY BASE)

This attachment contains a matrix (Table C-1.1) which represents the amount of each commodity shipped to/from each DODMDS customer. Each cell in the matrix indicates the amount of a commodity in hundred weights and the percentage that number represents with respect to the total amount of that commodity shipped. For example, 7 hundred weights of product code 104 (Arms and Fire Control Parts) were shipped to/from DODMDS customer number 161 (Richards Gebaur AFB). This represents .1 percent of all shipments of product code 104.

The row total at the right side of the matrix represents the total shipment in hundred weights of that commodity shipped and the percentage of all Air Force shipments that number represents. For example, a total of 6027 hundred weights of product code 104 were shipped. This figure represents .3 percent of all AF shipments.

The column total at the bottom of each matrix represents the total hundred weights of all products shipped to/from a DODMDS customer and the percentage that represents with respect to all Air Force shipments. For example, DODMDS customer number 161 was involved in the shipment of 6135 hundred weights representing .3 percent of all AF shipments.

Tables C-1.2 and C-1.3 are the indices used to define the product codes and base numbers contained in Table C-1.1.

TABLE C-1.1.

CROSS TABULATION OF BY BASE PAGE 1 OF 16

Table with columns: COUNT ROM PCT, BASE (161.I, 201.I, 202.I, 204.I, 205.I, 212.I, 213.I, 214.I, 221.I, 222.I), and ROM TOTAL. Rows include PC 104., 121., 141., 144., 153., 154., 161., 179., 249., 269., 289., 299., 491., 494., and COLUMNS TOTAL.

(CONTINUED)

TABLE C-1.1. (Continued)

***** C R O S S T A B U L A T I O N O F ***** PAGE 2 OF 16
PC ***** BY BASE *****

PC	223.I	224.I	225.I	226.I	231.I	232.I	233.I	234.I	235.I	236.I	ROM TOTAL
104.	42 I .7	66 I 1.1	4 I .1	3 I .0	4 I .1	578 I 9.6	5 I .1	91 I 1.5	44 I .7	47 I .8	6027 .3
121.	407 I 2.7	8 I .1	0 I .0	0 I .0	31 I .2	1919 I 12.6	294 I 1.9	105 I .7	52 I .3	64 I .4	15290 .7
141.	670 I 2.0	403 I 1.2	0 I .0	0 I .0	0 I .0	3047 I 9.1	85 I .3	695 I 2.1	365 I 1.1	442 I 1.3	33375 1.6
144.	89 I 3.5	5 I .2	0 I .0	1 I .0	0 I .0	167 I 6.5	26 I 1.0	32 I 1.2	13 I .5	19 I .7	2567 .1
153.	1252 I .8	1217 I .8	1956 I 1.3	544 I .3	931 I .6	13510 I 8.6	1394 I .8	1782 I 1.1	4559 I 2.9	492 I .3	1156241 7.7
154.	654 I .4	796 I .5	1498 I .9	833 I .5	416 I .3	5645 I 3.6	838 I .5	665 I .5	518 I .3	401 I .3	1158382 7.8
161.	3387 I .4	7942 I .9	4164 I .5	1719 I .2	3000 I .3	21733 I 2.4	2605 I .3	3733 I .4	2748 I .3	2745 I .3	1893521 43.8
179.	753 I 1.0	775 I 1.0	163 I .2	367 I .5	57 I .1	1097 I 1.4	356 I .5	1138 I 1.5	529 I .7	501 I .6	77268 3.8
249.	0 I 0	0 I 0	0 I 0	0 I 0	0 I 0	6 I 6	0 I 0	0 I 0	0 I 0	0 I 0	87 .0
269.	1617 I 1.8	1547 I 1.7	201 I .2	1051 I 1.1	5519 I 6.0	1670 I 1.8	636 I .7	1266 I 1.4	3048 I 3.3	872 I 1.0	91461 4.5
289.	95 I .3	228 I .7	78 I .2	106 I .3	15 I .0	1405 I 4.1	16 I .0	143 I .4	134 I .4	127 I .4	34372 1.7
299.	203 I .4	198 I .4	336 I .7	413 I .9	3 I .0	584 I 1.3	203 I .4	337 I .7	133 I .3	257 I .6	45394 2.2
491.	989 I .9	1407 I 1.2	328 I .3	235 I .2	171 I .1	14528 I 12.5	6154 I 5.3	1017 I .9	1110 I 1.0	745 I .6	1116330 5.7
494.	90 I .5	145 I .9	157 I .9	79 I .5	137 I .6	2003 I 11.6	709 I 4.2	197 I 1.2	133 I .6	54 I .3	17024 .8
COLUMN TOTAL	12041 .6	19864 1.0	10493 .5	6857 .3	11471 .6	101185 5.0	16423 .8	15273 .7	15197 .7	9474 .5	2039530 100.0

(CONTINUED)

TABLE C-1.1. (Continued)

PC ***** CROSS TABULATION OF ***** PAGE 3 OF 16
 ***** BY BASE *****

PC	237.I	238.I	239.I	241.I	242.I	243.I	244.I	245.I	251.I	252.I	ROW TOTAL
104.	2	1	1	40	9	12	12	9	12	12	6027
	.0	.0	.0	.7	.1	.2	.2	.1	.2	.1	.3
121.	0	0	0	22	106	17	296	345	392	201	15290
	0	0	0	.1	.7	.1	1.9	2.3	2.6	1.3	.7
141.	0	0	0	803	20	0	74	44	859	768	33375
	0	0	0	2.4	.1	0	.2	.1	2.6	2.3	1.6
144.	0	0	0	107	1	0	3	14	213	48	2567
	0	0	0	4.2	.0	0	.1	.5	8.3	1.9	.1
153.	454	393	378	2020	1207	906	1312	661	735	816	1156241
	.3	.3	.2	1.3	.8	.6	.8	.4	.5	.5	7.7
154.	183	427	176	886	613	616	558	335	496	437	1150302
	.1	.3	.1	.6	.4	.4	.4	.2	.3	.3	7.8
161.	217	2497	622	2754	1712	1216	1131	1496	1805	1747	893521
	.0	.3	.1	.3	.2	.1	.1	.2	.2	.2	43.6
179.	97	65	44	728	456	513	750	346	361	207	77268
	.1	.1	.1	.9	.6	.7	1.0	.4	.5	.3	3.8
249.	0	0	0	0	0	0	0	1	0	0	87
	0	0	0	0	0	0	0	1.1	0	0	.0
269.	356	565	409	1164	1023	894	1198	676	680	1032	91461
	.4	.6	.4	1.3	1.1	1.0	1.3	.7	.7	1.1	4.5
289.	119	63	22	218	93	306	66	201	192	220	34372
	.3	.2	.1	.6	.3	.9	.2	.6	.6	.6	1.7
299.	88	40	141	254	493	290	578	262	313	249	45394
	.2	.1	.3	.6	1.1	.6	1.3	.6	.7	.5	2.2
491.	78	344	402	678	486	315	595	1118	467	799	1116330
	.1	.3	.3	.6	.4	.3	.5	1.0	.4	.7	5.7
494.	24	30	70	63	311	28	128	36	91	54	17024
	.1	.2	.4	.4	1.8	.2	.8	.2	.5	.3	.8
COLUMN TOTAL	2607	5776	3967	12883	9223	6603	9787	7585	9248	8841	2039530
	.1	.3	.2	.6	.5	.3	.5	.4	.5	.4	100.0

(CONTINUED)

TABLE C-1.1. (Continued)

***** CROSS TABULATION OF ***** PAGE 4 OF 16
 PC ***** BY BASE *****

COUNT ROW PCT	BASE	253.I	255.I	261.I	262.I	270.I	271.I	272.I	273.I	274.I	275.I	ROM TOTAL
104.	I	10	7	3	27	10	30	16	135	3	62	6027
	I	.2	.1	.0	.4	.2	.5	.3	2.2	.0	1.0	.3
121.	I	317	177	0	269	590	1020	433	572	0	1025	15290
	I	2.1	1.2	0	1.8	3.9	6.7	2.8	3.7	0	6.7	.7
141.	I	1196	1564	15	183	0	341	158	274	0	41	33375
	I	3.6	4.7	.0	.5	0	1.0	.5	.8	0	.1	1.6
144.	I	299	122	0	5	0	4	6	2	0	0	2567
	I	11.6	4.8	0	.2	0	.2	.2	.1	0	0	.1
153.	I	658	565	921	6102	1674	1481	1880	6546	1267	3248	1156241
	I	.4	.4	.6	3.9	1.1	.9	1.2	4.2	.8	2.1	7.7
154.	I	280	157	652	8637	1346	679	2404	23627	651	4497	1150382
	I	.2	.1	.4	5.5	.8	.4	1.5	14.9	.4	2.8	7.8
161.	I	1598	1405	2549	2817	3060	4376	6913	1248678	1017	32159	1893521
	I	.2	.2	.3	.3	.3	.5	.8	27.8	.1	3.6	43.8
179.	I	618	109	203	1297	440	496	629	3455	224	901	77268
	I	.8	.1	.3	1.7	.6	.6	.8	4.5	.3	1.2	3.8
249.	I	0	0	0	0	0	0	0	0	0	0	87
	I	0	0	0	0	0	0	0	0	0	0	.0
269.	I	843	279	844	1427	1652	1350	2750	1798	1392	4366	91461
	I	.9	.3	.9	1.6	1.8	1.5	3.0	2.0	1.5	4.8	4.5
289.	I	172	19	55	91	171	142	290	249	212	150	34372
	I	.5	.1	.2	.3	.5	.4	.8	.7	.6	.4	1.7
299.	I	262	66	149	271	519	482	532	946	331	359	45394
	I	.6	.1	.3	.6	1.1	1.1	1.2	2.1	.7	.8	2.2
491.	I	516	753	352	2770	1881	651	738	6452	367	1543	1116330
	I	.4	.6	.3	2.4	1.6	.6	.6	5.5	.3	1.3	5.7
494.	I	137	63	98	142	184	124	162	723	32	183	17024
	I	.8	.4	.6	.8	1.1	.7	1.0	4.2	.2	1.1	.8
COLUMN TOTAL		12563	8866	7424	26522	14824	13630	20650	309612	7033	55855	2039530
		.6	.4	.4	1.3	.7	.7	1.0	15.2	.3	2.7	100.0

(CONTINUED)

TABLE C-1.1. (Continued)

PC ***** CROSS TABULATION OF ***** PAGE 5 OF 16
 ***** BY BASE *****

PC	COUNT I	BASE	277.I	278.I	279.I	280.I	281.I	282.I	283.I	284.I	285.I	286.I	ROM TOTAL
ROW PCT I	I	I	I	I	I	I	I	I	I	I	I	I	I
104.	166	17	5	17	5	2	36	26	2614	0	122	44	6027
	2.8	.3	.1	.3	.1	.0	.6	.4	43.4	.1	2.0	.7	.3
121.	383	0	0	0	0	0	.88	.49	51	1	15	18	15290
	2.5	0	0	0	0	0	.6	.3	.3	.0	.1	.1	.7
141.	42	632	6	1.9	6	751	542	47	4590	639	616	1277	33375
	.1	1.9	.0	1.9	.0	2.3	1.6	.1	13.8	1.9	1.8	3.8	1.6
144.	2	0	0	0	0	76	5	6	325	0	15	5	2567
	.1	0	0	0	0	3.0	.2	.2	12.7	0	.6	.2	.1
153.	3817	180	505	180	163	307	1092	13239	356	1728	1298	1156241	
	2.4	.1	.3	.1	.1	.2	.7	8.5	.2	1.1	.8	7.7	
154.	41414	120	436	110	110	683	235	10103	245	1900	2510	1158382	
	26.1	.1	.3	.1	.1	.4	.1	6.4	.2	1.2	1.6	7.8	
161.	1205756	4924	2175	189	189	1761	7972	53131	1964	5224	9330	1893521	
	23.0	.6	.2	.0	.0	.2	.9	5.9	.2	.6	1.0	43.8	
179.	29656	526	283	8	8	633	402	684	157	1555	542	77268	
	38.4	.7	.4	.0	.0	.8	.5	.9	.2	2.5	.7	3.8	
249.	0	0	0	0	0	0	0	0	0	0	0	87	
	0	0	0	0	0	0	0	0	0	0	0	.0	
269.	2334	463	463	196	196	384	608	1371	418	1697	1252	91461	
	2.6	.5	.5	.2	.2	.4	.7	1.5	.5	1.9	1.4	4.5	
289.	19711	70	188	11	11	79	21	464	42	282	129	34372	
	57.3	.2	.5	.0	.0	.2	.1	1.3	.1	.8	.4	1.7	
299.	16499	77	136	24	24	105	200	423	54	1044	239	45394	
	36.3	.2	.3	.1	.1	.2	.4	.9	.2	2.3	.5	2.2	
491.	31496	441	895	320	320	1130	445	1479	227	1359	602	1116330	
	27.1	.4	.8	.3	.3	1.0	.4	1.3	.2	1.2	.5	5.7	
494.	3198	41	61	38	38	169	65	208	20	102	100	17024	
	18.6	.2	.4	.2	.2	1.0	.4	1.2	.1	.6	.6	.8	
COLUMN TOTAL	394293	8218	9057	5304	5304	9406	13386	100082	5068	19244	21060	2039530	
	19.3	.4	.4	.3	.3	.5	.7	4.9	.2	.9	1.0	100.0	

(CONTINUED)

TABLE C-1.1. (Continued)

***** CROSS TABULATION OF *****
 PC ***** BY BASE ***** PAGE 6 OF 16

PC	BASE													ROM TOTAL
	COUNT	287.I	288.I	289.I	291.I	292.I	293.I	294.I	295.I	296.I	297.I	ROM		
ROM PCT	I	I	I	I	I	I	I	I	I	I	I	I	I	
104.	.4	1.0	63	1.0	4.1	1	6	5	24	58	6	6027	.3	
121.	.1	35	98	477	4	1	1	0	750	422	227	15290	.7	
141.	.1	1576	318	1147	636	82	9	56	4.9	2.8	1.5	33375	.6	
144.	.0	13	9	15	397	0	0	7	7	8	2	2567	.1	
153.	.6	746	1512	4972	21	681	3546	2434	9441	1003	156241	7.7	.1	
154.	.1	768	608	2855	6	433	3980	1203	4244	557	1158382	7.0	.1	
161.	.1	3422	5772	10157	41	2689	8134	6658	1106723	3186	1893521	43.8	.1	
179.	.9	452	860	747	36	884	692	410	766	460	77268	3.8	.1	
249.	0	0	0	0	0	0	0	0	0	0	0	87	.0	
269.	.4	729	854	2088	8	747	3312	1761	1881	956	91461	4.5	.1	
289.	.1	182	32	482	51	39	522	219	688	139	34372	1.7	.1	
299.	.4	234	116	616	30	105	542	457	2693	216	45394	2.2	.1	
491.	.2	884	950	1620	255	332	969	454	1821	561	1116330	5.7	.1	
494.	.4	90	74	215	19	16	106	39	596	70	17024	.8	.1	
COLUMN TOTAL	5761	13878	14567	32948	2700	7266	26037	18322	199304	9556	2039530	100.0	.5	
ROM TOTAL	.3	.7	.7	1.6	.1	.4	1.3	.9	9.3	.5	95.6	100.0	.5	

(CONTINUED)

TABLE C-1.1 (Continued)

PC ***** CROSS TABULATION OF ***** PAGE 7 OF 16 *****

COUNT ROW PCT	BASE										ROW TOTAL
	298.I	299.I	364.I	482.I	500.I	501.I	502.I	503.I	504.I	505.I	
104.	14	12	2	0	2	154	96	117	424	35	6027
	.2	.2	.0	.0	.0	2.6	1.6	1.9	7.0	.6	.3
121.	225	223	0	0	17	115	84	51	792	7	15290
	1.5	1.5	0	0	.1	.8	.5	.3	5.2	.0	.7
141.	192	15	361	0	49	1544	639	1478	1269	496	33375
	.6	.0	1.1	0	.1	4.6	1.9	4.4	3.8	1.5	1.6
144.	6	5	38	0	0	51	40	35	197	9	2567
	.3	.2	1.5	0	0	2.0	1.6	1.4	7.7	.4	.1
153.	1973	1207	11	138	167	2701	2885	1869	6867	1759	1156241
	1.3	.8	.0	.1	.1	1.7	1.6	1.2	4.4	1.1	7.7
154.	1137	755	6	94	91	1867	1344	573	4439	1435	1158382
	.7	.5	.0	.1	.1	1.2	.8	.4	2.6	.9	7.8
161.	2964	2321	34	134	20	7766	12194	2075	10172	2657	1893521
	.3	.3	.0	.0	.0	.9	1.4	.2	1.1	.3	43.8
179.	816	352	6	73	133	3062	2108	876	1870	913	77268
	1.1	.5	.0	.1	.2	4.0	2.7	1.1	2.4	1.2	3.8
249.	0	0	0	0	0	1	3	67	3	5	87
	0	0	0	0	0	1.1	3.4	77.0	3.4	5.7	.0
269.	255	939	8	88	141	2183	1853	865	3927	1709	91461
	.3	1.0	.0	.1	.2	2.4	2.0	.9	4.3	1.9	4.5
289.	96	197	0	0	20	565	663	362	336	215	34372
	.3	.6	0	0	.1	1.6	1.9	1.1	1.0	.6	1.7
299.	147	316	12	9	11	1246	1108	413	2209	538	45394
	.3	.7	.0	.0	.0	2.7	2.4	.9	4.9	1.2	2.2
491.	945	433	212	333	133	2230	2157	987	2591	636	1116330
	.8	.4	.2	.3	.1	1.9	1.9	.8	2.2	.5	5.7
494.	396	56	40	41	6	524	461	199	549	142	17024
	2.3	.3	.2	.2	.0	3.1	2.7	1.2	3.2	.8	.8
COLUMN TOTAL	12499	8641	2249	1637	1138	36552	34005	14088	46679	14448	2039530
	.6	.4	.1	.1	.1	1.6	1.7	.7	2.3	.7	100.0

(CONTINUED)

TABLE C-1.1 (Continued)

***** CROSSTABULATION OF *****
PC BY BASE ***** PAGE 6 OF 16

COUNT ROM PCT	BASE											ROM TOTAL
	506.I	507.I	508.I	511.I	512.I	513.I	519.I	522.I	524.I	861.I		
104.	4	6	18	12	77	0	9	57	15	11	6027	
	.1	.1	.3	.2	1.3	0	.1	.9	.2	.2	.3	
121.	0	47	29	0	16	0	0	24	739	0	15290	
	0	.3	.2	0	.1	0	0	.2	4.8	0	.7	
141.	0	61	367	140	335	0	153	498	2	42	33375	
	0	.2	1.1	.4	1.0	0	.5	1.5	.0	.1	1.6	
144.	0	7	12	12	18	0	3	14	0	1	2567	
	0	.3	.5	.5	.7	0	.1	.5	0	.0	.1	
153.	114	1368	4290	216	2088	8	578	2039	1086	171	1156241	
	.1	.9	2.7	.1	1.3	.0	.4	1.3	.7	.1	7.7	
154.	232	1040	763	94	791	9	107	2380	383	124	1158382	
	.1	.7	.5	.1	.5	.0	.1	1.5	.2	.1	7.8	
161.	403	1504	2035	24	2329	0	1158	4266	720	346	1693521	
	.0	.2	.2	.0	.3	0	.1	.5	.1	.0	43.8	
179.	182	547	961	198	1164	5	164	756	479	656	77268	
	.2	.7	1.2	.3	1.5	.0	.2	1.0	.6	.8	3.6	
249.	0	0	0	0	0	0	1	0	0	0	87	
	0	0	0	0	0	0	1.1	0	0	0	.0	
269.	142	930	719	187	607	3	300	1428	603	171	91461	
	.2	1.0	.8	.2	.7	.0	.1	1.6	.9	.2	4.5	
289.	176	73	315	29	178	1	225	409	21	27	34372	
	.5	.2	.9	.1	.5	.0	.7	1.2	.1	.1	1.7	
299.	78	267	665	254	262	0	372	515	451	139	45394	
	.2	.6	1.5	.6	.6	0	.8	1.1	1.0	.3	2.2	
491.	367	671	1444	472	1080	1	229	613	639	462	1116330	
	.5	.6	1.2	.4	.9	.0	.2	.7	.5	.4	5.7	
494.	30	150	199	186	179	0	107	537	141	30	17024	
	.2	.9	1.2	1.1	1.1	0	.6	3.4	.8	.2	.8	
COLUMN TOTAL	2701	8290	15781	3546	12281	76	5079	19811	7023	3033	2039530	
	.1	.4	.8	.2	.6	.0	.2	1.0	.3	.1	100.0	

(CONTINUED)

TABLE C-1.1. (Continued)

***** C R O S S T A B U L A T I O N O F *****
 PC BY BASE ***** PAGE 9 OF 16 *****

PC	161.I	201.I	202.I	204.I	205.I	212.I	213.I	214.I	221.I	222.I	ROM TOTAL
539.	358 I 1.2 I	178 I .6 I	96 I .3 I	78 I .3 I	18 I .1 I	170 I .6 I	130 I .4 I	517 I 1.8 I	84 I .3 I	102 I .3 I	29479 I 1.4 I
549.	0 I 0 I	8 I .1 I	6 I .0 I	0 I 0 I	12 I .1 I	0 I 0 I	0 I 0 I	0 I 0 I	4 I .0 I	0 I 0 I	15516 I .8 I
581.	361 I .3 I	1854 I 1.4 I	1072 I .8 I	989 I .7 I	1438 I 1.1 I	798 I .6 I	2024 I 1.5 I	1130 I .8 I	1039 I .8 I	725 I .5 I	1134520 I 6.6 I
584.	53 I .1 I	299 I .7 I	480 I 1.1 I	1097 I 2.5 I	359 I .8 I	88 I .2 I	393 I .9 I	70 I .2 I	141 I .3 I	341 I .8 I	43789 I 2.1 I
611.	248 I .2 I	945 I .9 I	585 I .5 I	556 I .5 I	983 I .9 I	138 I .1 I	1222 I 1.1 I	153 I .1 I	525 I .5 I	1284 I 1.2 I	110099 I 5.3 I
614.	21 I .2 I	84 I .6 I	54 I .4 I	55 I .4 I	16 I .1 I	123 I .9 I	520 I 3.8 I	60 I .4 I	92 I .7 I	66 I .5 I	13679 I .7 I
619.	6 I .0 I	49 I .4 I	29 I .2 I	31 I .2 I	13 I .1 I	19 I .1 I	79 I .6 I	20 I .1 I	61 I .5 I	38 I .3 I	13427 I .7 I
679.	0 I 0 I	9 I .1 I	5 I .1 I	22 I .2 I	7 I .1 I	7 I .1 I	9 I .1 I	26 I .3 I	44 I .5 I	299 I 3.2 I	9214 I .5 I
689.	0 I 0 I	0 I 0 I	0 I 0 I	0 I 0 I	0 I 0 I	0 I 0 I	1 I .4 I	0 I 0 I	0 I 0 I	0 I 0 I	285 I .0 I
719.	283 I 1.3 I	64 I .3 I	2 I .0 I	0 I 0 I	47 I .2 I	3 I .0 I	3 I .0 I	19 I .1 I	3 I .0 I	16 I .1 I	22148 I 1.1 I
849.	5 I .2 I	41 I 2.0 I	4 I .2 I	9 I .4 I	2 I .1 I	83 I 4.1 I	6 I .3 I	0 I 0 I	7 I .3 I	20 I 1.0 I	2035 I .1 I
COLUMN TOTAL	6135 .3	17110 .8	9146 .4	8430 .4	4321 .2	11189 .5	13893 .7	14029 .7	7909 .4	10575 .5	2039530 100.0

(CONTINUED)

TABLE C-1.1. (Continued)

***** C R O S S T A B U L A T I O N O F *****
 PC BY BASE ***** PAGE 10 OF 16 *****

PC	BASE										ROM TOTAL
	223.I	224.I	225.I	226.I	231.I	232.I	233.I	234.I	235.I	236.I	
539.	99 I .3 I	166 I .6 I	172 I .6 I	51 I .2 I	23 I .1 I	711 I 2.4 I	103 I .3 I	140 I .5 I	79 I .3 I	173 I .6 I	29479 I 1.4 I
549.	0 I 0 I	43 I .3 I	5 I .0 I	0 I 0 I	86 I .6 I	10250 I 66.1 I	5 I .0 I	152 I 1.0 I	83 I .5 I	0 I 0 I	15516 I .8 I
581.	856 I .6 I	1790 I 1.3 I	1023 I .8 I	907 I .7 I	632 I .6 I	12865 I 9.6 I	578 I .4 I	1130 I .8 I	755 I .6 I	1588 I 1.2 I	1134520 I 6.6 I
584.	274 I .6 I	303 I .7 I	90 I .2 I	88 I .2 I	80 I .2 I	6165 I 14.1 I	649 I 1.5 I	333 I .8 I	167 I .4 I	176 I .4 I	43789 I 2.1 I
611.	356 I .3 I	1178 I 1.1 I	234 I .2 I	383 I .4 I	112 I .1 I	1826 I 1.7 I	1752 I 1.6 I	1189 I 1.1 I	465 I .4 I	576 I .5 I	1108099 I 5.3 I
614.	99 I .7 I	143 I 1.0 I	45 I .3 I	47 I .3 I	40 I .3 I	401 I 2.9 I	44 I .3 I	578 I 4.2 I	84 I .6 I	61 I .4 I	13679 I .7 I
619.	58 I .4 I	172 I 1.3 I	21 I .2 I	13 I .1 I	12 I .1 I	103 I .8 I	28 I .2 I	236 I 1.8 I	35 I .3 I	94 I .7 I	13427 I .7 I
679.	22 I .2 I	1274 I 13.8 I	2 I .0 I	7 I .1 I	0 I 0 I	25 I .3 I	3 I .0 I	50 I .5 I	3 I .0 I	12 I .1 I	9214 I .5 I
689.	0 I 0 I	0 I 0 I	0 I 0 I	0 I 0 I	0 I 0 I	208 I 73.0 I	0 I 0 I	11 I 3.9 I	0 I 0 I	0 I 0 I	285 I .0 I
719.	8 I .0 I	6 I .0 I	16 I .1 I	0 I 0 I	0 I 0 I	664 I 3.0 I	25 I .1 I	4 I .0 I	110 I .5 I	6 I .0 I	22148 I 1.1 I
849.	21 I 1.0 I	52 I 2.6 I	0 I 0 I	10 I .5 I	2 I .1 I	85 I 4.2 I	5 I .2 I	49 I 2.4 I	30 I 1.5 I	22 I 1.1 I	2035 I .1 I
COLUMN TOTAL	12041 .6	19864 1.0	10493 .5	6857 .3	11471 .6	101185 5.0	16423 .8	15273 .7	15197 .7	9474 .5	2039530 100.0

(CONTINUED)

TABLE C-1.1. (Continued)

***** C R O S S T A B U L A T I O N O F *****
 PC BY BASE ***** PAGE 11 OF 16

PC	237.I	238.I	239.I	241.I	242.I	243.I	244.I	245.I	251.I	252.I	ROW TOTAL
539.	24 I	72 I	16 I	298 I	177 I	82 I	147 I	90 I	90 I	80 I	29479
	.1 I	.2 I	.1 I	1.0 I	.6 I	.3 I	.5 I	.3 I	.3 I	.3 I	1.4
549.	0 I	5 I	0 I	2 I	215 I	0 I	82 I	0 I	31 I	5 I	15516
	0 I	.0 I	0 I	.0 I	1.4 I	0 I	.5 I	0 I	.2 I	.0 I	.8
581.	347 I	631 I	1125 I	1272 I	1232 I	833 I	1585 I	597 I	727 I	734 I	1134520
	.3 I	.5 I	.8 I	.9 I	.9 I	.6 I	1.2 I	.4 I	.5 I	.5 I	6.6
584.	53 I	95 I	129 I	543 I	111 I	93 I	541 I	265 I	219 I	258 I	43789
	.1 I	.2 I	.3 I	1.2 I	.3 I	.2 I	1.2 I	.6 I	.5 I	.6 I	2.1
611.	499 I	352 I	385 I	751 I	557 I	232 I	458 I	898 I	643 I	337 I	1108099
	.5 I	.3 I	.4 I	.7 I	.5 I	.2 I	.4 I	.8 I	.6 I	.3 I	5.3
614.	14 I	35 I	25 I	128 I	96 I	127 I	126 I	100 I	119 I	46 I	13679
	.1 I	.3 I	.2 I	.9 I	.7 I	.9 I	.9 I	.7 I	.9 I	.3 I	.7
619.	36 I	42 I	9 I	79 I	55 I	71 I	96 I	55 I	768 I	773 I	13427
	.3 I	.3 I	.1 I	.6 I	.4 I	.5 I	.7 I	.4 I	5.7 I	5.8 I	.7
679.	13 I	78 I	9 I	5 I	210 I	1 I	31 I	8 I	23 I	7 I	9214
	.1 I	.8 I	.1 I	.1 I	2.3 I	.0 I	.3 I	.1 I	.2 I	.1 I	.5
689.	0 I	0 I	0 I	0 I	0 I	0 I	0 I	0 I	0 I	0 I	205
	0 I	0 I	0 I	0 I	0 I	0 I	0 I	0 I	0 I	0 I	.0
719.	0 I	9 I	4 I	26 I	23 I	3 I	5 I	7 I	3 I	3 I	22148
	0 I	.0 I	.0 I	.1 I	.1 I	.0 I	.0 I	.0 I	.0 I	.0 I	1.1
849.	1 I	32 I	0 I	42 I	17 I	48 I	15 I	21 I	9 I	12 I	2035
	.0 I	1.6 I	0 I	2.1 I	.8 I	2.4 I	.7 I	1.0 I	.4 I	.6 I	.1
COLUMN TOTAL	2607	5776	3967	12883	9223	6603	9787	7585	9248	8841	2039530
	.1	.3	.2	.6	.5	.3	.5	.4	.5	.4	100.0

(CONTINUED)

TABLE C-1.1. (Continued)

***** CROSS TABULATION OF *****
 PC BY BASE ***** PAGE 12 OF 16

PC	BASE													ROW TOTAL
	COUNT	253.I	255.I	261.I	262.I	270.I	271.I	272.I	273.I	274.I	275.I	276.I	277.I	
539.	225	54	92	516	202	114	197	8208	125	701	29479	1.4		
549.	17	114	0	0	19	0	0	11	2	35	15516	.8		
581.	704	438	869	1278	2066	1231	1582	5064	912	2441	1134520	6.6		
584.	327	1041	117	217	308	365	403	903	88	668	43789	2.1		
611.	2877	1115	182	304	393	490	1082	1443	273	1872	1108099	5.3		
614.	108	54	40	77	206	111	161	298	90	1414	13679	.7		
619.	1376	745	60	50	48	82	69	143	28	85	13427	.7		
679.	4	2	143	3	11	27	197	7	10	34	9214	.5		
689.	0	0	0	0	0	0	0	0	0	4	285	.0		
719.	12	6	67	2	0	18	0	34	4	30	22148	1.1		
849.	7	11	13	37	44	16	46	44	5	37	2035	.1		
COLUMN TOTAL	12563	8866	7424	26522	14824	13630	20650	309612	7033	55855	2039530	2.7	100.0	

(CONTINUED)

TABLE C-1.1. (Continued)

***** C R O S S T A B U L A T I O N O F ***** PAGE 13 OF 16

PC	COUNT ROM PCT	BASE													ROM TOTAL		
		277.I	278.I	279.I	280.I	281.I	282.I	283.I	284.I	285.I	286.I	287.I	288.I				
539.	5597	23	34	66	112	195	341	586	1027	1768	2995	4922	8017	13039	21056	34095	5597
	19.0	.1	.1	.2	.3	.6	1.0	1.5	2.5	4.0	6.0	9.0	13.0	19.0	28.0	41.0	1.4
549.	132	0	7	19	48	121	231	462	903	1768	3413	6826	13651	27302	54604	109208	132
	.9	0	.0	.1	.1	.2	.4	.7	1.3	2.6	5.2	10.4	20.8	41.6	83.2	166.4	.8
581.	10540	388	1168	3504	10512	31536	95608	286824	860472	2581416	7744288	23232864	70702752	212108256	636324768	1908974208	10540
	7.8	.3	.9	2.7	8.1	24.3	72.9	218.7	656.1	1968.3	5904.9	17714.7	53144.1	159432.3	478296.9	1434890.7	7.8
584.	1844	56	146	375	963	2468	6314	16385	42101	109062	280151	720392	1853014	4767735	12219888	31550161	1844
	4.2	.1	.3	.8	2.1	5.4	13.8	35.5	90.7	232.7	595.2	1521.5	3912.8	9952.3	25481.1	65175.4	4.2
611.	20336	163	789	2519	8160	26313	85041	278130	900413	2941301	9594130	31451301	102451301	334951301	109651301	358951301	20336
	18.8	.2	.7	2.2	7.2	22.8	74.4	229.2	719.2	2218.2	6816.2	20850.2	64550.2	198650.2	615950.2	1907850.2	18.8
614.	1014	17	80	191	411	1071	2761	7111	18711	48611	125111	324111	831111	2141111	5511111	14111111	1014
	7.4	.1	.6	1.5	3.3	8.5	21.5	55.5	141.5	361.5	911.5	2311.5	5911.5	15111.5	39111.5	99111.5	7.4
619.	154	42	99	2519	6419	16619	42619	109619	280119	720119	1853119	4767119	12219119	31550119	79677119	20336119	154
	1.1	.3	.7	19.8	51.8	132.8	341.8	871.8	2211.8	5711.8	14611.8	37111.8	94111.8	241111.8	611111.8	1561111.8	1.1
679.	17	10	1475	0	74	214	2603	8	33	113	4214	153	113	9214	33	113	17
	.2	.1	16.0	0	.8	2.3	28.3	.1	.4	1.2	15.2	.5	.5	1.2	.5	1.2	.2
689.	17	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	17
	6.0	0	0	0	.4	.4	0	0	0	0	0	0	0	0	0	0	6.0
719.	60	12	60	2	258	4	931	4	11	1789	4	11	1789	4	11	1789	60
	.3	.1	.3	.0	1.2	.0	4.2	.0	.0	15.1	.0	.0	15.1	.0	.0	50.7	.3
849.	106	16	24	1	17	64	23	9	66	43	2035	1	66	43	2035	1	106
	5.3	.8	1.2	.0	.8	3.1	1.1	.4	4.2	2.1	86.1	.1	4.2	2.1	86.1	.1	5.3
COLUMN TOTAL	394293	6218	9057	5304	9406	13386	10082	5068	19244	21060	2039530	19244	21060	2039530	19244	21060	394293
	19.3	.4	.4	.3	.5	.7	4.9	.2	.9	1.0	100.0	.9	1.0	100.0	.9	1.0	19.3

(CONTINUED)

TABLE C-1.1. (Continued)

***** C R O S S T A B U L A T I O N O F *****
 PC ***** BY BASE ***** PAGE 14 OF 16 *****

PC	BASE																ROM TOTAL
	287.I	288.I	289.I	291.I	292.I	293.I	294.I	295.I	296.I	297.I	298.I	299.I	300.I	301.I	302.I	303.I	
539.	75 I .3 I	132 I .4 I	140 I .5 I	387 I 1.3 I	92 I .3 I	81 I .3 I	451 I 1.5 I	366 I 1.2 I	675 I 2.3 I	63 I .3 I	29479						
549.	5 I .0 I	2804 I 18.1 I	12 I .1 I	159 I 1.0 I	4 I .0 I	0 I .0 I	8 I .1 I	1 I .0 I	344 I 2.2 I	0 I .0 I	15516						
581.	977 I .7 I	554 I .4 I	1329 I 1.0 I	3830 I 2.8 I	187 I .1 I	438 I .3 I	2171 I 1.6 I	1471 I 1.1 I	17499 I 13.0 I	911 I .7 I	134520						
584.	167 I .4 I	146 I .3 I	273 I .6 I	495 I 1.1 I	52 I .1 I	71 I .2 I	398 I .9 I	631 I 1.4 I	2315 I 5.3 I	220 I .5 I	43789						
611.	222 I .2 I	709 I .7 I	1322 I 1.2 I	1920 I 1.8 I	284 I .3 I	482 I .4 I	895 I .8 I	1055 I 1.0 I	32754 I 30.3 I	339 I .3 I	108099						
614.	37 I .3 I	83 I .6 I	74 I .5 I	296 I 2.2 I	6 I .0 I	39 I .3 I	137 I 1.0 I	150 I 1.1 I	3126 I 22.9 I	265 I 1.9 I	13679						
619.	25 I .2 I	45 I .3 I	63 I .5 I	103 I .8 I	540 I 4.0 I	55 I .4 I	76 I .6 I	112 I .8 I	804 I 6.0 I	35 I .3 I	13427						
679.	47 I .5 I	24 I .3 I	65 I .7 I	95 I .6 I	13 I .1 I	17 I .2 I	16 I .2 I	11 I .1 I	33 I .4 I	66 I .7 I	9214						
689.	0 I .0 I	5 I 1.8 I	0 I .0 I	0 I .0 I	0 I .0 I	0 I .0 I	0 I .0 I	0 I .0 I	0 I .0 I	0 I .0 I	285						
719.	6 I .0 I	123 I .6 I	1 I .0 I	65 I .3 I	14 I .1 I	0 I .0 I	42 I .2 I	1 I .0 I	12174 I 55.0 I	1 I .0 I	22148						
849.	17 I .8 I	59 I 2.9 I	16 I .8 I	42 I 2.1 I	0 I .0 I	8 I .4 I	26 I 1.3 I	52 I 2.6 I	27 I 1.3 I	24 I 1.2 I	2035						
COLUMN TOTAL	5761 .3	13878 .7	14567 .7	32948 1.6	2700 .1	7266 .4	26037 1.3	18322 .9	199304 9.8	9556 .5	2039530 100.0						

(CONTINUED)

TABLE C-1.1. (Continued)

***** CROSS TABULATION OF *****
 PC BY BASE ***** PAGE 15 OF 16

PC	BASE										ROM TOTAL
	298.I	299.I	364.I	482.I	500.I	501.I	502.I	503.I	504.I	505.I	
539.	215 I	88 I	20 I	12 I	2 I	334 I	274 I	71 I	570 I	207 I	29479
	.7 I	.3 I	.1 I	.0 I	.0 I	1.1 I	.9 I	.2 I	1.9 I	.7 I	1.4
549.	4 I	0 I	20 I	0 I	0 I	93 I	1 I	1 I	6 I	17 I	15516
	.0 I	0 I	.1 I	0 I	0 I	.6 I	.0 I	.0 I	.0 I	.1 I	.8
581.	913 I	780 I	128 I	184 I	177 I	4197 I	3484 I	942 I	3825 I	1199 I	1134520
	.7 I	.6 I	.1 I	.1 I	.1 I	3.1 I	2.6 I	.7 I	2.8 I	.9 I	6.6
584.	319 I	306 I	14 I	14 I	30 I	3095 I	2610 I	1691 I	3534 I	537 I	43769
	.7 I	.7 I	.0 I	.0 I	.1 I	7.1 I	6.0 I	3.9 I	8.1 I	1.2 I	2.1
611.	1491 I	462 I	604 I	269 I	122 I	2457 I	1167 I	712 I	1383 I	583 I	110099
	1.4 I	.4 I	.6 I	.2 I	.1 I	2.3 I	1.1 I	.7 I	1.3 I	.5 I	5.3
614.	60 I	116 I	14 I	10 I	6 I	243 I	156 I	78 I	467 I	159 I	13679
	.4 I	.8 I	.1 I	.1 I	.0 I	1.8 I	1.1 I	.6 I	3.4 I	1.2 I	.7
619.	219 I	45 I	700 I	8 I	1 I	214 I	104 I	157 I	472 I	129 I	13427
	1.6 I	.3 I	5.2 I	.1 I	.0 I	1.6 I	.8 I	1.2 I	3.5 I	1.0 I	.7
679.	10 I	0 I	13 I	205 I	4 I	225 I	407 I	75 I	114 I	454 I	9214
	.1 I	0 I	.1 I	2.2 I	.0 I	2.4 I	4.4 I	.8 I	1.2 I	4.9 I	.5
689.	1 I	0 I	0 I	0 I	0 I	2 I	1 I	0 I	4 I	1 I	285
	.4 I	0 I	0 I	0 I	0 I	.7 I	.4 I	0 I	1.4 I	.4 I	.0
719.	81 I	0 I	6 I	21 I	0 I	1558 I	105 I	369 I	617 I	555 I	22148
	.4 I	0 I	.0 I	.1 I	0 I	7.0 I	.5 I	1.7 I	2.8 I	2.5 I	1.1
849.	16 I	13 I	0 I	4 I	6 I	125 I	61 I	25 I	42 I	51 I	2035
	.8 I	.6 I	0 I	.2 I	.3 I	6.1 I	3.0 I	1.2 I	2.1 I	2.5 I	.1
COLUMN TOTAL	12499	8641	2249	1637	1138	36552	34005	14088	46679	14448	2039530
TOTAL	.6	.4	.1	.1	.1	1.8	1.7	.7	2.3	.7	100.0

(CONTINUED)

TABLE C-1.1. (Continued)

***** C R O S S T A B U L A T I O N O F *****
 PC BY BASE ***** PAGE 16 OF 16

PC	506.I	507.I	508.I	511.I	512.I	513.I	519.I	522.I	524.I	861.I	ROM TOTAL
539.	15 I	89 I	123 I	14 I	135 I	1 I	20 I	317 I	46 I	21 I	29479
	.1 I	.3 I	.4 I	.0 I	.5 I	.0 I	.1 I	1.1 I	.2 I	.1 I	1.4
549.	0 I	0 I	1 I	2 I	216 I	0 I	133 I	0 I	29 I	0 I	15516
	0 I	0 I	.0 I	.0 I	1.4 I	0 I	.9 I	0 I	.2 I	0 I	.8
581.	661 I	721 I	1903 I	767 I	1303 I	1 I	864 I	1730 I	840 I	184 I	1134520
	.5 I	.5 I	1.4 I	.6 I	1.0 I	.0 I	.6 I	1.3 I	.6 I	.1 I	6.6
584.	73 I	333 I	1160 I	593 I	620 I	1 I	295 I	1442 I	161 I	17 I	43769
	.2 I	.8 I	2.6 I	1.4 I	1.4 I	.0 I	.7 I	3.3 I	.4 I	.0 I	2.1
611.	161 I	260 I	496 I	231 I	667 I	21 I	450 I	573 I	289 I	582 I	1108099
	.1 I	.2 I	.5 I	.2 I	.6 I	.0 I	.4 I	.5 I	.3 I	.5 I	5.3
614.	13 I	74 I	91 I	16 I	78 I	0 I	26 I	127 I	122 I	12 I	13679
	.1 I	.5 I	.7 I	.1 I	.6 I	0 I	.2 I	.9 I	.9 I	.1 I	.7
619.	29 I	59 I	93 I	65 I	75 I	25 I	49 I	115 I	31 I	20 I	13427
	.2 I	.4 I	.7 I	.5 I	.6 I	.2 I	.4 I	.9 I	.2 I	.1 I	.7
679.	10 I	41 I	13 I	20 I	21 I	0 I	0 I	26 I	20 I	13 I	9214
	.1 I	.4 I	.1 I	.2 I	.2 I	0 I	0 I	.3 I	.2 I	.1 I	.5
689.	9 I	0 I	9 I	5 I	1 I	0 I	0 I	1 I	0 I	0 I	205
	3.2 I	0 I	3.2 I	1.8 I	.4 I	0 I	0 I	.4 I	0 I	0 I	.0
719.	1 I	27 I	2 I	3 I	26 I	0 I	15 I	1666 I	1 I	2 I	22140
	.0 I	.1 I	.0 I	.0 I	.1 I	0 I	.1 I	7.5 I	.0 I	.0 I	1.1
849.	1 I	15 I	47 I	6 I	15 I	0 I	1 I	28 I	5 I	2 I	2035
	.0 I	.7 I	2.3 I	.3 I	.7 I	0 I	.0 I	1.4 I	.2 I	.1 I	.1
COLUMN TOTAL	2701	6290	15781	3546	12281	76	5079	19811	7023	3033	2039530
	.1	.4	.8	.2	.6	.0	.2	1.0	.3	.1	100.0

TABLE C-1.2.

P/C	GENERIC NAME	PRODUCT CODE INDEX	NATIONAL SUPPLY CLASSES	ERRC
104	ARMS AND FIRE CONTROL PARTS	10XX 12XX		XF/B
121	FIRE CONTROL COMPONENTS	12XX		XD
141	MISSILE COMPONENTS	14XX 18XX		XD
144	MISSILE PARTS	14XX 18XX		XF/B
153	AIRCRAFT STRUKTURKAL COMPONENTS	1560 16XX		XD
154	AIRCRAFT STRUCTURAL PARTS	1560 16XX 2010 2840 2845 2915 2925 2935 2945 2995		XF/B
161	AIRCRAFT ENGINES AND MAJOR COMPONENTS	2010 2840 2845 2915 2925 2935 2950		XD
179	GROUND SUPPORT EQUIPMENT AND PARTS	17XX		ALL
269	TIRES AND TUBES	26XX		ALL
289	NON AIRCRAFT ENGINES, COMPONENTS, AND PARTS	2815 2820 2825 2830 2835 2850 2895		ALL
299	AUTOMOTIVE PARTS AND COMPONENTS	25XX 2640 2805 2910 2920 2930 2940 2990 30XX		ALL
491	SHOP EQUIPMENT AND INDUSTRIAL MACHINES	32XX 34XX 35XX 36XX 37XX 39XX 41XX 42XX 43XX 44XX 45XX 46XX 49XX		XD
494	SHOP AND INDUSTRIAL PARTS AND CONSUMABLES	32XX 34XX 35XX 36XX 37XX 39XX 41XX 42XX 43XX 44XX 45XX 46XX 49XX		XF/B
539	HARDWARE AND RELATED ITEMS	31XX 40XX 47XX 48XX 51XX 52XX 53XX		ALL
549	CONSTRUCTION AND PACKAGING MATERIALS	54XX 55XX 56XX 01XX 93XX 96XX		ALL
581	COMMUNICATIONS EQUIPMENT AND COMPONENTS	58XX		XD
584	COMMUNICATIONS EQUIPMENT PARTS	58XX		XF/B
591	COMPUTER AND ELECTRONIC COMPONENTS	59XX 70XX		XD
594	COMPUTER AND ELECTRONIC PARTS	59XX 70XX		XF/B
611	ELECTRICAL EQUIPMENT AND COMPONENTS	6105 6110 6115 6120 6125 6130 6150 62XX 63XX 66XX		XD
614	ELECTRICAL EQUIPMENT PARTS	6105 6110 6115 6120 6125 6130 6150 62XX 63XX 66XX		XF/B
619	BATTERIES, FUEL CELLS, ETC	6116 6135 6140 6145		ALL
679	PHOTO EQUIPMENT AND SUPPLIES	67XX		ALL
669	CHEMICALS, PAINTS, AND PETROLEUM PRODUCTS	68XX 7930 80XX 91XX		ALL
719	HOUSE AND OFFICE EQUIPMENT AND SUPPLIES	71XX 7240 73XX 74XX 75XX 76XX 7910 7920		ALL
849	CLOTHING AND TEXTILES	83XX 84XX 7210 7220 7230 7290		ALL

TABLE C-1.3.

BASE	BASE IDENTIFICATION		BASE	COORDINATES		MDS	AAD	COORDINATES	
	MDS	AAD		MDS	AAD				
MOODY	1311	4830	3059N	9311W	VANCE	2732	3029	3621N	9755W
RICHARDS	1611	3100	3851N	9433W	ALTUS	2741	4419	3440N	9316W
MCGUIRE	2011	4484	4002N	7435W	CARSWELL	2751	4689	3247N	9726W
PEASE	2021	4623	4306N	7049W	SHEPPARD	2752	3020	3358N	9830W
LORING	2041	4678	4657N	6754W	KELLY	2771	2059	2927N	9836W
HANSCOM	2051	2620	4228N	7117W	BROOKS	2772	2857	2926N	9830W
PLATTSBURG	2121	4615	4440N	7328W	LACKLAND	2772	3047	2927N	9837W
GRIFFIS	2131	4616	4314N	7546W	RANDOLPH	2772	3089	2932N	9816W
DOVER	2141	4497	3908N	7528W	ENGLAND	2781	4805	3120N	9233W
ANDREWS	2211	4425	3848N	7652W	BERGSTROM	2791	4857	3012N	9740W
LANELEY	2221	4800	3705N	7621W	LAUGHLIN	2792	3099	2922N	10047W
SEYMOUR-JOHNSON	2231	4809	3510N	7800W	F E WARREN	2801	4613	4106N	10451W
SHAM	2241	4803	3358N	8029W	PETERSON	2811	2500	3849N	10444W
MYRTLE BEACH	2242	4806	3343N	7856W	ENT	2812	2505	3850N	10443W
CHARLESTON	2251	4418	3248N	7957W	LOHRY	2812	3059	3943N	10501W
POPE	2261	4488	3450N	7900W	MOUNTAIN HOME	2821	4897	4303N	11552W
DOBBS	2311	6703	3354N	8432W	HILL	2831	2027	4107N	11201W
ROBINS	2321	2065	3237N	8336W	KIRTLAND	2841	4469	3502N	10637W
TYNDALL	2331	2586	3008N	8539W	LUKE	2851	4887	3326N	11221W
EGLIN	2341	2603	3029N	8630W	WILLIAMS	2852	3044	3515N	11211W
HOMESTEAD	2351	4829	2329N	8023W	CAVIS MONTHAN	2861	4884	3211N	11053W
MACCILL	2361	4814	2751N	8229W	CANNON	2871	4855	3423N	10310W
PATRICK	2371	2829	2815N	8036W	HOLLOWAN	2881	4801	3251N	10605W
MAXWELL	2381	3300	3223N	8621W	NELLIS	2891	4852	3614N	11502W
KEESLER	2391	3010	3024N	8853W	NORTON	2911	4448	3406N	11715W
COLUMBUS	2392	3022	3316N	8826W	MARCH	2912	4664	3354N	11715W
RICKENBACKER	2411	4601	3948N	8256W	GEORGE	2912	4812	3435N	11722W
NEWARK	2412	2006	4004N	8224W	VANDENBERG	2921	4610	3443N	12033W
WRIGHT-PATT	2421	2300	3999N	8403W	BLITHEVILLE	2922	4634	3557N	9957W
GRISSOM	2431	4654	4040N	8608W	EDWARDS	2931	2805	3454N	11752W
HURTSMITH	2441	4585	4427N	8323W	TRAVIS	2941	4427	3816N	12155W
K I SAWYER	2451	4515	4620N	8720W	CASTLE	2951	4672	3722N	12034W
KINCHELOE	2452	4603	4615N	8428W	MCCLELLAN	2961	2049	3839N	12123W
ELLSWORTH	2511	4690	4408N	10305W	MATHER	2962	3067	3834N	12118W
GRAND FORKS	2521	4659	4757N	9725W	BEALE	2971	4648	3908N	12126W
DULUTH	2522	2554	4647N	9206W	MUCHORO	2981	4479	4708N	12223W
MINOT	2531	4528	4826N	10121W	FAIRCHILD	2991	4620	4738N	11738W
MALMSTROM	2551	4626	4730N	11117W	WHITEMAN	3641	4625	3844N	9334W
OFFUTT	2611	4600	4108N	9556W	KINGSLEY	4821	2560	4210N	12145W
MCCONNELL	2621	4621	3738N	9715W	KAMEY	5001	9575	1830N	6700W
DYESS	2701	4661	3251N	9951W	ALL BASES	5011	0501		
HEBB	2702	3005	3214N	10131W	NORVENICH	5012	5514	6200N	1000E
REESE	2702	3060	3336N	10202W	LAHK	5012	5527	4820N	752E
BARNSDALE	2711	4608	3230N	9343W	ZWEIBRUCKEN	5012	5529	4915N	721E
LITTLE ROCK	2721	4460	3455N	9210W	ANEHORN	5012	5545		
TINKER	2731	2037	3525N	9724W	UKEMGARTEN	5012	5549	4721N	821E

TABLE C-1.3. (Continued)

BASE	BASE IDENTIFICATION COORDINATES		IBY DODMDS CUSTOMER NUMBER) BASE		MDS	AAD	COORDINATES
	MDS	AAD	IBY	DODMDS			
BOUDA	5012	5550	6717N	1423E			
EINDHOVEN	5012	5556	5126N	520E			
ERDING	5012	5557	4818N	1154E			
FLESLAND	5012	5559					
GILZ RYEN	5012	5561	5133N	457E			
GARGERHOEN	5012	5562	6013N	1106E			
INGOLSTADT	5012	5568	4946N	1127E			
KARUP	5012	5569	5618N	910E			
KAUFBUEREN	5012	5572	4793N	1037E			
LECHFELD	5012	5577	4810N	1050E			
LEIPHEIM	5012	5579	4827N	1013E			
SOLA	5012	5580	5953N	536E			
NOKDOLZ	5012	5582					
RYGGE	5012	5590	5923N	1043E			
SOLLINGEN	5012	5593	5205N	1055E			
SEMBACK	5012	5604	4927N	1055E			
BLTEURG	5012	5606	4958N	631E			
KAMSTEIN	5012	5612	4927N	733E			
RHEINMAIN	5012	5615	4945N	1100E			
SPANGDAHLEM	5012	5621	5100N	900E			
TEMPLEHOF	5012	5622	5229N	1325E			
SJESTERBERG	5012	5603	5207N	517E			
ALL BASES	5021	0502					
MILDEN HALL	5022	5518	5221N	0030E			
UPPER HEYFORD	5022	5537	5150N	132M			
BASLOMBE	5022	5551					
COLLISWALL	5022	5554	5244N	122E			
FINNINGLEY	5022	5558	5330N	100W			
FAIRFORD	5022	5560	5144N	147W			
LAKENHEATH	5022	5537	5225N	0031E			
WADDINGTON	5022	5538	5227N	031W			
WITTERING	5022	5559					
ALCONBURY	5022	5643	5219N	0012W			
BENTWATERS	5022	5644	5225N	32W			
CHICKSANDS	5022	5650	5210N	030W			
ALL BASES	5031	0503					
KUNSAN	5032	5284	3558N	1264E			
OSAH	5032	5294	3711N	12704E			
ALL BASES	5041	0504					
SUNG SHAN	5042	5225					
SHU LIN KOU	5042	5247	2325N	12110E			
CHING CHUAN KAN	5042	5266	2430N	12130E			
KADENA	5051	5270	2822N	12745E			
ALL BASES	5061	0506					
MISAWA	5062	5205	4045N	14123E			
YOKOTA	5062	5205	3545N	13921E			
BOUDA	5071	5260					
ALL BASES	5081	0508					
ELMENDORF	5082	5000					
EIELSON	5082	5004					
KING SALMON	5082	5007					
SHEMYA	5082	5040					
GALENA	5082	5060					
ALL BASES	5111	0511					
CIGLI	5112	5531					
BATMAN	5112	5552					
TANAGRA	5112	5565					
MERZEFON	5112	5581					
MURTEO	5112	5583					
UALIKESIR	5112	5584					
NEA ANKHIALOS	5112	5586					
SIVRISEHIR	5112	5592					
TYMBAKION	5112	5595					
INCIRLIK	5112	5685					
ATHENS	5112	5687					
LARISSA	5112	5692					
ESKISEHIR	5112	5693					
KARAMURSEL	5112	5695					
IRAKLION	5112	5699					
ALL BASES	5121	0512					
LAJES	5122	4400					
GHEDI	5122	5512					
BRINDISI	5122	5517					
GIOIA DEL COLLE	5122	5564					
ZARAGOZA	5122	5571					
TORREJON	5122	5573					
MORON	5122	5575					
PIACENZA	5122	5588					
AVIANO	5122	5682					
HOWARD	5131	4810					
KEFLAVIK	5192	2647					
GOOSE	5221	0522					
ALL BASES	5222	5274					
GLARK	5222	5250					
JOHNSON ISLAND	5222	5274					
ANDERSON	5241	4415					
CRAIG	8311	3057					
ALL BASES	8611	0861					
CHANUTE	8612	3018					
SCOTT	8612	4407					

ATTACHMENT C-2MATERIAL DISTRIBUTION DATA LISTING (PRODUCT CODE BY MODE)

This attachment contains a crosstabulation arranged numerically by product code and represents first mode used to ship each commodity to/from all DODMDS customers (Table C-2.1). The data in this report do not include the percentage or amount of material shipped by local transportation (government vehicle). The amount of material is quantified in hundred weights and the percentiles relate to the quantities displayed. NOTE: Local transportation data was eliminated from this tabulation to provide a more realistic relationship of other modes to commodities involved. Initial tabulations of product codes by mode included local transportation. However, it was eliminated because of the large figure it represented; when used, each product code reflected less than 1 percent of the commodity being shipped by most of the other modes.

The modes represented are:

LTL	less than truck load
TL	truckload
CL	carload
CA	commercial air
SSP	surface small parcel
ASP	air small parcel
LOGAIR	LOGAIR
MAC	military airlift
MSC	military sealift

Table C-2.2 provides an index of product groups related to the product codes used in Table C-2.1.

TABLE C-2.1.

***** CROSSTABULATION OF *****
 PC ***** BY MODE ***** PAGE 1 OF 2

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MODE	PC	COUNT	ILTL	YL	GL	CA	SSP	ASP	LOG AIR	MAC	MSC	ROW TOTAL
I	I	1.1	2.1	3.1	4.1	5.1	6.1	7.1	8.1	9.1		
I	I	2842	195	1	16	618	140	1518	8	0	0	5337
I	I	53.2	3.7	.0	.3	11.6	2.6	28.4	.1	0	0	.4
I	I	967	307	0	181	440	317	12548	26	0	0	14787
I	I	6.5	2.1	.0	1.2	3.0	2.1	84.9	.2	0	0	1.2
I	I	4702	4394	234	32	198	420	19259	81	387	307	29707
I	I	15.8	14.8	.8	.1	.7	1.4	64.8	.3	1.3	1.3	2.4
I	I	965	4	0	3	269	75	920	0	0	0	2237
I	I	43.1	.2	.0	.1	12.0	3.4	41.1	0	0	0	.2
I	I	29335	17107	1637	841	2450	1244	84692	1865	3	139173	
I	I	21.1	12.3	1.2	.6	1.8	.9	60.9	1.3	.0	.0	11.0
I	I	44248	26001	9	388	10129	1697	31428	1609	0	0	115509
I	I	38.3	22.5	.0	.3	8.8	1.5	27.2	1.4	.0	.0	9.1
I	I	62553	61944	1	373	1458	862	1175271	1758	0	0	304221
I	I	20.6	20.4	.0	.1	.5	.3	57.6	.6	0	0	24.1
I	I	28405	12460	616	90	1955	720	16313	2978	601	601	64136
I	I	44.3	19.4	1.0	.1	3.0	1.1	25.4	4.6	.9	.9	5.1
I	I	0	0	0	0	73	1	13	0	0	0	87
I	I	0	0	0	0	84.5	.7	14.8	0	0	0	.0
I	I	17172	4143	4260	15	307	61	64904	9	0	0	90870
I	I	18.9	4.6	4.7	.0	.3	.1	71.4	.0	0	0	7.2
I	I	3516	1921	0	4	81	44	6584	24	0	0	14174
I	I	24.8	13.6	0	.0	.6	.3	60.6	.2	0	0	1.1
I	I	10113	5226	1	63	621	134	19462	25	0	0	35704
I	I	28.3	14.6	.0	.2	1.7	.5	54.5	.1	0	0	2.8
I	I	42993	22657	1036	338	3273	1510	25249	3742	934	934	1101732
I	I	42.3	22.3	1.0	.3	3.2	1.5	24.8	3.7	.9	.9	8.1
I	I	5262	2442	2	87	1195	426	5898	246	98	98	15656
I	I	33.6	15.6	.0	.6	7.6	2.7	37.7	1.6	.6	.6	1.2
I	I	352682	21923	13211	5493	40569	17127	610729	22947	2935	2935	1263616
I	I	26.3	17.2	1.0	.4	3.2	1.4	48.3	1.8	.2	.2	100.0

(CONTINUED)

TABLE C-2.1. (Continued)

***** C R O S S T A B U L A T I O N O F *****
 PC ***** BY MODE ***** PAGE 2 OF 2 *****

MODE	TL	CL	CA	SSP	ASP	LOG AIR	MAC	MSC	ROM TOTAL	
539.	1.1	2.1	3.1	4.1	5.1	6.1	7.1	8.1	9.1	
549.	1.1	2.1	3.1	4.1	5.1	6.1	7.1	8.1	9.1	
581.	1.1	2.1	3.1	4.1	5.1	6.1	7.1	8.1	9.1	
584.	1.1	2.1	3.1	4.1	5.1	6.1	7.1	8.1	9.1	
611.	1.1	2.1	3.1	4.1	5.1	6.1	7.1	8.1	9.1	
614.	1.1	2.1	3.1	4.1	5.1	6.1	7.1	8.1	9.1	
619.	1.1	2.1	3.1	4.1	5.1	6.1	7.1	8.1	9.1	
679.	1.1	2.1	3.1	4.1	5.1	6.1	7.1	8.1	9.1	
689.	1.1	2.1	3.1	4.1	5.1	6.1	7.1	8.1	9.1	
719.	1.1	2.1	3.1	4.1	5.1	6.1	7.1	8.1	9.1	
849.	1.1	2.1	3.1	4.1	5.1	6.1	7.1	8.1	9.1	
COLUMN TOTAL	332682	217923	13211	5493	40569	17127	610729	22947	2935	1263616
	26.3	17.2	1.0	.4	3.2	1.4	46.3	1.8	.2	100.0

TABLE C-2.2.

PRODUCT CODE INDEX		NATIONAL SUPPLY CLASSES		ERRC
P/C	GENERIC NAME			
104	ARMS AND FIRE CONTROL PARTS	10XX 12XX		XF/B
121	FIRE CONTROL COMPONENTS	12XX		XO
141	MISSILE COMPONENTS	14XX 10XX		XO
144	MISSILE PARTS	14XX 18XX		XF/B
153	AIRCRAFT STRUCTURAL COMPONENTS	1560 16XX		XO
154	AIRCRAFT STRUCTURAL PARTS	1560 16XX 2810 2840 2845 2915 2925 2935 2945 2995		XF/B
161	AIRCRAFT ENGINES AND MAJOR COMPONENTS	2810 2840 2845 2915 2925 2935 2950		XO
179	GROUND SUPPORT EQUIPMENT AND PARTS	17XX		ALL
269	TIRES AND TUBES	26XX		ALL
289	NON AIRCRAFT ENGINES, COMPONENTS, AND PARTS	2815 2820 2825 2830 2835 2850 2895		ALL
299	AUTOMOTIVE PARTS AND COMPONENTS	25XX 2640 2805 2910 2920 2930 2940 2990 30XX		ALL
491	SHOP EQUIPMENT AND INDUSTRIAL MACHINES	32XX 34XX 35XX 36XX 37XX 39XX 41XX 42XX 43XX 44XX 45XX 46XX 49XX		XO
494	SHOP AND INDUSTRIAL PARTS AND CONSUMABLES	32XX 34XX 35XX 36XX 37XX 39XX 41XX 42XX 43XX 44XX 45XX 46XX 49XX		XF/B
539	HARDWARE AND RELATED ITEMS	31XX 40XX 47XX 48XX 51XX 52XX 53XX		ALL
549	CONSTRUCTION AND PACKAGING MATERIALS	54XX 55XX 56XX 81XX 93XX 96XX		ALL
561	COMMUNICATIONS EQUIPMENT AND COMPONENTS	58XX		XO
584	COMMUNICATIONS EQUIPMENT PARTS	58XX		XF/B
591	COMPUTER AND ELECTRONIC COMPONENTS	59XX 70XX		XO
594	COMPUTER AND ELECTRONIC PARTS	59XX 70XX		XF/B
611	ELECTRICAL EQUIPMENT AND COMPONENTS	6105 6110 6115 6120 6125 6130 6150 62XX 63XX 66XX		XO
614	ELECTRICAL EQUIPMENT PARTS	6105 6110 6115 6120 6125 6130 6150 62XX 63XX 66XX		XF/B
619	BATTERIES, FUEL CELLS, ETC	6116 6135 6140 6145		ALL
679	PHOTO EQUIPMENT AND SUPPLIES	67XX		ALL
689	CHEMICALS, PAINTS, AND PETROLEUM PRODUCTS	68XX 7930 80XX 91XX		ALL
719	HOUSE AND OFFICE EQUIPMENT AND SUPPLIES	71XX 7240 73XX 74XX 75XX 76XX 7910 7920		ALL
849	CLOTHING AND TEXTILES	83XX 84XX 7210 7220 7230 7290		ALL

ATTACHMENT C-3MATERIAL DISTRIBUTION DATA LISTING (DISTRIBUTION OF COMMODITIES (PERCENT))

This attachment contains a matrix arranged numerically by product code and reflects the percentage of each commodity (by weight) shipped by mode and the percentage of each commodity (by weight) shipped overseas. (Table C-3.1)

The following headings were used for mode and overseas locations.

Transportation Mode

LTL = less than truck load
TL = truck load
CL = car load
SP = surface and air small parcel
L/A = LOGAIR
MAC = military airlift
MISC = all other modes

Overseas Shipments

PR = Puerto Rico
NEUR = Northern Europe
GB = Great Britain
KOR = Korea
TIA = Taiwan
OKI = Okinawa
JAP = Japan
HI = Hawaii
ALA = Alaska
EMED = Eastern Mediterranean (Greece and east)
WWED = Western Mediterranean (Italy and west)
CZ = Canal Zone
ICE = Iceland
PHIL = Phillipines/South Pacific
Guam = Guam

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Table C-3.2 provides index of product groups related to the product codes used in Table C-3.1.

TABLE C-3.1.

PROD CODE	DISTRIBUTION OF COMMODITIES (PERCENT)										OVERSEA SHIPMENTS										PHIL	GUAM
	LTL	TL	CL	SP	L/A	MAC	MISC	P R	NEUR	G B	KOR	TIA	OKI	JAP	HI	ALA	EMED	WMED	C Z	ICE		
104	53.2	3.7	0.0	14.2	28.4	.1	.4	.03	2.55	1.59	1.94	7.03	.58	.07	.10	.30	.20	1.28	0.00	.15	.94	.25
121	6.5	2.1	0.0	5.1	84.9	.2	1.2	.11	.75	.55	.33	5.18	.05	0.00	.31	.19	0.00	.10	0.00	0.00	.16	4.83
141	15.8	14.8	.8	2.1	64.8	.3	1.4	.15	4.63	1.91	4.43	3.80	1.49	0.00	.18	1.10	.42	1.00	0.00	.46	1.49	.01
144	43.1	.2	0.0	15.4	41.1	0.0	0.0	0.00	1.99	1.56	1.36	7.67	.35	0.00	.27	.47	.47	.70	0.00	.12	.55	0.00
153	21.1	12.3	1.2	2.7	60.9	1.3	.5	.11	1.72	1.83	1.19	4.37	1.12	.07	.87	2.73	.14	1.33	.01,	.37	1.30	.69
154	38.3	22.5	0.0	10.3	27.2	1.4	.3	.06	1.17	.84	.36	2.79	.15	.65	.50	.06	.50	.01	.07	1.50	.24	.08
161	20.6	20.4	0.0	.8	57.6	.6	0.0	0.00	.87	1.36	.23	1.14	.30	.05	.17	.23	0.00	.26	0.00	.13	.48	.08
179	40.4	20.3	0.0	3.3	29.3	6.1	.6	.10	4.11	2.66	1.11	1.38	.69	.15	.66	1.16	.17	1.48	0.00	.23	.65	.47
269	18.9	4.6	4.7	.4	71.4	0.0	0.0	.15	2.37	2.01	1.94	4.25	1.85	.15	1.01	.78	.20	.66	0.00	.11	1.55	.87
289	24.8	13.6	0.0	.9	60.6	.2	.1	.06	1.64	1.92	1.05	.97	.62	.51	.21	.91	.08	.52	0.00	.65	1.19	.06
299	28.3	14.6	0.0	2.2	54.5	.1	.3	.02	2.74	2.44	.91	4.68	1.18	.17	.59	1.46	.56	.58	0.00	.82	1.13	.99
491	42.3	22.3	1.0	4.7	24.8	3.7	1.2	.11	1.91	1.85	.84	2.22	.54	.31	.57	1.24	.40	.92	0.00	.20	.70	.55
494	33.6	15.6	0.0	10.3	37.7	1.6	1.2	.04	3.08	2.71	1.17	3.22	.83	.18	.88	1.17	1.09	1.05	0.00	.63	3.45	.83
539	34.2	3.1	0.0	27.8	32.3	1.6	1.0	.01	1.13	.92	.24	1.92	.70	.05	.30	.42	.05	.46	0.00	.07	1.07	.16
549	6.1	31.7	1.0	7.8	12.7	40.5	.2	0.00	.60	.01	.01	.04	.11	0.00	0.00	.01	.01	1.39	0.00	.86	0.00	.19
581	17.4	11.7	.1	8.5	57.9	2.7	1.7	.13	3.10	2.58	.70	2.83	.89	.49	.53	1.41	.57	.96	0.00	.64	1.28	.62
584	26.2	17.5	9.6	10.4	34.8	.8	.7	.07	7.04	5.94	3.85	8.04	1.22	.17	.76	2.64	1.35	1.41	0.00	.67	3.28	.37
591	17.4	11.7	.1	8.5	57.9	2.7	1.7	.13	3.10	2.58	.70	2.83	.89	.49	.53	1.41	.57	.96	0.00	.64	1.28	.62
594	26.2	17.5	9.6	10.4	34.8	.8	.7	.07	7.04	5.94	3.85	8.04	1.22	.17	.76	2.64	1.35	1.41	0.00	.67	3.28	.37
611	32.8	23.0	1.7	3.2	35.7	2.5	1.1	.11	2.27	1.08	.66	1.28	.54	.15	.24	.46	.21	.62	.02	.41	.53	.27
614	19.1	7.2	0.0	19.5	53.5	.1	1.6	.04	1.75	1.12	.56	3.36	1.14	.09	.53	.65	.12	.56	0.00	.19	.91	.88
619	24.4	23.2	0.0	4.4	47.7	0.0	.3	.01	1.59	.77	1.16	3.50	.96	.22	.44	.69	.48	.56	.19	.36	.85	.23
679	31.2	.2	0.0	7.7	59.5	.6	.8	.06	5.20	9.99	.32	3.54	5.09	.06	.13	0.00	0.00	0.00	0.00	.13	.71	.71
689	79.8	0.0	0.0	1.6	18.6	0.0	0.0	0.00	.70	.35	0.00	1.40	.35	3.16	0.00	3.16	1.75	.35	0.00	0.00	0.00	.35
719	17.6	62.4	0.0	6.7	13.2	.1	0.0	0.00	7.03	.47	1.67	2.79	2.51	0.00	.12	.01	.01	.12	0.00	.07	7.52	0.00
849	48.4	1.1	0.0	19.4	30.4	.4	.3	.29	6.02	2.94	1.20	2.02	2.46	.05	.72	2.26	.29	.72	0.00	.05	1.35	.24

TABLE C-3.2.

P/C	GENERIC NAME	PRODUCT CODE INDEX	NATIONAL SUPPLY CLASSES	ERRC
104	ARMS AND FIRE CONTROL PARTS	10XX 12XX		XF/B
121	FIRE CONTROL COMPONENTS	12XX		XD
141	MISSILE COMPONENTS	14XX 18XX		XD
144	MISSILE PARTS	14XX 18XX		XF/B
153	AIRCRAFT STRUCTURAL COMPONENTS	1560 16XX		XD
154	AIRCRAFT STRUCTURAL PARTS	1560 16XX 2010 2040 2045 2915 2925 2935 2945 2995		XF/B
161	AIRCRAFT ENGINES AND MAJOR COMPONENTS	2810 2840 2845 2915 2925 2935 2950		XD
179	GROUND SUPPORT EQUIPMENT AND PARTS	17XX		ALL
269	TIRES AND TUBES	26XX		ALL
289	NON AIRCRAFT ENGINES, COMPONENTS, AND PARTS	2815 2820 2825 2830 2835 2650 2895		ALL
299	AUTOMOTIVE PARTS AND COMPONENTS	25XX 2640 2805 2910 2920 2930 2940 2990 30XX		ALL
491	SHOP EQUIPMENT AND INDUSTRIAL MACHINES	32XX 34XX 35XX 36XX 37XX 39XX 41XX 42XX 43XX 44XX 45XX 46XX 49XX		XD
494	SHOP AND INDUSTRIAL PARTS AND CONSUMABLES	32XX 34XX 35XX 36XX 37XX 39XX 41XX 42XX 43XX 44XX 45XX 46XX 49XX		XF/B
539	HARDWARE AND RELATED ITEMS	31XX 40XX 47XX 48XX 51XX 52XX 53XX		ALL
549	CONSTRUCTION AND PACKAGING MATERIALS	54XX 55XX 56XX 81XX 93XX 96XX		ALL
581	COMMUNICATIONS EQUIPMENT AND COMPONENTS	58XX		XD
584	COMMUNICATIONS EQUIPMENT PARTS	58XX		XF/B
591	COMPUTER AND ELECTRONIC COMPONENTS	59XX 70XX		XD
594	COMPUTER AND ELECTRONIC PARTS	59XX 70XX		XF/B
611	ELECTRICAL EQUIPMENT AND COMPONENTS	6105 6110 6115 6120 6125 6130 6150 62XX 63XX 66XX		XD
614	ELECTRICAL EQUIPMENT PARTS	6105 6110 6115 6120 6125 6130 6150 62XX 63XX 66XX		XF/B
619	BATTERIES, FUEL CELLS, ETC	6116 6135 6140 6145		ALL
679	PHOTO EQUIPMENT AND SUPPLIES	67XX		ALL
689	CHEMICALS, PAINTS, AND PETROLEUM PRODUCTS	68XX 7930 80XX 91XX		ALL
719	HOUSE AND OFFICE EQUIPMENT AND SUPPLIES	71XX 7240 73XX 74XX 75XX 76XX 7910 7920		ALL
849	CLOTHING AND TEXTILES	83XX 84XX 7210 7220 7230 7290		ALL

ATTACHEMENT C-4MATERIAL DISTRIBUTION DATA LISTING (DISTRIBUTION TO DODMOS CUSTOMERS)

This attachment contains a matrix of AF Bases which are grouped alphabetically by Continental US, Alaska, Caribbean, Atlantic/Europe and Pacific. The matrix reflects the total hundred weights shipped to/from each base and the first mode used for each shipment represented as a percentage of total weight. The following modes are depicted.

LTC	Less than truckload
TL	Truck load
CL	Car load
CA	Commercial air
SSP	Surface - small parcel
ASP	Air small parcel
DMA	Domestic Military Air (LOGAIR)
LD	Local transportation (military vehicle)
MAC	Military airlift
MSC	Military sealift
TOTAL	Total weight of shipments in hundred weights

NOTE - DODMDS consolidated customers for their study effort. Where a consolidated customer is shown, the data reflected is a duplicate of the principal DODMDS customer.

TABLE C-4.1. Page 1 of 4

DISTRIBUTION TO OODMDS CUSTOMERS
(INCLUDES CONSOLIDATED CUSTOMERS)

BASE CONTINENTAL US	ACTIVITY	COORDINATES	LTL	TL	CL	SHIPMENT HEIGHTS IN PERCENT TO PER BASE				MAC	MSC TOTAL			
						CA	SSP	ASP	DMA			LD		
ANDREWS	22114425	3848N	7652W	20.9	9.1	0.0	2.4	4.1	.3	60.7	1.8	0.0	0.0	7970
ALTUS	27414419	3440N	9916W	17.5	2.9	0.0	.1	2.7	.2	76.2	.2	0.0	0.0	7072
BARNSDALE	27114608	3230N	9343W	23.0	5.7	0.0	0.0	3.0	1.9	67.4	1.2	.2	0.0	13771
BEALE	29714648	3908N	12126W	24.5	10.4	0.0	.8	3.0	1.9	52.1	6.5	.3	0.0	9644
BERGSTROM	27914857	3012N	9740W	32.2	19.4	0.0	3.3	3.5	1.7	37.8	1.4	0.0	.1	9079
BLYTHEVILLE	29224634	3557N	8957W	32.3	7.4	0.0	.4	7.2	2.3	49.6	.5	0.0	0.0	2714
BROOKS	27722857	2926N	9830W	11.4	15.5	.2	.1	1.2	.4	6.9	62.7	1.0	.3	394790
CANNON	28714855	3423N	10318W	12.6	8.6	0.0	0.0	2.1	.1	76.0	.1	0.0	0.0	5837
CARSHHELL	27514689	3247N	9726W	33.1	13.9	0.0	.7	2.4	.4	46.6	2.2	.1	0.0	56240
CASTLE	29514672	3722N	12034W	23.3	8.3	0.0	0.0	1.8	.4	59.6	5.9	.1	0.0	16890
CHANUTE	86123018	4018N	8809W	35.1	32.8	0.0	3.0	5.2	2.4	18.6	2.3	0.0	0.0	3061
CHARLESTON	22514418	3248N	7957W	23.4	11.4	0.0	0.0	4.0	.1	60.6	0.0	0.0	0.0	10518
CRAIG	83113097	3221N	8659W	42.2	3.3	0.0	6.7	16.8	1.8	28.3	.4	0.0	0.0	2369
COLUMBUS	23923022	3338N	8826W	32.6	6.3	0.0	1.8	7.0	3.7	36.6	11.6	0.0	0.0	3981
DAVIS MONTHAN	28614604	3211N	11053W	23.1	23.3	0.0	0.0	2.0	.4	50.5	.2	0.0	0.0	21460
DOBBS	23116703	3354N	8432W	19.8	27.1	22.5	.9	2.8	.6	25.7	0.0	0.0	0.0	11548
DOVER	21414497	3908N	7528W	17.2	6.0	0.0	.6	2.1	.6	72.8	.2	0.0	0.0	14097
DULUTH	25222554	4647N	9206W	19.1	12.1	1.0	.2	3.9	.7	62.7	0.0	0.0	0.0	8863
DYESS	27014661	3225N	9951W	37.1	8.3	0.0	.1	4.5	.8	48.0	.7	0.0	0.0	14950
EDWARDS	29312805	3454N	11752W	27.6	15.4	1.5	.1	4.1	2.0	44.2	3.6	1.1	0.0	7619
EGLIN	23412603	3029N	8630W	25.3	14.8	1.2	0.0	2.7	.3	52.2	2.6	.5	0.0	16040
ELLSWORTH	25114690	4408N	10305W	20.8	5.8	0.0	0.0	1.7	.1	71.2	0.0	0.0	0.0	9289
ENGLAND	27814805	3120N	9233W	29.4	13.8	0.0	0.0	.9	.1	55.5	0.0	0.0	0.0	8583
ENT	28122505	3850N	10449W	28.8	10.4	0.0	1.7	4.3	1.3	50.4	2.4	0.0	0.0	9497
F E WARREN	28014613	4108N	10451W	17.3	16.2	1.4	.1	1.7	2.4	60.6	0.0	0.0	0.0	5316
FAIRCHILD	29514620	4738N	11738W	26.5	6.6	0.0	.1	3.4	.6	61.8	.6	0.0	0.0	8988
GEORGE	29124812	3435N	11722W	29.0	7.8	.1	.8	3.1	1.5	53.8	3.2	.2	.1	34072
GRAND FORKS	25214659	4757N	9725W	19.1	12.1	1.0	.2	3.9	.7	62.7	0.0	0.0	0.0	8863
GRIFFIS	21314616	4314N	7546W	23.7	7.5	0.0	.2	1.7	.7	65.3	.2	.1	0.0	13951
GRISSOM	24314654	4304N	8608W	24.6	8.9	0.0	.2	4.2	.7	60.7	.1	.3	0.0	6693
HANSCOM	20512620	4226N	7117W	20.4	15.1	0.0	1.3	4.3	2.0	56.3	0.0	0.0	0.0	4323
HILL	28312027	4107N	11201W	8.9	4.4	.1	0.0	.6	.1	13.9	71.1	.4	.3	108305
HOLLOWAN	28914801	3251N	10605W	20.7	28.1	0.0	.1	1.6	.3	48.6	.3	.1	0.0	14650
HOMESTEAD	23514829	2529N	8023W	15.5	34.8	10.8	.3	1.5	.4	34.4	1.6	.3	0.0	15296
K I SAWYER	24514515	4620N	8720W	24.8	7.1	0.0	0.0	2.7	.1	64.2	.6	.2	0.0	7597
KEESLER	23913010	3024N	8853W	32.6	6.3	0.0	1.8	7.0	3.7	36.6	11.6	0.0	0.0	3981
KELLY	27712059	2927N	9836W	11.4	15.5	.2	.1	1.2	.4	6.9	62.7	1.0	.3	394790
KINCHELOE	24624609	4615N	8428W	24.8	7.1	0.0	0.0	2.7	.1	64.2	.6	.2	0.0	7597
KINGSLEY	48212560	4210N	12145W	48.8	7.8	.1	5.3	6.1	4.3	23.9	3.4	0.0	0.0	1637
KIRTLAND	28414469	3502N	10637W	30.4	17.0	0.0	.8	2.1	.2	49.2	0.0	0.0	0.0	5215
LACKLAND	27723047	2927N	9837W	11.4	15.5	.2	.1	1.2	.4	6.9	62.7	1.0	.3	394790

TABLE C-4.1. (Continued) Page 2 of 4

BASE	ACTIVITY	COORDINATES	SHIPMENT WEIGHTS				IN PERCENT TO PER BASE					MAC	MSC TOTAL
			LTL	TL	CL	CA	SSP	ASP	OMA	LD	MAC		
LANGLY	22214800	3705N 7621W	26.0	9.0	0.0	.7	1.5	.2	61.6	.4	.3	0.0	10582
LAUGHLIN	27923099	2922N 10047W	26.5	6.6	0.0	.1	3.4	.6	61.8	.6	0.0	0.0	8988
LITTLE ROCK	27214460	3455N 9210W	24.1	7.9	0.0	.6	2.8	.4	62.6	.9	.3	0.0	20735
LORING	20414678	4657N 6754W	20.2	14.2	3.2	.6	3.3	1.0	56.8	0.0	0.0	0.0	8471
LOWRY	28123059	3943N 10501W	28.8	10.4	0.0	1.7	4.3	1.3	50.4	2.4	0.0	0.0	9497
LUKE	28514887	3326N 11221W	32.8	11.8	0.0	1.2	3.4	1.5	45.8	.2	2.8	0.0	19769
MACDILL	23614814	2751N 8229W	19.8	11.4	0.0	.6	1.7	.2	65.6	.3	0.0	0.0	9871
MALMSTROM	25514626	4730N 11117W	30.1	8.4	1.1	.1	2.2	.9	56.9	0.0	0.0	0.0	9193
MCCORD	29814479	4708N 12229W	23.8	16.2	4.6	.1	1.9	.4	52.6	0.0	0.0	0.0	12530
MCCLELLAN	29612049	3839N 12123W	13.0	6.3	.2	.1	1.2	.5	12.5	63.8	1.7	.3	199408
MCCONNELL	26214621	3738N 9715W	41.6	15.5	.5	.5	4.3	.5	34.5	.1	1.9	0.0	26557
MARCH	29124664	3354N 11715W	29.0	7.8	.1	.8	3.1	1.5	53.8	3.2	.2	.1	34072
MATHER	29623067	3834N 12118W	13.0	6.3	.2	.1	1.2	.5	12.5	63.8	1.7	.3	199408
MAXWELL	23813300	3223N 8621W	25.5	14.2	0.0	1.2	6.6	3.2	48.7	0.0	0.0	0.0	5781
MCCUIRE	20114484	4002N 7435W	24.0	9.8	0.0	.5	3.3	.9	60.9	0.0	0.0	.1	17177
MINOT	25314528	4826N 10121W	25.2	5.4	0.0	0.0	1.7	.1	67.0	.1	.1	.1	12593
MOODY	13114830	3059N 8311W	33.1	9.7	0.0	.7	8.3	5.1	40.3	2.3	0.0	0.0	2304
MOUNTAIN HOME	23214897	4303N 11522W	21.5	15.6	0.0	.1	2.0	.6	59.3	.2	.3	0.0	13672
MYRTLE BEACH	22424806	3341N 7956W	25.2	14.3	0.0	.3	2.4	1.1	55.8	.4	.2	0.0	20127
NELLIS	28914852	3614N 11502W	25.8	12.3	.8	1.7	2.4	.1	55.3	.4	.9	0.0	14882
NEWARK	24122006	4004N 8224W	33.0	4.4	0.0	3.1	7.6	1.9	49.2	.3	.1	0.0	13174
NORTON	29114448	3406N 11715W	29.0	7.8	.1	.8	3.1	1.5	53.8	3.2	.2	.1	34072
OFFUTT	26114600	4108N 9556W	22.5	2.7	0.0	1.0	3.9	.8	67.9	.8	0.0	0.0	7442
PATRICK	23712829	2815N 8036W	21.2	17.4	0.0	.6	3.7	.4	56.4	0.0	0.0	0.0	2607
PEASE	20214623	4306N 7049W	25.8	10.1	0.0	.2	2.0	.3	61.3	0.0	0.0	0.0	9482
PETERSON	28112500	3849N 10444W	28.8	10.4	0.0	1.7	4.3	1.3	50.4	2.4	0.0	0.0	9497
PLATTSBURG	21214615	4440N 7328W	21.3	4.3	0.0	0.0	1.9	.1	71.7	0.0	.1	0.0	11206
POPE	22614488	3450N 7300W	24.1	7.0	0.0	.8	4.9	3.3	59.3	0.0	.1	0.0	6877
RANDOLPH	27723089	2932N 9816W	11.4	15.5	.2	.1	1.2	.4	6.9	62.7	1.0	.3	394790
REESE	27023060	3336N 10202W	37.1	8.3	0.0	.1	4.5	.8	48.0	.7	0.0	0.0	14950
RICHARDS	16113100	3851N 9433W	46.6	10.5	.3	2.9	6.1	2.9	29.0	.9	0.0	0.0	6161
RICKENBACKER	24114601	3948N 8256W	33.0	4.4	0.0	3.1	7.6	1.9	49.2	.3	.1	0.0	13174
ROBINS	23212065	3237N 8336W	15.3	7.8	.2	0.0	2.1	1.4	22.6	44.2	5.2	.6	103908
SCOTT	86124407	3832N 8952W	35.1	32.3	0.0	3.0	5.2	2.4	18.6	2.3	0.0	0.0	3061
SHAW	22414803	3358N 8029W	25.2	14.3	0.0	.3	2.4	1.1	55.8	.4	.2	0.0	20127
SEYMOUR-JOHNSON	22314809	3510N 7800W	26.4	6.8	0.0	.1	2.2	.2	63.9	0.0	0.0	0.0	13243
SHEPPARD	27523020	3358N 5830W	33.1	13.9	0.0	.7	2.4	.4	46.6	2.2	.1	0.0	56240
TINKER	27312037	3525N 9724W	2.7	2.8	0.0	.1	.4	.1	5.3	88.1	.1	0.0	309804
TRAVIS	29414427	3816N 12155W	16.4	10.0	.4	.2	1.2	.2	69.2	1.3	.2	.2	26195
TYNDALL	23312546	3008N 8539W	28.7	33.5	1.6	0.0	1.7	.2	33.8	.1	0.0	0.0	17157
VANCE	27323029	3621N 9755W	2.7	2.8	0.0	.1	.4	.1	5.3	88.1	.1	0.0	309804
VANDENBERG	29214610	3443N 12033W	32.3	7.4	0.0	.4	7.2	2.3	49.6	.5	0.0	0.0	2714

TABLE C-4.1. (Continued) Page 3 of 4

BASE	TX	ACTIVITY	COORDINATES	SHIPMENT WEIGHTS				IN PERCENT TO PER BASE				MAC	MSC TOTAL
				LTL	TL	CL	CA	SSP	ASP	DMA	LD		
MEBB	MO	27023005	3214N 1031W	37.1	8.3	0.0	.1	4.5	.8	48.0	.7	0.0	14950
WHITEMAN	MO	36414625	3844N 9334W	21.1	6.0	0.0	.1	3.3	.1	69.3	0.0	0.0	2419
WILLIAMS	AZ	28523044	3515N 11211W	32.8	11.8	0.0	1.2	3.4	1.5	45.8	.2	2.8	0.0 19769
WRIGHT-PATT	OH	24212300	3939N 8403W	21.2	3.7	0.0	1.2	3.3	.4	62.2	7.6	.1	0.0 9533
WURTSMITH	MI	24414585	4427N 8323W	24.7	6.2	0.0	.1	2.8	.5	65.3	0.0	0.0	0.0 10020
ALASKA													
EIELSON	AK	50825004	6450N 14743W	30.2	10.1	0.1	0.0	2.8	3.0	42.7	2.2	.4	0.0 16296
ELMENDORF	AK	50825000	6113N 14953W	30.2	10.1	0.1	0.0	2.8	3.0	42.7	2.2	.4	0.0 16296
GALENA	AK	50825060	6444N 15657W	30.2	10.1	0.1	0.0	2.8	3.0	42.7	2.2	.4	0.0 16296
KING SALMON	AK	50825007	5814N 15724W	30.2	10.1	0.1	0.0	2.8	3.0	42.7	2.2	.4	0.0 16296
SHEMYA	AK	50825040	5243N 17405E	30.2	10.1	0.1	0.0	2.8	3.0	42.7	2.2	.4	0.0 16296
CARIBBEAN													
HOWARD	CANAL ZONE	51314810	905N 7930W	15.2	0.0	0.0	0.0	7.1	7.0	70.5	0.0	0.0	0.0 76
RAMEY	PUERTO RICO	50019575	1830N 6708W	47.9	4.7	0.0	.3	8.1	3.9	35.0	0.0	0.0	0.0 1167
ATLANTIC/EUROPE													
ALCONBURY													
ATHENS	ENG	50225643	5219N 0012W	18.4	10.5	2.4	0.0	3.7	3.9	59.7	.6	.3	0.0 35359
AVIANO	GREECE	51125687	3758N 2343E	25.7	5.9	2.9	0.0	5.0	4.1	54.0	.6	.5	0.0 3572
BALIKESIR	ITALY	51225682	4604N 1236E	21.2	22.0	1.0	.1	3.5	4.3	46.9	.3	.2	0.0 13215
BATMAN	TURKEY	51125584	3939N 2753E	25.7	5.9	2.9	0.0	5.0	4.1	54.0	.6	.5	0.0 3572
BENTWATERS	TURKEY	51125552	3752N 407E	25.7	5.9	2.9	0.0	5.0	4.1	54.0	.6	.5	0.0 3572
BITHURG	ENG	50225644	5225N 32W	18.4	10.5	2.4	0.0	3.7	3.9	59.7	.6	.3	0.0 35359
BOUDA	GERM	50125606	4958N 631E	22.5	16.1	2.2	.1	4.1	3.3	49.0	1.7	.3	.1 37207
BREMARTEN	NORWAY	50125550	6717N 1423E	22.5	16.1	2.2	.1	4.1	3.3	49.0	1.7	.3	.1 37207
BRINDISI	GERM	50125549	4721N 821E	22.5	16.1	2.2	.1	4.1	3.3	49.0	1.7	.3	.1 37207
CHICKSARDS	ITALY	51225517	4038N 1756E	21.2	22.0	1.0	.1	3.5	4.3	46.9	.3	.2	0.0 13215
COLLISHALL	ENG	50225650	5210N 030M	18.4	10.5	2.4	0.0	3.7	3.9	59.7	.6	.3	0.0 35359
EINDHOVEN	TURKEY	51125531	3825N 2709E	25.7	5.9	2.9	0.0	5.0	4.1	54.0	.6	.5	0.0 3572
ERJING	ENG	50225554	5244N 122E	18.4	10.5	2.4	0.0	3.7	3.9	59.7	.6	.3	0.0 35359
ESKISEHIR	NETH	50125556	5126N 528E	22.5	16.1	2.2	.1	4.1	3.3	49.0	1.7	.3	.1 37207
FAIRFORD	GERM	50125557	4618N 1154E	22.5	16.1	2.2	.1	4.1	3.3	49.0	1.7	.3	.1 37207
FINNINGLEY	TURKEY	51125693	3946N 3032E	25.7	5.9	2.9	0.0	5.0	4.1	54.0	.6	.5	0.0 3572
GARDERMOEN	ENG	50225560	5147N 147W	18.4	10.5	2.4	0.0	3.7	3.9	59.7	.6	.3	0.0 35359
GHEDI	ENG	50225558	5330N 100M	18.4	10.5	2.4	0.0	3.7	3.9	59.7	.6	.3	0.0 35359
GILZ RYEN	NORWAY	50125562	6013N 1106E	22.5	16.1	2.2	.1	4.1	3.3	49.0	1.7	.3	.1 37207
GIOTA DEL COLLE	ITALY	51225512	4524N 1016E	21.2	22.0	1.0	.1	3.5	4.3	46.9	.3	.2	0.0 13215
GOUSE	NETH	50125561	5133N 457E	22.5	16.1	2.2	.1	4.1	3.3	49.0	1.7	.3	.1 37207
INGIRLIK	ITALY	51225564	4048N 1656E	21.2	22.0	1.0	.1	3.5	4.3	46.9	.3	.2	0.0 13215
INGOLSTADT	NEW FOUNDL	51927032	5319N 6024W	24.9	3.8	0.0	.4	3.0	2.5	53.7	9.5	.8	0.0 5234
IRAKLION	TURKEY	51125685	3650N 3520E	25.7	5.9	2.9	0.0	5.0	4.1	54.0	.6	.5	0.0 3572
KARAMURSEL	GERM	50125568	4846N 1127E	22.5	16.1	2.2	.1	4.1	3.3	49.0	1.7	.3	.1 37207
	CRETE	51125699	3804N 2346E	25.7	5.9	2.9	0.0	5.0	4.1	54.0	.6	.5	0.0 3572
	TURKEY	51125695	4042N 2936E	25.7	5.9	2.9	0.0	5.0	4.1	54.0	.6	.5	0.0 3572

TABLE C-4.1. (Continued) Page 4 of 4

DISTRIBUTION TO OODMUS CUSTOMERS
(INCLUDES CONSOLIDATED CUSTOMERS)

BASE	ACTIVITY	COORDINATES	SHIPMENT WEIGHTS						IN PERCENT TO PER BASE						MAC	MSC TOTAL
			LTL	TL	CL	CA	SSP	ASP	OMA	LD	SSP	ASP	OMA	LD		
KARUP	50125569	5618N 910E	22.5	16.1	2.2	.1	4.1	3.3	49.0	1.7	.3	.1	37207			
KAUFBUEREN	50125572	4753N 1037E	22.5	16.1	2.2	.1	4.1	3.3	49.0	1.7	.3	.1	37207			
KEFLAVIK	51922647	6402N 2236W	24.9	3.8	0.0	.4	3.1	2.5	53.7	9.5	.8	0.0	5234			
LAHR	50125527	4820N 752E	22.5	16.1	2.2	.1	4.1	3.3	49.0	1.7	.3	.1	37207			
LAJES	51224400	3750N 2530W	21.2	22.0	1.0	.1	3.5	4.3	46.9	.3	.2	0.0	13215			
LAKENHEATH	50225587	5225N 0031E	18.4	10.5	2.4	0.0	3.7	3.9	59.7	.6	.3	0.0	35359			
LARISSA	51125692	3938N 2225E	25.7	5.9	2.9	0.0	5.0	4.1	54.0	.6	.5	0.0	3572			
LECHFELD	50125577	4810N 1050E	22.5	16.1	2.2	.1	4.1	3.3	49.0	1.7	.3	.1	37207			
LEIPHEIM	50125579	4827N 1013E	22.5	16.1	2.2	.1	4.1	3.3	49.0	1.7	.3	.1	37207			
MERZEFON	51125581	4053N 3529E	25.7	5.9	2.9	0.0	5.0	4.1	54.0	.6	.5	0.0	3572			
MILDEN HALL	50225518	5221N 0030E	18.4	10.5	2.4	0.0	3.7	3.9	59.7	.6	.3	0.0	35359			
MORON	51225575	3708N 528W	21.2	22.0	1.0	.1	3.5	4.3	46.9	.3	.2	0.0	13215			
MURTED	51125583	4010N 3245E	25.7	5.9	2.9	0.0	5.0	4.1	54.0	.6	.5	0.0	3572			
NORVENICH	50125514	6200N 1000E	22.5	16.1	2.2	.1	4.1	3.3	49.0	1.7	.3	.1	37207			
PIACENZA	51225568	4501N 940E	21.2	22.0	1.0	.1	3.5	4.3	46.9	.3	.2	0.0	13215			
RAMSTEIN	50125612	4927N 733E	22.5	16.1	2.2	.1	4.1	3.3	49.0	1.7	.3	.1	37207			
RHEINMAIN	50125615	4945N 1100E	22.5	16.1	2.2	.1	4.1	3.3	49.0	1.7	.3	.1	37207			
RYGGE	50125590	5923N 1043E	22.5	16.1	2.2	.1	4.1	3.3	49.0	1.7	.3	.1	37207			
SEBACK	50125604	4927N 1055E	22.5	16.1	2.2	.1	4.1	3.3	49.0	1.7	.3	.1	37207			
SIVRISEHIR	51125592	3927N 3134E	25.7	5.9	2.9	0.0	5.0	4.1	54.0	.6	.5	0.0	3572			
SPANGDAHEM	50125621	5100N 900E	22.5	16.1	2.2	.1	4.1	3.3	49.0	1.7	.3	.1	37207			
SOFSTERBERG	50125688	5207N 517E	22.5	16.1	2.2	.1	4.1	3.3	49.0	1.7	.3	.1	37207			
SOLA	50125580	5853N 536E	22.5	16.1	2.2	.1	4.1	3.3	49.0	1.7	.3	.1	37207			
SOLLINGEN	50125593	5205N 1055E	22.5	16.1	2.2	.1	4.1	3.3	49.0	1.7	.3	.1	37207			
TEMPLEHOF	50125622	529N 1325E	22.5	16.1	2.2	.1	4.1	3.3	49.0	1.7	.3	.1	37207			
TOKREJON	51225573	4028N 328W	21.2	22.0	1.0	.1	3.5	4.3	46.9	.3	.2	0.0	13215			
UPPER HEYFORD	50225537	5150N 132M	18.4	10.5	2.4	0.0	3.7	3.9	59.7	.6	.3	0.0	35359			
WADINGTON	50225598	5227N 031M	18.4	10.5	2.4	0.0	3.7	3.9	59.7	.6	.3	0.0	35359			
ZARAGOZA	51225571	4138N 53M	21.2	22.0	1.0	.1	3.5	4.3	46.9	.3	.2	0.0	13215			
ZWEIRUCKEN	50125529	4915N 721E	22.5	16.1	2.2	.1	4.1	3.3	49.0	1.7	.3	.1	37207			
PACIFIC																
ANDERSON	52414415	1335N 14456E	12.0	8.5	0.0	0.0	3.0	2.5	56.0	0.0	16.5	1.1	7074			
CHING CHUAN KAN	50425266	2430N 12130E	13.0	17.0	4.6	0.0	2.9	3.2	50.4	.2	8.2	0.0	48772			
CLARK	52225250	1511N 12033E	12.3	28.3	.7	0.0	2.7	2.1	50.2	1.1	2.3	0.0	20642			
HICKAM	50715260	2120N 15757W	11.7	14.4	.1	.2	4.6	3.3	57.8	6.6	0.0	.8	9063			
JOHNSON ISLAND	52225274	1710N 16910W	12.3	28.3	.7	0.0	2.7	2.1	50.2	1.1	2.3	0.0	20642			
KADENA	50515270	2622N 12745E	24.1	6.6	1.0	.5	5.5	2.7	49.5	.3	9.6	0.0	15753			
KUNSAN	50325284	3558N 12641E	20.4	34.0	0.0	0.0	2.8	2.1	39.3	.1	.8	.1	15273			
MISAWA	50625205	4045N 14123E	12.8	31.5	0.0	.5	4.1	1.9	36.0	10.8	2.0	0.0	2849			
OSAN	50325294	3711N 12704E	20.4	34.0	0.0	0.0	2.8	2.1	39.3	.1	.8	.1	15273			
SHU LIN KOU	50425247	2325N 12110E	13.0	17.0	4.6	0.0	2.9	3.2	50.4	.2	8.2	0.0	48772			
YOKOTA	50625209	3545N 13921E	12.8	31.5	0.0	.5	4.1	1.9	36.0	10.8	2.0	0.0	2849			

ATTACHMENT C-5MATERIAL DISTRIBUTION DATA LISTING - (DEPOT BY BASE)

This attachment contains a matrix which represents the shipment of Air Force Managed Material from the 5 Air Logistic Centers to/from the DODMDS customers. (Table C-5.1)

Each cell of the matrix has three figures. The top figure represents the hundred weights shipped between each ALC and the DODMDS customer. The second figure represents the percent of an ALC's shipments going to/from the DODMDS customer. The third figure represents the percent of the DODMDS customers total shipments going to/from each ALC. For example, the first cell in the matrix reflects:

294 hundred weights are shipped between Sacramento ALC and DODMDS customer number 161 (Richards Gebaur AFB). This figure represents .1 percent of Sacramento ALC's total shipments and represents 5.3 percent of all AF material shipped to/from Richard Gebaur AFB.

The row total at the right of each matrix represents the total weight in hundred weights shipped to/from the ALC and its percentage with respect to all Air Force shipments. For example, Sacramento ALC was involved in the shipment of 264,427 hundred weights representing 13.7 percent of all shipments.

The column total at the bottom of each matrix represents the total material shipped in hundred weights to/from the DODMDS customers, and its percentage with respect to all Air Force shipments.

For example, DODMDS customer number 161 was involved in shipments totaling 5822 hundred weights representing .3 percent of all AF shipments.

Table C-5.2 contains an index of DODMDS customers for use in conjunction with Table C-5.1.

(NOTE: Some customers were dropped due to extremely limited shipments and some shipments were made from/to other than 5 Air Logistics Centers therefore the figures shown are slightly less than total AF shipments.)

TABLE C-5.1

***** C R O S S T A B U L A T I O N O F * * * * * P A G E 1 O F 8

DEPOT	COUNT I	161.I	201.I	202.I	204.I	205.I	212.I	213.I	214.I	221.I	222.I	ROW TOTAL
FF	ROW PCT I											
SACRAMENTO	COL PCT I											
I	I	294	I 1707	I 1104	I 851	I 1950	I 978	I 2432	I 302	I 553	I 1310	I 264427
I	I	.1	I .6	I .4	I .3	I .7	I .4	I .9	I .1	I .2	I .5	I 13.7
I	I	5.0	I 10.3	I 12.5	I 11.0	I 46.3	I 9.4	I 18.8	I 3.3	I 8.2	I 13.8	I
I	I	4.31	I 1740	I 478	I 879	I 81	I 3751	I 922	I 616	I 966	I 1063	I 302513
I	I	.1	I .6	I .2	I .3	I .0	I 1.2	I .3	I .2	I .3	I .4	I 15.7
I	I	7.4	I 10.5	I 5.4	I 11.3	I 1.9	I 35.9	I 7.1	I 5.2	I 14.4	I 11.2	I
I	I	1010	I 5815	I 3341	I 2638	I 921	I 3031	I 4125	I 436	I 2098	I 1746	I 567411
I	I	.2	I 1.0	I .6	I .5	I .2	I .5	I .7	I .1	I .4	I .3	I 29.5
I	I	17.3	I 35.2	I 37.9	I 34.0	I 21.9	I 29.0	I 31.9	I 3.7	I 31.3	I 18.4	I
I	I	909	I 3747	I 1855	I 1954	I 534	I 1272	I 3118	I 1124	I 1101	I 1860	I 222875
I	I	.4	I 1.7	I .8	I .9	I .2	I .6	I 1.4	I .5	I .5	I .8	I 11.6
I	I	15.6	I 22.7	I 21.1	I 25.2	I 12.7	I 12.2	I 24.1	I 9.6	I 16.4	I 19.6	I
I	I	3178	I 3501	I 2030	I 1443	I 725	I 1405	I 2342	I 9189	I 1988	I 3531	I 567379
I	I	.6	I .6	I .4	I .3	I .1	I .2	I .4	I 1.6	I .4	I .6	I 29.5
I	I	54.6	I 21.2	I 23.0	I 18.6	I 17.2	I 13.5	I 18.1	I 78.2	I 29.6	I 37.1	I
I	I	5822	I 16510	I 8808	I 7765	I 4211	I 10437	I 12939	I 11747	I 6706	I 9510	I 1924605
I	I	.3	I .9	I .5	I .4	I .2	I .5	I .7	I .6	I .3	I .5	I 100.0

(CONTINUED)

TABLE C-5.1

DEPT ***** C R O S S T A B U L A T I O N O F *****
 BY BASE ***** PAGE 2 OF 8

DEPT	223.I	224.I	225.I	226.I	231.I	232.I	233.I	234.I	235.I	236.I	ROW TOTAL
FF	626	1947	614	477	221	4527	2522	1900	1019	1454	126427
SACRAMENTO	.2	.7	.2	.2	.1	1.7	1.0	.7	.4	.5	13.7
	5.3	10.6	6.0	8.1	2.0	5.2	16.1	13.0	7.1	16.6	
FG	2258	3552	727	413	4851	17990	1812	2907	7472	1479	1302513
OGDEN	.7	1.2	.2	.1	1.6	5.9	.6	1.0	2.5	.5	15.7
	19.2	19.3	7.1	7.0	43.8	20.8	11.6	20.0	51.9	16.9	
FH	3808	7010	4564	346	594	6280	2760	1280	1291	1746	1567411
OKLAHOMA CITY	.7	1.2	.8	.1	.1	1.1	.5	.2	.2	.3	29.5
	32.4	38.0	44.4	5.9	5.4	7.3	17.7	8.8	9.0	20.0	
FL	2270	1509	2932	1309	1375	47102	7068	3176	1332	1135	1222875
WARNER ROBINS	1.0	.7	1.3	.6	.6	21.1	3.2	1.4	.6	.5	11.6
	19.3	8.2	28.5	22.2	12.4	54.6	45.2	21.8	9.2	13.0	
FP	2787	4414	1434	3339	4037	10418	1465	5303	3280	2923	1567379
SAN ANTONIO	.5	.8	.3	.6	.7	1.8	.3	.9	.6	.5	29.5
	23.7	23.9	14.0	56.7	36.4	12.1	9.4	36.4	22.8	33.5	
COLUMN TOTAL	11743	18432	10271	5884	11078	86317	15627	14566	14402	8737	1924605
TOTAL	.6	1.0	.5	.3	.6	4.5	.8	.8	.7	.5	100.0

(CONTINUED)

TABLE C-5.1

***** C R O S S T A B U L A T I O N O F ***** PAGE 3 OF 8

DEPOT	BASE	237.I	238.I	239.I	241.I	242.I	243.I	244.I	245.I	251.I	252.I	ROW TOTAL
COUNT I	ROW PCT I	COL PCT I	COL PCT I	COL PCT I	COL PCT I	COL PCT I	COL PCT I	COL PCT I	COL PCT I	COL PCT I	COL PCT I	COL PCT I
FF	663	621	1378	1062	1149	460	950	1083	747	542	1264427	
SACRAMENTO	.3	.2	.5	.4	.4	.2	.4	.4	.3	.2	13.7	
	29.2	11.6	38.2	8.7	13.5	7.9	10.8	15.9	8.2	6.3		
FG	395	640	306	2553	1179	538	970	595	3180	3458	1302513	
OGDEN	.1	.2	.1	.8	.4	.2	.3	.2	1.1	1.1	15.7	
	17.4	12.0	8.5	21.0	13.8	9.2	11.0	8.8	35.0	40.3		
FH	452	209	302	4235	2252	2234	2711	1984	2623	2400	1567411	
OKLAHOMA CITY	.1	.0	.1	.7	.4	.4	.5	.3	.5	.4	29.5	
	19.9	3.9	8.4	34.8	26.4	38.2	30.8	29.2	28.9	28.0		
FL	274	391	767	1704	1394	788	1656	1336	1051	850	1222875	
WARNER ROBINS	.1	.2	.3	.8	.6	.4	.7	.6	.5	.4	11.6	
	12.1	7.3	21.3	14.0	16.3	13.5	18.8	19.7	11.6	9.9		
FP	485	3484	855	2620	2565	1821	2511	1792	1478	1336	1567379	
SAN ANTONIO	.1	.6	.2	.5	.5	.3	.4	.3	.3	.2	29.5	
	21.4	65.2	23.7	21.5	30.0	31.2	28.5	26.4	16.3	15.6		
COLUMN TOTAL	2269	5345	3608	12174	8539	5841	8798	6790	9079	8586	1924605	
TOTAL	.1	.3	.2	.6	.4	.3	.5	.4	.5	.4	100.0	

(CONTINUED)

TABLE C-5.1

DEPT ***** CROSSTABULATION OF ***** BY BASE ***** PAGE 4 OF 8

DEPT	BASE										ROW TOTAL
	COUNT	253.I	255.I	261.I	262.I	270.I	271.I	272.I	273.I	274.I	
FF	ROW PCT	304.I	1930.I	467.I	667.I	675.I	750.I	1489.I	8036.I	603.I	2530.I
SACRAMENTO	COL FCT	1.2	.6	.2	.3	.3	.3	.6	3.0	.2	1.0
		24.8	16.7	7.1	2.7	5.0	6.1	8.2	2.6	10.3	4.7
FG		4276.I	3224.I	866.I	2273.I	1755.I	959.I	1932.I	7513.I	609.I	3666.I
OGDEN		1.4	1.1	.3	.8	.6	.3	.6	2.5	.2	1.2
		34.9	35.3	13.1	9.2	13.0	7.8	10.7	2.4	10.4	6.8
FH		2113.I	1004.I	2646.I	15886.I	3072.I	5847.I	4457.I	1272468.I	1298.I	21690.I
OKLAHOMA CITY		.4	.2	.5	2.8	.5	1.0	.8	48.0	.2	3.8
		17.2	11.0	40.2	64.5	22.8	47.5	24.7	88.8	22.2	40.4
FL		1072.I	2079.I	755.I	951.I	2599.I	2103.I	2814.I	4968.I	1164.I	4141.I
WARNER ROBBINS		.5	.9	.3	.4	1.2	.9	1.3	2.2	.5	1.9
		8.7	22.7	11.5	3.9	19.3	17.1	15.6	1.6	19.9	7.7
FP		1766.I	1309.I	1852.I	4841.I	5386.I	2654.I	7378.I	13944.I	2180.I	21637.I
SAN ANTONIO		.3	.2	.3	.9	.9	.5	1.3	2.5	.4	3.8
		14.4	14.3	28.1	19.7	39.9	21.6	40.8	4.5	37.2	40.3
COLUMN TOTAL		12268	9146	6586	24618	13487	12313	18070	306929	5854	53664
		.6	.5	.3	1.3	.7	.6	.9	15.9	.3	2.8
		100.0									100.0

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TABLE C-5.1

***** C R O S S T A B U L A T I O N O F * * * * * P A G E 5 O F 8
 DEPT BY BASE

DEPT	277.I	278.I	279.I	280.I	281.I	282.I	283.I	284.I	285.I	286.I	ROM TOTAL
SACRAMENTO	20161 I 7.6 I 5.7 I	279 I 1125 I 3.4 I	279 I 1125 I 13.4 I	593 I .2 I 11.3 I	2991 I 1.1 I 32.5 I	1438 I .5 I 10.7 I	3200 I 1.2 I 3.0 I	392 I .1 I 8.1 I	1937 I .7 I 10.4 I	3309 I 1.3 I 15.6 I	1264427 I 13.7 I
OGDEN	16546 I 5.5 I 4.7 I	946 I .3 I 11.6 I	2400 I .8 I 28.6 I	3989 I 1.3 I 75.7 I	1424 I .5 I 15.5 I	1614 I .5 I 12.0 I	78461 I 25.9 I 74.6 I	1094 I .4 I 22.7 I	3984 I 1.3 I 21.3 I	3063 I 1.3 I 18.3 I	1302513 I 15.7 I
OKLAHOMA CITY	44338 I 7.8 I 12.6 I	5238 I .9 I 64.3 I	194 I .0 I 2.3 I	38 I .0 I .7 I	2075 I .4 I 22.6 I	8179 I 1.4 I 61.1 I	4352 I .8 I 4.1 I	1996 I .4 I 41.4 I	1557 I .3 I 8.3 I	9122 I 1.6 I 43.1 I	1567411 I 29.5 I
WARNER ROBINS	7325 I 3.3 I 2.1 I	587 I .3 I 7.2 I	704 I .3 I 8.4 I	225 I .1 I 4.3 I	629 I .3 I 6.8 I	889 I .4 I 6.6 I	13761 I 6.2 I 13.1 I	371 I .2 I 7.7 I	1456 I .7 I 7.8 I	1467 I .7 I 6.9 I	1222875 I 11.6 I
SAN ANTONIO	1264764 I 46.7 I 75.0 I	1096 I .2 I 13.5 I	3978 I .7 I 47.4 I	422 I .1 I 8.0 I	2074 I .4 I 22.6 I	1276 I .2 I 9.5 I	5366 I .9 I 5.1 I	964 I .2 I 20.0 I	9730 I 1.7 I 52.1 I	3383 I .6 I 16.0 I	1567379 I 29.5 I
COLUMN TOTAL	353134 I 16.3 I	8146 I .4 I	8401 I .4 I	5267 I .3 I	9193 I .5 I	13396 I .7 I	105140 I 5.5 I	4817 I .3 I	18664 I 1.0 I	21144 I 1.1 I	1924605 I 100.0 I

(CONTINUED)

TABLE C-5.1

***** C R O S S T A B U L A T I O N O F *****
 DEPT BY BASE ***** PAGE 6 OF 8

DEPT	287.I	288.I	289.I	291.I	292.I	293.I	294.I	295.I	296.I	297.I	ROM TOTAL
FF	1529	1008	3047	4126	499	932	1779	2077	122630	614	1264427
SACRAMENTO	.6	.4	1.2	1.6	.2	.4	.7	.8	46.4	.2	13.7
	28.2	7.4	20.8	12.4	18.4	12.6	6.9	11.3	70.8	6.6	
FG	790	4487	2632	6619	1852	1673	4882	2737	18532	1456	1302513
OGDEN	.3	1.5	.9	2.2	.6	.6	1.6	.9	6.1	.5	15.7
	14.6	32.8	18.0	19.8	68.2	22.7	18.9	14.9	10.7	15.5	
FH	1404	368	5521	10380	34	1667	3998	8280	14423	4472	1567411
OKLAHOMA CITY	.2	.1	1.0	1.8	.0	.3	.7	1.5	2.5	.8	29.5
	25.9	2.7	37.8	31.1	1.3	29.3	15.5	44.9	8.3	47.7	
FL	495	2815	1310	5832	52	567	3460	2440	3802	976	1222875
WARNER ROBINS	.2	1.3	.6	2.6	.0	.3	1.6	1.1	1.7	.4	11.6
	9.1	20.6	9.0	17.5	1.9	7.7	13.4	13.2	2.2	10.4	
FP	1199	4992	2105	6445	277	2340	11712	2692	13718	1849	1567379
SAN ANTONIO	.2	.9	.4	1.1	.0	.4	2.1	.5	2.4	.3	29.5
	22.1	36.5	14.4	19.3	10.2	31.7	45.3	15.7	7.9	19.7	
COLUMN TOTAL	5417	13670	14615	33404	2714	7379	25631	18426	173105	9367	1924605
TOTAL	.3	.7	.8	1.7	.1	.4	1.3	1.0	9.0	.5	100.0

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(CONTINUED)

TABLE C-5.1

***** C R O S S T A B U L A T I O N O F *****
 DEPT BY BASE ***** PAGE 7 OF 8

DEPT	298.I	299.I	364.I	482.I	500.I	501.I	502.I	503.I	504.I	505.I	ROM TOTAL
FF	2074	782	516	220	288	5951	3153	2803	4550	1446	1264427
SACRAMENTO	.8	.3	.2	.1	.1	2.3	1.2	1.1	1.7	.5	13.7
	17.0	9.0	21.7	14.7	27.7	17.5	9.7	19.0	9.5	9.5	
FG	1052	1624	1402	421	108	7059	3904	3665	10073	3979	1302513
OGDEN	.3	.5	.5	.1	.0	2.3	1.3	1.2	3.3	1.3	15.7
	8.6	18.6	58.9	28.0	10.4	20.8	12.0	24.9	21.1	26.0	
FH	3440	3368	30	123	76	4013	5779	1134	9612	1602	1587411
OKLAHOMA CITY	.6	.6	.0	.0	.0	.7	1.0	.2	1.7	.3	29.5
	28.1	30.6	1.3	8.2	7.3	11.8	17.8	7.7	20.1	10.5	
FL	3298	1278	235	225	211	5805	7055	3446	11332	3350	1222875
WARNER ROBINS	1.5	.6	.1	.1	.1	2.6	3.2	1.5	5.1	1.5	11.6
	27.0	14.6	9.9	15.0	20.3	17.1	21.7	23.4	23.7	21.9	
FP	2360	1679	193	512	397	11156	12623	3693	12223	4916	1587379
SAN ANTONIO	.4	.3	.0	.1	.1	2.0	2.2	.7	2.2	.9	29.5
	19.3	19.2	8.4	34.1	34.3	32.8	38.8	25.1	25.6	32.1	
COLUMN TOTAL	12224	8731	2382	1501	1040	33944	32514	14741	47798	15293	1924605
(CONTINUED)	.6	.5	.1	.1	.1	1.8	1.7	.8	2.5	.8	100.0

TABLE C-5.1

***** C R O S S T A B U L A T I O N O F * * * * * P A G E 8 O F 8

DEPOT	BASE	506.I	507.I	508.I	511.I	512.I	513.I	519.I	522.I	524.I	ROW TOTAL
FF	805	1733	2434	480	1282	43	1593	4143	642	502	1264427
SACRAMENTO	28.4	19.9	15.3	15.1	10.4	58.9	31.9	20.6	9.4	18.0	13.7
FG	269	1542	3908	266	3118	2	642	2500	1382	333	1302513
OGDEN	.1	.5	1.3	.1	1.0	.0	.2	.8	.5	.1	15.7
	9.5	17.7	24.6	8.3	25.4	2.7	12.8	12.5	20.2	11.9	
FH	260	921	1218	170	626	7	251	574	1551	97	1567411
OKLAHOMA CITY	.0	.2	.2	.0	.1	.0	.0	.1	.3	.0	29.5
	9.2	10.6	7.7	5.3	5.1	9.6	5.0	2.9	22.7	3.5	
FL	420	2183	4135	1409	2487	6	675	4973	1523	127	1222875
WARNER ROBINS	.2	1.0	1.9	.6	1.1	.0	.3	2.2	.7	.1	11.6
	14.8	25.1	26.1	44.2	20.2	8.2	13.5	24.7	22.3	4.5	
FP	1077	2321	4174	862	4771	15	1837	7923	1732	1733	1567379
SAN ANTONIO	.2	.4	.7	.2	.8	.0	.3	1.4	.3	.3	29.5
	38.0	26.7	26.3	27.0	38.8	20.5	36.8	39.4	25.4	62.1	
COLUMN TOTAL	2631	8700	15869	3187	12284	73	4998	20121	6830	2792	1924605
TOTAL	.1	.5	.8	.2	.6	.0	.3	1.0	.4	.1	100.0

TABLE C-5.2

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BASE	BASE IDENTIFICATION		(BY DODOMS CUSTOMER NUMBER)		BASE	MOS	AAD	COORDINATES	MOS	AAD	COORDINATES
	MOS	AAD	COORDINATES	COORDINATES							
MOODY	GA	1311	4830	3059N	8311W			2732	3029	3621N	9755W
RICHARDS	GA	1611	3100	3851N	9433W			2741	4419	3440N	9316W
MCGUIRE	NJ	2011	4484	4002N	7435W			2751	4689	3247N	9726W
PEASE	NH	2021	4623	4306N	7049W			2752	3020	3358N	9830W
LORING	ME	2041	4678	4657N	6754W			2771	2059	2927N	9836W
HANSCOM	MA	2051	2620	4226N	7117W			2772	2857	2926N	9830W
PLATTSBURG	NY	2121	4615	4440N	7328W			2772	3047	2927N	9837W
GRIFFIS	NY	2131	4616	4314N	7546W			2772	3089	2932N	9816W
DOVER	DE	2141	4497	3908N	7528W			2781	4805	3120N	9233W
ANDREWS	MD	2211	4425	3848N	7652W			2791	4857	3012N	9740W
LANGLEY	VA	2221	4800	3705N	7621W			2792	3099	2922N	10047W
SEYMOUR-JOHNSON	NC	2231	4809	3510N	7800W			2801	4613	4106N	10451W
SHAW	SC	2241	4803	3356N	8029W			2811	2500	3849N	10444W
MYRTLE BEACH	SC	2242	4806	3341N	7856W			2812	2505	3850N	10443W
CHARLESTON	SC	2251	4418	3248N	7957W			2812	3059	3943N	10501W
POPE	NC	2261	4460	3450N	7900W			2821	4897	4303N	11552W
DORRINS	GA	2311	6703	3354N	8432W			2831	2027	4107N	11201W
ROBINS	GA	2321	2065	3237N	8336W			2841	4469	3502N	10637W
TYNDALL	FL	2331	2586	3008N	9539W			2851	4887	3326N	11221W
EGLIN	FL	2341	2603	3029N	8630W			2852	3044	3515N	11211W
HOMESTEAD	FL	2351	4829	2529N	8023W			2861	4604	3211N	11053W
MACGILL	FL	2361	4814	2751N	8229W			2871	4855	3423N	10318W
PATRICK	FL	2371	2829	2815N	8036W			2881	4801	3251N	10605W
MAXWELL	AL	2381	3300	3223N	8621W			2891	4852	3614N	11502W
KEESLER	MS	2391	3010	3024N	8853W			2911	4448	3406N	11715W
GOLUMBUS	MS	2392	3022	3336N	8826W			2912	4664	3354N	11715W
RICKENBACKER	OH	2411	4601	3948N	8256W			2912	4812	3435N	11722W
NEWARK	OH	2412	2006	4004N	8224W			2921	4610	3443N	12033W
WRIGHT-PATT	OH	2421	2300	3999N	8403W			2922	4634	3557N	8957W
GRISSOM	IN	2431	4654	4040N	8608W			2931	2805	3454N	11752W
WURTSMITH	MI	2441	4585	4427N	8323W			2941	4427	3816N	12155W
K I SAWYER	MI	2451	4515	4620N	8720W			2951	4672	3722N	12034W
KINCHELOE	MI	2452	4603	4615N	8428W			2961	2049	3839N	12123W
ELLSMORTH	SD	2511	4690	4408N	10305W			2962	3067	3834N	12118W
GARD FORKS	ND	2521	4659	4757N	9725W			2971	4648	3908N	12126W
DULLUTH	MN	2522	2554	4647N	9206W			2981	4479	4708N	12223W
MINOT	ND	2531	4528	4826N	10121W			2991	4620	4738N	11733W
MALMSTROM	MT	2551	4626	4730N	11117W			3641	4625	3844N	9334W
OFFUTT	NE	2611	4600	4108N	9556W			4821	2560	4210N	12145W
MCCORNELL	KS	2621	4621	3738N	9715W			5001	9575	1830N	6708W
UTESS	TX	2701	4661	3225N	9551W			5011	0501		
WEISS	TX	2702	3005	3214N	10131W			5012	5514	6200N	1000E
REISE	TX	2702	3060	3336N	10202W			5012	5527	4820N	752E
BAKSDALE	LA	2711	4608	3230N	9343W			5012	5529	4915N	721E
LITTLE ROCK	AR	2721	4460	3455N	9210W			5012	5545		
TINKER	OK	2731	2037	3525N	9724W			5012	5549	4721N	821E

TABLE C-5.2

BASE	BASE IDENTIFICATION		BASE		MDS	AAD	COORDINATES	BASE	MDS	AAD	COORDINATES
	(BY DODMDS CUSTOMER NUMBER)	BASE	HI	ALASKA							
BOUDA	NORWAY	5012 5550	6717N	1423E	5012 5260	2120N	15757M	5071 5260	2120N	15757M	
EINHOVEN	NETH	5012 5556	5126N	528E	5081 0508			5081 0508			
ERDJING	GERM	5012 5557	4818N	1154E	5082 5000	6113N	14953M	5082 5000	6113N	14953M	
FLESAND	NORWAY	5012 5559			5082 5004	6450N	14743M	5082 5004	6450N	14743M	
GILZ RYEN	NETH	5012 5561	5133N	457E	5082 5007	5814N	15724M	5082 5007	5814N	15724M	
GARGERHOEN	NORWAY	5012 5562	6013N	1106E	5082 5040	5243N	17405E	5082 5040	5243N	17405E	
INGOLSTADT	GERM	5012 5568	4846N	1127E	5082 5060	6444N	15657M	5082 5060	6444N	15657M	
KARUP	DENMARK	5012 5569	5616N	910E	5111 0511			5111 0511			
KAUFBUEREN	GERM	5012 5572	4753N	1037E	5112 5531	3825N	2709E	5112 5531	3825N	2709E	
LECHFELD	GERM	5012 5577	4810N	1050E	5112 5552	3752N	4107E	5112 5552	3752N	4107E	
LEIPHHEIM	GERM	5012 5579	4827N	1013E	5112 5565			5112 5565			
SOLA	NORWAY	5012 5580	5853N	536E	5112 5581	4053N	3529E	5112 5581	4053N	3529E	
NORHOLZ	GERM	5012 5582			5112 5583	4010N	3245E	5112 5583	4010N	3245E	
RYGGE	NORWAY	5012 5582	5323N	1043E	5112 5584	3939N	2753E	5112 5584	3939N	2753E	
SOLLINGEN	GERM	5012 5593	5205N	1055E	5112 5592	3927N	3134E	5112 5592	3927N	3134E	
SEMBACK	GERM	5012 5604	4927N	1055E	5112 5595			5112 5595			
BITEURG	GERM	5012 5606	4958N	631E	5112 5685	3650N	3520E	5112 5685	3650N	3520E	
KAMSTEIN	GERM	5012 5612	4927N	733E	5112 5687	3758N	2343E	5112 5687	3758N	2343E	
RHEINMAIN	GERM	5012 5615	4945N	1100E	5112 5692	3938N	2225E	5112 5692	3938N	2225E	
SPANGDAHLEM	GERM	5012 5621	5100N	900E	5112 5693	3946N	3032E	5112 5693	3946N	3032E	
TEMPLEHOF	GERM	5012 5622	5299N	1325E	5112 5695	4042N	2916E	5112 5695	4042N	2916E	
SOESTERBERG	GERM	5012 5683	5207N	517E	5112 5699	3804N	2346E	5112 5699	3804N	2346E	
ALL BASES	BR ISLES	5021 0502			5121 0512			5121 0512			
MILDEN HALL	ENG	5022 5518	5221N	0030E	5122 4400	3750N	2530M	5122 4400	3750N	2530M	
UPPER HEYFORD	ENG	5022 5537	5150N	132M	5122 5512	4524N	1016E	5122 5512	4524N	1016E	
BASLOMBE	ENG	5022 5551			5122 5517	4038N	1756E	5122 5517	4038N	1756E	
COLLISHALL	ENG	5022 5554	5244N	122E	5122 5564	4048N	1656E	5122 5564	4048N	1656E	
FINNINGLEY	ENG	5022 5559	5330N	100M	5122 5571	4138N	53M	5122 5571	4138N	53M	
FAIRFORD	ENG	5022 5560	5144N	147M	5122 5573	4028N	320M	5122 5573	4028N	320M	
LAKENHEATH	ENG	5022 5567	5225N	0031E	5122 5575	3708N	528M	5122 5575	3708N	528M	
WADINGTON	ENG	5022 5598	5227N	031M	5122 5588	4501N	940E	5122 5588	4501N	940E	
WITTING	ENG	5022 5599			5122 5682	4604N	1236E	5122 5682	4604N	1236E	
ALCONBURY	ENG	5022 5643	5219N	0012M	5131 4810	905N	7930M	5131 4810	905N	7930M	
BENTWATERS	ENG	5022 5644	5225N	32M	5192 2647	6402N	2236M	5192 2647	6402N	2236M	
CHICKSANDS	ENG	5022 5650	5210N	030M	5192 7032	5319N	6024M	5192 7032	5319N	6024M	
ALL BASES	KOREA	5031 0503			5222 5274	1511N	1203E	5222 5274	1511N	1203E	
KUNSAN	KOREA	5032 5284	3558N	1264E	5241 4415	1335N	14456E	5241 4415	1335N	14456E	
OSAH	KOREA	5032 5294	3711N	12704E	8311 3057	3221N	8659M	8311 3057	3221N	8659M	
ALL BASES	CHINA SEA	5041 0504			8611 0861			8611 0861			
SUNG SHAN	TAIWAN	5042 5225			8612 3018	4018N	8809M	8612 3018	4018N	8809M	
SHU LIN KOU	TAIWAN	5042 5247	2325N	12110E	8612 4407	3832N	8952M	8612 4407	3832N	8952M	
CHING CHUAN KAN	TAIWAN	5042 5266	2430N	12130E							
KADENA	OKINAWA	5051 5270	2622N	12745E							
ALL BASES	JAPAN	5061 0506									
MISAWA	JAPAN	5062 5205	4045N	14123E							
YOKOTA	JAPAN	5062 5209	3545N	13921E							

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ATTACHMENT C-6

DESIGN OF EXPERIMENTS FOR
SHIPMENT OF INSTRUMENTED PACKAGESPurposes

This Experimental Design is prepared in response to para 4.2.2 of the Statement of Work, Contract Number F-33657-77-A-0003, Order No. 0004. The design outlines both U.S. Air Force and Battelle Columbus Laboratories responsibilities and required actions necessary to statistically sample the shipping distribution system in terms of shipping hazards. Actual measurement of the shipping hazards shall be made using test shipments of USAF owned transportation environment recorders.

ResponsibilitiesA. Battelle Columbus Laboratories

- (1) Prepare/revise experimental design as necessary
- (2) Receive, analyze and interpret all test data
- (3) Obtain meteorological data at destinations for dates when test shipments were positioned there
- (4) Provide shipping instructions to the USAF in terms of origination point, mode of shipment, number and size of containers, intermediate point, and termination point.

B. USAF

- (1) Review and approve experimental design and revisions
- (2) Design and test the containers necessary to perform the test
- (3) Furnish the transportation environment recorders
- (4) Plan and monitor the actual shipments using shipping instructions provided by Battelle Columbus Laboratories
- (5) Furnish transportation environment recorders along with dates of shipment and transshipment points to Battelle Columbus Laboratories.

General Approach

Each trial of the experimental design shall consist of an originating point, an intermediate point, a termination point, container size, recorder type, and transportation mode. The intermediate point is a point where the shipment will be removed from the transportation system, moved through receiving and shipping departments and then shipped to the termination point. At the termination point, the recorder will be disabled and shipped to Battelle Columbus as described in USAF Tasks Para (6)(C).

The experimental design shall be sequential in nature. This will permit use of the data already collected for optimal selection of the next set of trials. The trials will be selected far enough in advance, however, that none of the recorders need ever be idle.

TasksBattelle Columbus Laboratories

- (1) Furnish statistical experimental design for package drop height calibration and analyze resultant data.
- (2) Establish initial experimental design runs for instrumented packages and provide shipping instructions (Table I).
- (3) Arrange to obtain meteorological data from National Weather Service or other appropriate source for destinations and dates of design trail shipments.
- (4) Analyze transportation data and data received from the initial group of samples to provide subsequent experimental design trails.
- (5) Continue to provide shipping instructions as data is accumulated.

USAF

- (1) Design the containers to be used in the test to the following specifications:

- (a) Two sizes of container will be required. One size small and light enough with the recorder inside for one man to carry and one size large and heavy enough to require material handling equipment.
 - (b) The containers shall be engineered to produce repeatable performance.
 - (c) At least 8 containers of each size will be required.
 - (d) The containers shall have no identifying characteristics relating to special handling needs, special testing, etc.
- (2) Data relating drop height to recorder readings shall be generated according to a statistical experimental design to be specified by Battelle Columbus.
 - (3) Determine temperature equilibration time for each container size. The length of time it takes for the recorder to reach -20 F from 70 F and the time it takes to reach +120 F from 70 F shall be determined. Triplicate determinations shall be made and reported.
 - (4) Determine humidity equilibration time for each container size. The length of time it takes for the recorder to reach 30 percent relative humidity from 50 percent and the time to reach 90 percent from 50 percent shall be determined. Triplicate determinations shall be made and reported.
 - (5) Provide Battelle Columbus Laboratories with all test data developed as described above.
 - (6) Using shipping instructions provided by Battelle Columbus Laboratories, plan and monitor shipments.
 - (a) Establish contacts at originating points to enable/disable the recorders, re-ship the recorders or return them for data readouts.
 - (b) Establish a monitoring system which will provide dates of shipment, transshipment, and arrival/departure at destination. Note: The system established should be discrete so as not to invoke special handling of the samples.
 - (c) Send Battelle Columbus Laboratories the transportation environment recorders along with the history of the shipments, run numbers, dates of shipment, transshipment, etc.

Shipping Instructions:

The success of this Experimental Design depends on timely movement of the transportation environment recorders through the transportation system and the readout of data after each shipment. While no time table for shipments/readouts is provided, initial estimates dictate a requirement for an average of 30 shipments per month.

To ensure that this average can be obtained, shipping instructions will be provided at least 30 days in advance of anticipated shipment dates. This will allow time for advance planning and expeditious shipment of the samples through the transportation system. Priority shipment precedence should be used wherever possible.

TABLE 1. SHIPPING INSTRUCTIONS
(For First Set of Experimental Design Trials)

Shipment Number	Originating Point (Enable Recorder)	Intermediate Point	Termination Point (Disable Recorder)	Container Size (Large or Small)	Type Recorder (Temperature or Resultant)	Mode
1a	OOALC (Ogden, UT)	Grand Forks AFB	WPAFB	Small	T	LOG AIR
b	"	"	"	"	T	"
c	"	"	"	"	T	"
d	"	"	"	Large	T	"
e	"	"	"	"	T	"
f	"	"	"	"	T	"
2a	WRALC (Robins, GA)	Homstead AFB	WFALC	Small	R	"
b	"	"	"	"	R	"
c	"	"	"	"	R	"
d	"	"	"	Large	R	"
e	"	"	"	"	R	"
f	"	"	"	"	R	"
3a	OCALC (Tinker, OK)	Norton AFB	SMALC (McClellan)	Small	R	"
b	"	"	"	"	R	"
c	"	"	"	"	R	"
d	"	"	"	Large	R	"
e	"	"	"	"	R	"
f	"	"	"	"	R	"
4a	WPAFB	Dover AFB	WRALC	Small	R	"
b	"	"	"	Large	R	"
5a	SAALC (San Antonio, TX)	Davis Monthan	SAALC	Small	T	"
b	"	"	"	Large	T	"
6a	WPAFB	Whitman	OCALC	Small	R	"
b	"	"	"	Large	R	"

TABLE I. SHIPPING INSTRUCTIONS
(Continued)

Shipment Number	Originating Point	Intermediate Point	Termination Point	Container Size	Type Recorder	Mode
7	WPAFB	Hanscom	WPAFB	Large	T	LTL
8	SAALC	Andrews	WRALC	Large	T	LTL
9	SMALC	Maxwell	WRALC	Large	T	LTL
10	SMALC	Mountain Home	OOALC	Large	T	LTL
11a	OCALC	Dyess	SMALC	Large	T	LTL
b	OCALC	Dyess	SMALC	Small	R	UPS
12a	WRALC	Luke	OCALC	Large	T	LTL
b	WRALC	Luke	OCALC	Small	R	UPS
13	OOALC	Little Rock	SAALC	Large	T	LTL
14	WPAFB	Eglin	OOALC	Small	R	UPS
15	OOALC	Minot	OCALC	Small	T	UPS
16	SAALC	McGuire	WRALC	Small	R	UPS
17	OOALC	Rickenbacker	SAALC	Small	T	UPS

TABLE 1. SHIPPING INSTRUCTIONS
(Continued)

Shipment No.	Originating Point	Intermediate Point	Termination Point	Container Size	Recorder Type	Mode
17a	WR ALC	None	WPAFB	L	T	LTL
b	WR ALC	None	"	S	R	UPS
18a	OC	"	"	L	T	LTL
b	OC	"	"	S	R	UPS
19a	SA	"	"	L	T	LTL
b	SA	"	"	S	R	UPS
20a	00	"	"	L	T	LTL
b	00	"	"	S	R	UPS
21a	SM	"	"	L	T	LTL
b	SM	"	"	S	R	UPS

APPENDIX D
STORAGE OF MATERIAL

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APPENDIX D

STORAGE OF MATERIAL

INTRODUCTION

This appendix provides background information on (1) length of storage, (2) items in outside storage and (3) base level storage capabilities.

The length of storage section is discussed in relation to ALC storage and base level storage data development and then the combined analysis of the data.

Items in outside storage at ALC and base level are treated separately as they are independent. The base level storage capabilities section covers the results of a base storage survey of 32 Air Force bases.

LENGTH OF STORAGE

Length of Storage at Air Logistics Centers (ALC)

Data Source:

AFLC Distribution and Quality Assurance Reporting and Evaluation System (G091).

Time Base:

Calendar year 1977.

Description of Data Source:

The G091 is a computer analysis system used by the Distribution Quality Control functions at each Air Force Air Logistic Center (ALC). The data file for the system is generated by accumulating information contained in quality deficiency reports prepared by personnel throughout the ALC Distribution Complex. Included are results from various quality control sampling systems as well as deficiency reports initiated as a result of a routine inspection. The resulting data file includes information pertinent to quality analysis. A listing of all data elements is contained in Table D-1. A key element which is significant to this project is the date-of-pack code developed from the date printed on the package of all serviceable items indicating when it was packaged.

TABLE D-1. G091 DATA ELEMENT LISTING

1. Card Code	10. Number Items Inspected
2. Operation Code	11. Number Items Defective
3. Date of Inspection	12. Defect Code
4. Inspector Number	13. Cause Code
5. Condition Code	14. Responsibility Code
6. ERRC Code	15. Action Code
7. NSN	16. Packaging Code
8. Description	17. Data of Pack Code
9. Dollar Value	18. Contract Code

Six months of data are maintained in the computer and the data from all five ALC's is consolidated as of 30 June and 31 Dec in order to provide command wide analysis of quality deficiencies. For this project, two six-month consolidations were obtained, thus providing one year of historical data.

Quality of the Data:

The method of generating the data file was determined and reviewed through discussions with both AFLC/QE and ALC quality personnel and through an on-site review at Sacramento ALC. Analysis of the quality procedures used and the method of report generation indicate that the sample can be considered random. The fact that data generation was not influenced by the date-of-pack element adds to the confidence in the validity of the data file used in the project. In other words, no data input to the G091 was initiated due to date-of-pack; that element was input as incidental information in anticipation of future use and analysis. To increase further the confidence in the data file, screening techniques were used to eliminate data deemed extraneous to this project.

The Project Data:

The G091 computer tapes provided by AFLC were separated into 10 individual files for initial analysis. The 10 files represented two six month tapes (Jan-Jun 77 and Jul-Dec 77) from each of the five ALC's. The files were further reduced to six elements of data needed to analyze storage time. These were:

1. Location where inspection took place
2. ERRC Code (Expendability, Recoverability, Repairability, Category Code)
3. Condition code
4. Contract/code indicating conditions of contract acceptance
5. Date of pack code
6. NSN

A total of 37,241 cases were considered: 20,937 for the period 1 Jan - 30 June 1977 and 16,304 for the period 1 July - 31 Dec 1977.

To maintain the statistical integrity of the two six-month periods, initial analysis and all screening of data was performed independently on the two sets of data. Only the cases that provided meaningful data for this report were retained. Combinations of the first two plus one of the remaining three conditions listed below were used to accept a case.

- a. The item was serviceable.
- b. It did not involve a contractor shipment. This screening prevented the sample from becoming distorted at the lower (0 to 6-month) end.
- c. The report was issued in a major report center, was not an outgoing report and the date-of-pack code was not "0" (date unknown) or "9" (mixed dates). This screening eliminated those cases where length of storage data was not available and to some degree limited the effects of last-in first-out storage practice. Where mixed dates were involved it is conceivable that the length of storage could be distorted more readily by the last-in first-out practice.
- d. An "outgoing" report involved another ALC and the date-of-pack code was not "0" or "9". If this was the case, then it was assumed that the item concerned came from storage at an ALC.
- e. The date-of-code was not "0", "9" or "1" (0 to 6 months) and the report was issued in receiving, packaging, or an area other than a major report center. The rationale applied to this screening was that some material moving through receiving, packaging, and other non-major centers would provide added valid samples. If the item was serviceable and had not just been packed, then the item must have come out of storage either at an ALC or other storage site, thus providing a valid case for consideration.

Table D-2 provides a numerical values pertaining to the data file before and after screening.

Once the screening was completed, the data from the two 6-month periods was statistically analyzed using the Kolmogorov-Smirnov Two-Sample Test. This is a test of whether two independent samples have been drawn from the same populations or from populations with the same distribution. The two-sample test showed positive agreement between the samples except for date-of-pack codes "1" and "2". This fact was not entirely unexpected since the codes involved covered 0-6 months and 6-12 months and the two independent samples were drawn in two different 6-month periods. The results of the two-sample tests were accepted as valid since all analyses involved the date-of-pack codes at values higher than "2" (longer storage times). The two 6-month sets of data were combined to create a 1-year sample for use in our analysis of ALC storage time.

Length of Storage at Base Level

Data Source:

Item records in the Air Force Base Supply 1050 II Computer System at 18 bases worldwide.

Time Base:

Records as of 1 April 1977.

Description of Data Source:

Item records are the master records for an Air Force base supply computer system. An item record is maintained for all accountable equipment and supply items.

TABLE D-2. G091 CASES BEFORE AND AFTER SCREENING

	<u>TOTAL</u>	<u>USED</u>
Condition Code		
Serviceable	23903	6188
Non-Serviceable	<u>13338</u>	<u>0</u>
	37241	6188
Location Where Defect Was Found		
Out bound	1954	617
Receiving	11221	800
Storage	5642	3712
Packaging	1168	490
Outgoing Reports	17091	1222
Other	<u>165</u>	<u>47</u>
	37241	6188
Contractor	7744	0
Not Contractor	<u>29497</u>	<u>6188</u>
	37241	6188

Quality of the Data Source:

The 18 bases used for this study are Stock Control Data Base participants and were selected by Hq AFLC, as representative of Air Force base supply functions world wide. The use of a sample such as this as opposed to a random sample of world wide base supply systems was mutually agreed to by AFLC and BCL. This choice offers several distinct advantages. First, because the 18 bases were already selected as representative, the sample should also be representative. Second and equally important use of the 18 base item records allowed an analysis of storage times related to 100 percent of the items at the 18 representative bases. This second factor provides a much higher confidence level in the length of storage calculations. A listing of the 18 bases used for this study is contained in Attachment D-2.

The Project Data File:

The item records from two different Air Force Bases were initially evaluated for content and several analysis formats were generated for review. As a result, two major data bases were generated for the 18 bases. One data base contained all of the AF-managed investment (depot reparable items) the other contained the expendable or consumable items. These data bases contained 94,814 and 118,281 records, respectively. The following key elements are contained in the project data file and were used to compute storage times.

- o Stock Number
- o System Designator (Main Frame or Satellite)
- o Unit of Issue
- o Routing Identifiers (Management Source)
- o ERRC
- o Warehouse Location
- o Serviceable Balance
- o Date of Last Demand
- o Demand Level

There is no direct way to extract storage times from the Item Records, therefore, a computational model was developed in conjunction with HQ AFLC/LOSS. The model considered three key data elements:

(1) The serviceable balance which reflects the number of items on hand.

(2) The demand level which is computed by the Base 1050 system and represents the number of items required to meet a 90-day demand.

(3) The date of last demand which indicates the last time any user requested the item, even if it was not in stock.

Using these three elements, a logic table was developed for the calculations.

TABLE D-3. LOGIC TABLE

Serviceable Balance	Date of Last Demand	Demand Level	
Not 0	Not Blank	0	Use Date of Last Demand
Not 0	Blank	0	Reject
0	Not Blank	Not 0	Use Date of Last Demand
0	Not Blank	0	Reject
0	Blank	Not 0	Reject
0	Blank	0	Reject
Less than Demand Level	Either Blank or not	Greater than Serv. Bal.	Use 90 days
Greater than Demand Level	Either Blank or not	Less than Demand Level	Serv/DL (90 days)

In each case, the best available data were used in the calculation. Where no calculation was possible, the data were rejected. The final data file used for calculation of base level length of storage contains 183,771 cases. The length of storage computations were then converted to the same intervals as the ALC "date-of-pack" so that the entire length of storage data file was internally consistent.

The development of a second data file was considered so that War Readiness Material (WRM) and Material Due in from Maintenance (DIFM) could be separately identified. After discussions with AFLC personnel, the decision was made not to attempt such separate data bases. The inclusion of WRM as an identifiable element would have required security classification of the data base. Further, the WRM assets were accounted for in the calculations discussed previously as such reflect a more realistic storage time for material in general. The DIFM items, which are not included in the serviceable balance, must be considered as issued (no longer stored in the package); therefore, nothing would be gained by forming a separate data file for them. This completed action to develop the base-level length of storage data file to be used in our analysis.

Analysis of the Length of Storage Data Files

Length of storage is an extremely difficult area to evaluate and analyze. Because of this, care was exercised to insure statistical integrity of the data files as they were manipulated, analyzed and combined. The goal was to aggregate the files as much as possible. To do this, several preliminary analyses were required. All involved the use of frequency distributions in the form of crosstabulations and statistical comparisons among different rows in these two-way tables.

The initial analysis involved the frequency distributions of the date-of-pack code by National Supply Class (1st four digits of stock number) which were prepared to determine if these distributions within each National Supply Group (1st two digits of stock number) were statistically compatible. We found the classes within each group to be compatible whenever there was enough data to make a compatibility test. When one or two classes

within a group had too few samples to make an analysis, the class was also one which contained few, if any, Air Force-managed (centrally procured) items. For example, in the ALC Storage Data Base, the 15XX National Supply Group had 498 cases in class 1450, 1 case in class 1569, and 20 cases in class 1510. Only class 1560 was considered valid and therefore included in the final tabulation. The 49XX National Supply Group included items in classes 4920, 4933, and 4940. All were basically compatible thus the 49XX group was left intact.

Another aspect of storage time analyzed was the relationship between item application and storage time more specifically, the relation between type of weapon system and age of stock. To determine if such a relationship existed, MMC codes for various systems were selected to portray new system, old system, and current system items. The length of storage was computed for each grouping and these were compared to each other as well as the total cases in the data file for an NSN. The general hypothesis was that new systems would have less storage times than current systems and old systems would have more. The pattern observed and tested was far less obvious; in fact there were no significant differences. In some national supply classes, the older system reflected less storage time than current or new.

Several factors must be considered in this analysis. First, the G091 reports were more often written around active items, thus the population of older system items was not as large as current and new. Second, base-level records do not generally reflect old items since their inventory relates to current or anticipated new system. Third, for base level, the new or anticipated system requirements are not generated on experience but instead on projected or recommended stock demand levels. As a result, new items potentially will have the longest storage times. This third factor can also be assumed for ALC stock levels and consequently length of storage.

Once these preliminary analyses were completed, further effort was devoted to developing a system of combining the stock groups into logical and compatible larger groupings. Various commodity groupings were considered, however, the most advantageous grouping was inspired by the DODMDS effort related to combining generic commodities in the form of product groups. This approach was selected since, if it proves successful, all the environmental data could be merged into compatible groups.

With aggregation into product groups as an objective, a series of 43 product codes compatible with the DODMDS groups were developed (see Appendix E for details on product codes). Both base and ALC storage time data files were reestablished with a product code assigned to each NSN based on the 43 codes developed. They were then statistically evaluated for compatibility at the 99th, 95th, and 80th percentiles using a specially developed computer program which analyzed each component of the product group for compatibility at the levels indicated. The statistical analysis resulted in the following changes.

- a. Product Group 171, 174, and 175 were combined to form Product Group 179.
- b. Product Groups 268 and 269 were combined to form an expanded Group 269.
- c. Product Groups 581 and 584 were reduced to reflect only the 58XX National Supply Classes, a new series of product groups; 591 and 594 were created for the 59XX and 70XX National Supply Classes and 66XX was added to 611 and 614 product codes.
- d. Product Codes 678 and 679 were combined into 679.
- e. The 81XX National Supply Class was moved from 719 to 549.
- f. Product Codes 101, 102, 151, 152, 209, 249, 899, and 999 were discarded since only minimal storage data fell in these categories.
- g. Product Codes 105, 106, 145, 155, 495, 585, and 616 were discarded since the data contained in them was not compatible with related product codes.

This analysis yielded two sets of frequency distribution matrices which are statistically compatible and represent the distribution of storage times for each of 26 generic product groupings.

The two sets of distributions in the form of crosstabulations formed the basis for determining storage times at base level and the ALC. These tabulations are contained in Attachments D-1 and D-2. The data as displayed were further refined through statistical computer routines to reduce the storage time intervals from two-year groupings to the six-month grouping appearing in the final report matrices. Attachment D-3 portrays this six month groupings at the selected probability levels represented by the 1st, 5th, 10th and 20th percentiles.

OUTSIDE STORAGE

Outside Storage at ALC's

Data Source:

AFLC, Cental Materiel Locator System (D103) and AFLC Packaging and Transportation Data System (0013).

Description of Data Sources:

The D103 system is used at each ALC to identify locations of material stored at that ALC. Concurrent with storing material at an ALC, data such as the item NSN, storage location, ERRC and condition of the material, and other information, is put into the D103 system. The 0013 system is used to record and retrieve packaging and transportation data. The transportation portion of the data file includes dimensional, weight, and cube data for each NSN.

Quality of the Data Source:

Since the amount of items in outside or shed storage was found to be minimal, 100 percent of the data was used in this sample providing a very high degree of confidence. By deduction, all items not stored outdoors or in shed storage, were stored inside, therefore, all items stored at the 5 ALCs were included in the sample. Data obtained from the 0013 system

was assumed accurate enough to portray the size, weight, and cube of items in outside storage.

The Project Data Base:

Screening of the D103 system resulted in a total of 3678 national stock numbers of items in outside storage. After elimination of duplicates and unserviceable items, the final list consisted of 1153 stock numbers. This list merged with associated 0013 dimensional data represents the total number of different items stored outside at the ALC's and was used for analysis.

Outside Storage at Base Level

Data Sources:

Item records in the Air Force Base Supply 1050 II Computer System at 32 Air Force Bases worldwide.

Time Base:

As of October 1, 1976.

Description of Data Base:

The Base Supply 1050 II Computer System item records are the master records for an Air Force base supply data system. Item records are maintained for all accountable equipment and supply items.

Quality of the Data Source:

AFLC Stock Control Data Base Participants were used to develop the outside storage at base level. The same rationale was used to accept these data as was used for the base level length of storage data discussed in an earlier section.

However, data for this portion of the project were taken from an earlier stock control data base when 32 rather than 18 Air Force Bases were participating. The selection and use of the larger data base was preferred due to expectation of minimal outside storage and the fact that it would include more overseas locations. A list of the bases used is attached. (Attachment D-4)

The Project Data Base:

The item records for the 32 bases were appropriately screened in order to consider only Air Force-managed items at "Main Frame 1050 II bases". This data base was then matched to outside storage location codes provided by each of the 32 bases and resulted in a total of 856 stock numbers of items stored outside. Elimination of duplicates reduced this to a total of 240.

To complete the base level outside storage file, AFLC 0013 interregation cards were prepared and the size, weight, and cube data obtained from the prime management Air Logistic Center. (Attachment D-5)

Analysis of the Base and ALC Outside Storage Data

The number of different items stored outside at both ALC and base level is so small that trend analysis proved futile. The numbers involved represented approximately .2 percent of the base level stock numbers and .15 percent of the ALC numbers. Dimensional data were also inconclusive since individual item size does not appear to be a determining criteria. Two things can account for this.

- 1) Warehousing practice as stated in AFM 67-3, Storage and Materials Handling, and discussions with warehouse personnel at Mather AFB, Travis AFB, and McClellan AFB (SMALC) both lead to the conclusion that if outside storage must be used, items packaged in metal or plastic containers, and large open steel crates are usually selected.
- 2) The quantity of an item or its hazardous properties can result in outside storage. Examples are small amounts of highly flammable items or large quantities of such items as communication

cable, where the unit dimension is one foot of cable but it is stored as 1000 feet on one roll.

An alternative to trend analysis, two data listings concerning outside storage were prepared. One related to base level (Attachment D-4), and the other related to ALCs (Attachment D-5). Both lists provide the stock number, ERRC code, Product Code, the DOD activity address code of at least one of the activities where the item is stored outside and dimensional data.

BASE STORAGE CAPABILITIES SURVEY

A survey form was sent to 32 Air Force Bases to determine the amount and type of storage available at base level. The square footage available in the following warehouse classifications were asked for:

- a. Indoor
 - Humidity Controlled
 - Heated
 - Unheated
- b. Shed (Roof-no sides)
- c. Outside Paved
- d. Outside Unpaved

The results of this survey (Attachment D-7) were input to the computer and a series regression analyses attempted to correlate climatology/corrosion data to types of warehouses. It was assumed that the mix between heated and unheated warehouses and warehouses versus outside storage would correlate with climate. Except for one model, the regression analysis showed very little direct correlation. That model indicated that mean temperature is inversely proportional to unheated storage. That is to say, the colder the mean temperature, the higher the proportion of heated warehouse space. Subjective analysis of the data reflects that:

- a) The amount of storage space available, does not relate to the number of items stored or the current mission of the base. Instead, the historical (past) mission/organization of the base has a large influence on these factors.
- b) The ratio between outdoor vs indoor storage locations is two

times higher overseas than continental U.S. and the overseas outside storage areas are generally unpaved.

- c) An insignificant amount of controlled humidity warehousing is available for storage of material. In fact, only one product of the inside storage is humidity controlled.

The conclusions to be drawn from the above analysis are:

- a) For items known to be destined for outside storage at overseas locations, an unimproved storage area is highly probable.
- b) There is little significance to be drawn on heated vs. unheated warehouses. Where cold weather is a factor, there is a high probability of finding heated warehouses.
- c) Humidity controlled storage should not be considered unless specific arrangements and availability have been verified.

ATTACHMENT D-1

ALC STORAGE LENGTH MATRIX

This attachment includes a matrix arranged numerically by product code and reflect the frequency distribution of each commodity by years in storage. (Table D-1.1). The figures in each cell represent the number of cases a commodity appeared in a storage interval and the percentage that number represents with respect to the total cases evaluated for that commodity. Table D-1.2 provides an index of product groups related to the product codes used in Table D-1.1.

TABLE D-1.1

***** PRODUCT CODE ***** CROSS TABULATION OF ***** STORAGE TIME *****
PC ***** BY DPC ***** PAGE 1 OF 2

COUNT ROW PCT	10 TO 6		6 MONTHS TO 1		1 TO 2		2 TO 4		4 TO 6		6 TO 8		8 TO 10		OVER 10		TOTAL			
	IMONTHS I1	I2	I3	I4	I5	I6	I7	I8	I9	I10	I11	I12	I13	I14	I15	I16		I17	I18	I19
104.	30	11	4	4	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	53
	56.6	20.8	7.5	7.5	0	0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	.9
121.	33	9	3	1	1	3	3	3	3	3	3	3	3	3	3	3	3	3	3	52
	63.5	17.3	5.8	1.9	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	.8
141.	11	6	2	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	22
	50.0	27.3	9.1	0	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	.4
144.	10	2	5	1	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	20
	50.0	10.0	25.0	5.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	.3
153.	126	72	25	20	14.3	14.3	14.3	14.3	14.3	14.3	14.3	14.3	14.3	14.3	14.3	14.3	14.3	14.3	14.3	437
	28.8	16.5	5.7	4.6	32.7	10.3	10.3	10.3	10.3	10.3	10.3	10.3	10.3	10.3	10.3	10.3	10.3	10.3	10.3	7.1
154.	253	186	131	90	32	24	24	24	24	24	24	24	24	24	24	24	24	24	24	766
	33.0	24.3	17.1	11.7	4.2	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	12.4
161.	60	40	7	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	112
	53.6	35.7	6.3	2.7	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	1.8
179.	20	11	3	5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	40
	50.0	27.5	7.5	12.5	2.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	.6
269.	33	7	6	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	49
	67.3	14.3	12.2	6.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	.8
289.	14	3	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	24
	58.3	12.5	12.5	4.2	0	12.5	0	0	0	0	0	0	0	0	0	0	0	0	0	.4
299.	52	33	21	9	4	3	3	3	3	3	3	3	3	3	3	3	3	3	3	127
	40.9	26.0	16.5	7.1	3.1	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.1
491.	67	26	6	4	3.5	7.1	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	113
	59.3	23.0	5.3	3.5	7.1	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	1.8
494.	44	28	14	8	10	4	6	6	6	6	6	6	6	6	6	6	6	6	6	117
	37.6	23.9	12.0	6.8	8.5	3.4	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	1.9
539.	417	231	125	85	71	35	24	24	24	24	24	24	24	24	24	24	24	24	24	1016
	41.0	22.7	12.3	8.4	7.0	3.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	16.4
COLUMN TOTAL	2678	1591	704	442	359	177	79	79	79	79	79	79	79	79	79	79	79	79	79	6188
	43.3	25.7	11.4	7.1	5.8	2.9	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	100.0

(CONTINUED)

TABLE D-1.1

***** PRODUCT CODE ***** CROSS TABULATION OF ***** STORAGE TIME *****
 ***** PC ***** BY DPC ***** PAGE 2 OF 2 *****

COUNT	PC	DPC	MONTHS TO 1 YR YEARS										TOTAL							
			10 TO 6 MONTHS	6 MONTHS TO 1 YR	1 TO 2 YEARS	2 TO 4 YEARS	4 TO 6 YEARS	6 TO 8 YEARS	8 TO 10 YEARS	10 OVER YEARS										
549.	I	66	I	25	I	3	I	0	I	1	I	1	I	0	I	0	I	1	I	97
	I	68.0	I	25.8	I	3.1	I	0	I	1.0	I	1.0	I	1.0	I	0	I	1.0	I	1.6
581.	I	327	I	211	I	61	I	50	I	18	I	12	I	4	I	7	I	7	I	690
	I	47.4	I	30.6	I	8.8	I	7.2	I	2.6	I	1.7	I	.6	I	1.0	I	1.0	I	11.2
584.	I	122	I	73	I	36	I	17	I	13	I	9	I	4	I	24	I	24	I	298
	I	40.9	I	24.5	I	12.1	I	5.7	I	4.4	I	3.0	I	1.3	I	8.1	I	8.1	I	4.8
591.	I	15	I	12	I	8	I	3	I	7	I	1	I	3	I	0	I	0	I	49
	I	30.6	I	24.5	I	16.3	I	6.1	I	14.3	I	2.0	I	6.1	I	0	I	0	I	.8
594.	I	183	I	183	I	93	I	54	I	23	I	16	I	11	I	46	I	46	I	609
	I	30.0	I	30.0	I	15.3	I	8.9	I	3.8	I	2.6	I	1.8	I	7.6	I	7.6	I	9.8
611.	I	423	I	214	I	51	I	38	I	7	I	5	I	1	I	3	I	3	I	742
	I	57.0	I	28.8	I	6.9	I	5.1	I	.9	I	.7	I	.1	I	.4	I	.4	I	12.0
614.	I	164	I	142	I	61	I	25	I	11	I	8	I	0	I	3	I	3	I	414
	I	39.6	I	34.3	I	14.7	I	6.0	I	2.7	I	1.9	I	0	I	.7	I	.7	I	6.7
619.	I	33	I	18	I	4	I	8	I	1	I	0	I	0	I	0	I	0	I	64
	I	51.6	I	28.1	I	6.3	I	12.5	I	1.6	I	0	I	0	I	0	I	0	I	1.0
679.	I	8	I	5	I	5	I	0	I	0	I	0	I	0	I	0	I	0	I	18
	I	44.4	I	27.8	I	27.8	I	0	I	0	I	0	I	0	I	0	I	0	I	.3
689.	I	96	I	37	I	23	I	13	I	2	I	2	I	1	I	0	I	0	I	174
	I	55.2	I	21.3	I	13.2	I	7.5	I	1.1	I	1.1	I	.6	I	0	I	0	I	2.8
719.	I	39	I	3	I	2	I	0	I	0	I	3	I	1	I	0	I	0	I	48
	I	81.3	I	6.3	I	4.2	I	0	I	0	I	6.3	I	2.1	I	0	I	0	I	.8
849.	I	32	I	3	I	2	I	0	I	0	I	0	I	0	I	0	I	0	I	37
	I	86.5	I	8.1	I	5.4	I	0	I	0	I	0	I	0	I	0	I	0	I	.6
COLUMN TOTAL		2078		1591		704		442		359		177		79		158		6188		
		43.3		25.7		11.4		7.1		5.8		2.9		1.3		2.6		100.0		

TABLE D-1.2

PRODUCT CODE INDEX

P/C	GENERIC NAME	NATIONAL SUPPLY CLASSES	ERRC
104	ARMS AND FIKE CONTROL PARTS	10XX 12XX	XF/B
121	FIRE CONTROL COMPONENTS	12XX	XD
141	MISSILE COMPONENTS	14XX 18XX	XD
144	MISSILE PARTS	14XX 18XX	XF/B
153	AIRCRAFT STRUCTURAL COMPONENTS	1560 16XX	XD
154	AIRCRAFT STRUCTURAL PARTS	1560 16XX 2810 2840 2845 2915 2925 2935 2945 2995	XF/B
161	AIRCRAFT ENGINES AND MAJOR COMPONENTS	2810 2840 2845 2915 2925 2935 2950	XD
179	GROUND SUPPORT EQUIPMENT AND PARTS	17XX	ALL
269	TIRES AND TUBES	26XX	ALL
289	NON AIRCRAFT ENGINES, COMPONENTS, AND PARTS	2815 2820 2825 2830 2835 2850 2895	ALL
299	AUTOMOTIVE PARTS AND COMPONENTS	25XX 2640 2805 2910 2920 2930 2940 2990 30XX	ALL
491	SHOP EQUIPMENT AND INDUSTRIAL MACHINES	32XX 34XX 35XX 36XX 37XX 39XX 41XX 42XX 43XX 44XX 45XX 46XX 49XX	XD
494	SHOP AND INDUSTRIAL PARTS AND CONSUMABLES	32XX 34XX 35XX 36XX 37XX 39XX 41XX 42XX 43XX 44XX 45XX 46XX 49XX	XF/B
539	HARDWARE AND RELATED ITEMS	31XX 40XX 47XX 48XX 51XX 52XX 53XX	ALL
549	CONSTRUCTION AND PACKAGING MATERIALS	54XX 55XX 56XX 81XX 93XX 96XX	ALL
581	COMMUNICATIONS EQUIPMENT AND COMPONENTS	58XX	XD
584	COMMUNICATIONS EQUIPMENT PARTS	58XX	XF/B
591	COMPUTER AND ELECTRONIC COMPONENTS	59XX 70XX	XD
594	COMPUTER AND ELECTRONIC PARTS	59XX 70XX	XF/B
611	ELECTRICAL EQUIPMENT AND COMPONENTS	6105 6110 6115 6120 6125 6130 6150 62XX 63XX 66XX	XD
614	ELECTRICAL EQUIPMENT PARTS	6105 6110 6115 6120 6125 6130 6150 62XX 63XX 66XX	XF/B
619	BATTERIES, FUEL CELLS, ETC	6116 6135 6140 6145	ALL
679	PHOTO EQUIPMENT AND SUPPLIES	67XX	ALL
689	CHEMICALS, PAINTS, AND PETROLEUM PRODUCTS	68XX 7930 80XX 91XX	ALL
719	HOUSE AND OFFICE EQUIPMENT AND SUPPLIES	71XX 7240 73XX 74XX 75XX 76XX 7910 7920	ALL
849	CLOTHING AND TEXTILES	83XX 84XX 7210 7220 7230 7290	ALL

ATTACHMENT D-2

BASE LEVEL STORAGE LENGTH LISTING

This attachment includes a listing of the 18 AF Bases involved in the base level storage analysis (Table D-2.1) and a matrix arranged numerically by product code which reflects the frequency distribution of each commodity by years in storage. (Table D-2.2). The figures in each cell represent the number of cases of the commodity that appeared in a storage interval and the percentage that number represents with respect to the total cases evaluated for that commodity. Table D-2.3 provides an index of product groups related to the product codes used in Table D-2.3.

TABLE D2.1. STOCK CONTROL DATA BANK PARTICIPANTS

<u>SRAN</u>	<u>COMD</u>	<u>BASE NAME</u>
FB2505	ADCOM	ENT AFB (EACC)
FB3020	ATC	SHEPPARD AFB
FB3067	ATC	MATHER AFB
FB3089	ATC	RANDOLPH AFB
FB4427	MAC	TRAVIS AFB
FB4460	MAC	LITTLE ROCK AFB
FB 4497	MAC	DOVER AFB
FB4528	SAC	MINOT AFB
FB4608	SAC	BARKSDALE AFB
FB4672	SAC	CASTLE
FB4800	TAC	LANGLEY AFB
FB4805	TAC	ENGLAND AFB
FB4857	TAC	BERGSTROM AFB
FB5000	AAC	ELMENDORF AFB
FB5250	PACAF	CLARK AFB
FB5260	PACAF	HICKAM AFB
FB5606	USAFE	BITBURG AB
FB5644	USAFE	BENTWATERS (RAF)

TABLE D-2.2

CROSS TABULATION OF STORAGE TIME
 BY STORAGE YEARS
 PC PRODUCT CODE
 PAGE 1 OF 2

COUNT	PC	PRODUCT CODE	STORAGE										TOTAL					
			10 TO 6 MONTHS	6 MONTHS TO 1 YR	1 TO 2 YRS	2 TO 4 YRS	4 TO 6 YRS	6 TO 8 YRS	8 TO 10 YRS	OVER 10 YEARS	10							
104.	I	1529	I	747	I	430	I	29	I	3	I	1	I	0	I	1	I	2740
	I	55.8	I	27.3	I	15.7	I	1.1	I	.1	I	.0	I	0	I	.0	I	1.6
121.	I	1971	I	624	I	306	I	56	I	7	I	0	I	0	I	0	I	2964
	I	66.5	I	21.1	I	10.3	I	1.9	I	.2	I	0	I	0	I	0	I	1.7
141.	I	1090	I	355	I	244	I	86	I	32	I	1	I	0	I	0	I	1808
	I	60.3	I	19.6	I	13.5	I	4.8	I	1.8	I	.1	I	0	I	0	I	1.0
144.	I	937	I	385	I	263	I	77	I	12	I	0	I	0	I	0	I	1674
	I	56.0	I	23.0	I	15.7	I	4.6	I	.7	I	0	I	0	I	0	I	1.0
153.	I	5071	I	2346	I	1361	I	410	I	75	I	5	I	0	I	1	I	9269
	I	54.7	I	25.3	I	14.7	I	4.4	I	.8	I	.1	I	0	I	.0	I	5.4
154.	I	23778	I	5977	I	6523	I	612	I	50	I	6	I	2	I	3	I	40951
	I	58.1	I	24.4	I	15.9	I	1.5	I	.1	I	.0	I	.0	I	.0	I	23.7
161.	I	2514	I	871	I	711	I	293	I	40	I	5	I	0	I	0	I	4434
	I	56.7	I	19.6	I	16.0	I	6.6	I	.9	I	.1	I	0	I	0	I	2.6
179.	I	2471	I	1345	I	842	I	49	I	8	I	0	I	0	I	0	I	4715
	I	52.4	I	28.5	I	17.9	I	1.0	I	.2	I	0	I	0	I	0	I	2.7
269.	I	177	I	33	I	13	I	14	I	3	I	0	I	0	I	0	I	240
	I	73.7	I	13.7	I	5.4	I	5.8	I	1.2	I	0	I	0	I	0	I	.1
289.	I	681	I	311	I	130	I	9	I	0	I	0	I	0	I	1	I	1132
	I	60.2	I	27.5	I	11.5	I	.8	I	0	I	0	I	0	I	.1	I	.7
299.	I	1621	I	840	I	564	I	40	I	3	I	1	I	0	I	0	I	3069
	I	52.8	I	27.4	I	18.4	I	1.3	I	.1	I	.0	I	0	I	0	I	1.8
491.	I	2357	I	649	I	587	I	230	I	31	I	1	I	0	I	0	I	3505
	I	60.4	I	17.9	I	15.0	I	5.9	I	.8	I	.0	I	0	I	0	I	2.3
494.	I	2597	I	1526	I	922	I	86	I	12	I	0	I	0	I	0	I	5143
	I	50.5	I	29.7	I	17.9	I	1.7	I	.2	I	0	I	0	I	0	I	3.0
539.	I	14431	I	5590	I	3665	I	561	I	111	I	11	I	6	I	7	I	24382
	I	59.2	I	22.9	I	15.0	I	2.3	I	.5	I	.0	I	.0	I	.0	I	14.1
COLUMN TOTAL		95302		41062		27394		5992		2224		138		10		26		172668
TOTAL		55.5		23.8		15.9		3.5		1.3		.1		.0		.0		100.0

(CONTINUED)

TABLE D-2.2

 PC PRODUCT CODE ***** CROSS TABULATION OF STORAGE TIME *****

 BY STORAGE *****
 ***** PAGE 2 OF 2

COUNT ROW PCT	STORAGE										TOTAL	
	0 TO 6 MONTHS	1 TO 2 YRS	2 TO 4 YRS	4 TO 6 YRS	6 TO 8 YRS	8 TO 10 YRS	10 OVER	10 YEARS	10 YEARS	10 YEARS		
549.	159	45	56	7	6	0	0	0	0	0	0	273
	58.2	16.5	20.5	2.6	2.2	0	0	0	0	0	0	.2
581.	9805	3893	2846	1226	1088	45	0	0	0	0	0	18906
	51.9	20.6	15.1	6.5	5.8	.2	0	0	0	0	0	10.9
584.	4812	2674	1837	532	264	25	1	5	10150			
	47.4	26.3	18.1	5.2	2.6	.2	.0	.0	5.9			
591.	1092	475	268	249	135	18	0	1	2238			
	48.8	21.2	12.0	11.1	6.0	.8	0	.0	1.3			
594.	4780	2389	1560	449	65	1	1	0	9645			
	49.6	24.8	20.3	4.7	.7	.0	.0	0	5.6			
611.	6825	2509	1460	456	134	9	0	0	11393			
	59.9	22.0	12.8	4.0	1.2	.1	0	0	6.6			
614.	5310	2626	1895	227	21	1	0	0	10080			
	52.7	26.1	18.8	2.3	.2	.0	0	0	5.8			
619.	406	161	86	16	6	0	0	4	681			
	59.6	23.6	12.6	2.3	1.2	0	0	.6	.4			
679.	444	251	196	56	9	1	0	0	957			
	46.4	26.2	20.5	5.9	.9	.1	0	0	.6			
689.	48	19	9	1	0	0	0	0	77			
	62.3	24.7	11.7	1.3	0	0	0	0	.0			
719.	480	246	145	214	107	7	0	0	1199			
	40.0	20.5	12.1	17.8	8.9	.6	0	0	.7			
849.	416	145	75	7	0	0	0	0	643			
	64.7	22.6	11.7	1.1	0	0	0	0	.4			
COLUMN TOTAL	95802	41082	27394	5992	2224	138	10	26	172668			
	55.5	23.8	15.9	3.5	1.3	.1	.0	.0	100.0			

TABLE D-2.3

PRODUCT CODE INDEX

P/C	GENERIC NAME	NATIONAL SUPPLY CLASSES	ERRC
104	ARMS AND FIRE CONTROL PARTS	10XX 12XX	XF/B
121	FIRE CONTROL COMPONENTS	12XX	XD
141	MISSILE COMPONENTS	14XX 18XX	XD
144	MISSILE PARTS	14XX 18XX	XF/B
153	AIRCRAFT STRUKTURAL COMPONENTS	1560 16XX	XD
154	AIRCRAFT STRUKTURAL PARTS	1560 16XX 2810 2840 2845 2915 2925 2935 2945 2995	XF/B
161	AIRCRAFT ENGINES AND MAJOR COMPONENTS	2810 2840 2845 2915 2925 2935 2950	XD
179	GROUND SUPPORT EQUIPMENT AND PARTS	17XX	ALL
269	TIRES AND TUBES	26XX	ALL
289	NON AIRCRAFT ENGINES, COMPONENTS, AND PARTS	2815 2820 2825 2830 2835 2650 2895	ALL
299	AUTOMOTIVE PARTS AND COMPONENTS	25XX 2640 2805 2910 2920 2930 2940 2990 30XX	ALL
491	SHOP EQUIPMENT AND INDUSTRIAL MACHINES	32XX 34XX 35XX 36XX 37XX 39XX 41XX 42XX 43XX 44XX 45XX 46XX 49XX	XD
494	SHOP AND INDUSTRIAL PARTS AND CONSUMABLES	32XX 34XX 35XX 36XX 37XX 39XX 41XX 42XX 43XX 44XX 45XX 46XX 49XX	XF/B
539	HARDWARE AND RELATED ITEMS	31XX 40XX 47XX 48XX 51XX 52XX 53XX	ALL
549	CONSTRUCTION AND PACKAGING MATERIALS	54XX 55XX 56XX 81XX 93XX 96XX	ALL
581	COMMUNICATIONS EQUIPMENT AND COMPONENTS	58XX	XD
584	COMMUNICATIONS EQUIPMENT PARTS	58XX	XF/B
591	COMPUTER AND ELECTRONIC COMPONENTS	59XX 70XX	XD
594	COMPUTER AND ELECTRONIC PARTS	59XX 70XX	XF/B
611	ELECTRICAL EQUIPMENT AND COMPONENTS	6105 6110 6115 6120 6125 6130 6150 62XX 63XX 66XX	XD
614	ELECTRICAL EQUIPMENT PARTS	6105 6110 6115 6120 6125 6130 6150 62XX 63XX 66XX	XF/B
619	BATTERIES, FUEL CELLS, ETC	6116 6135 6140 6145	ALL
679	PHOTO EQUIPMENT AND SUPPLIES	67XX	ALL
689	CHEMICALS, PAINTS, AND PETROLEUM PRODUCTS	68XX 7930 80XX 91XX	ALL
719	HOUSE AND OFFICE EQUIPMENT AND SUPPLIES	71XX 7240 73XX 74XX 75XX 76XX 7910 7920	ALL
849	CLOTHING AND TEXTILES	83XX 84XX 7210 7220 7230 7290	ALL

ATTACHMENT D-3

YEARS STORAGE PROBABILITIES MATRIX

This attachment includes a matrix arranged numerically by product code and represents consolidated length of storage values in expected years of storage at the 20%, 10%, 5%, and 1% probabilities. (Table D-3.1)

The values shown represent a statistical conversion of "date of pack" intervals into a continuous value and then computed to the closest 1/2 year.

Table D-3.2 provides an index of product groups related to the product codes used in Table D-3.1.

TABLE D-3.1

PROD CODE	YEARS STORAGE PROBABILITIES							
	20%		10%		5%		1%	
	BASE	ALC	BASE	ALC	BASE	ALC	BASE	ALC
104	1.0	1.5	1.5	3.5	2.0	8.5	4.0	10+
121	1.0	1.0	2.0	4.5	2.5	7.0	4.0	8.0
141	1.0	1.5	1.5	6.0	3.5	9.5	6.0	10
144	1.0	2.0	1.5	4.0	2.0	5.0	4.0	6.0
153	1.0	5.5	1.5	6.5	2.0	7.5	4.0	10
154	1.0	3.0	1.5	6.0	2.0	9.5	3.5	10+
161	1.0	1.0	2.0	1.0	3.0	2.0	4.0	6.0
179	1.0	1.5	1.5	2.5	2.0	3.5	4.0	5.0
269	1.0	1.0	2.0	1.5	3.0	2.5	5.5	4.0
289	1.0	2.0	1.5	6.5	2.0	7.5	2.0	8.0
299	1.0	2.0	1.5	4.0	2.0	7.0	3.0	10+
491	1.0	1.0	2.0	3.5	2.5	5.0	4.0	8.0
494	1.0	4.5	1.5	7.5	2.0	9.5	3.5	10+
539	1.0	3.0	1.5	5.5	2.0	8.1	4.0	10+
549	1.5	1.0	2.0	1.0	2.0	1.0	5.0	10+
581	1.0	2.0	1.5	4.0	4.0	5.0	5.5	10+
584	1.0	2.5	1.5	8.0	2.5	10+	5.5	10+
591	2.0	4.5	3.5	6.0	4.5	8.5	5.5	9.5
594	1.5	3.0	2.0	7.5	2.0	10+	4.0	10+
611	1.0	1.0	1.5	1.5	2.0	3.0	6.0	8.0
614	1.0	1.5	1.5	2.5	2.0	4.0	3.5	8.0
619	1.0	1.0	1.5	3.0	2.0	3.5	5.0	5.0
679	1.0	1.0	1.5	1.5	2.0	1.5	3.0	2.0
689	1.0	1.5	1.5	2.0	1.5	3.5	3.0	7.5
719	3.0	.5	4.0	1.0	5.0	7.5	6.0	9.0
849	1.0	.5	1.5	1.0	1.5	1.5	2.5	2.0

TABLE D-3.2
PRODUCT CODE INDEX

P/C	GENERIC NAME	NATIONAL SUPPLY CLASSES	ERRC
104	ARMS AND FIRE CONTROL PARTS	10XX 12XX	XF/B
121	FIRE CONTROL COMPONENTS	12XX	XD
141	MISSILE COMPONENTS	14XX 18XX	XD
144	MISSILE PARTS	14XX 16XX	XF/B
153	AIRCRAFT STRUKTURAL COMPONENTS	1560 16XX	XD
154	AIRCRAFT STRUKTURAL PARTS	1560 16XX 2810 2840 2845 2915 2925 2935 2945 2995	XF/B
161	AIRCRAFT ENGINES AND MAJOR COMPONENTS	2810 2840 2845 2915 2925 2935 2950	XD
179	GROUND SUPPORT EQUIPMENT AND PARTS	17XX	ALL
269	TIRES AND TUBES	26XX	ALL
289	NON AIRCRAFT ENGINES, COMPONENTS, AND PARTS	2815 2820 2825 2830 2835 2850 2895	ALL
299	AUTOMOTIVE PARTS AND COMPONENTS	25XX 2640 2805 2910 2920 2930 2940 2990 30XX	ALL
491	SHOP EQUIPMENT AND INDUSTRIAL MACHINES	32XX 34XX 35XX 36XX 37XX 39XX 41XX 42XX 43XX 44XX 45XX 46XX 49XX	XD
494	SHOP AND INDUSTRIAL PARTS AND CONSUMABLES	32XX 34XX 35XX 36XX 37XX 39XX 41XX 42XX 43XX 44XX 45XX 46XX 49XX	XF/B
539	HARDWARE AND RELATED ITEMS	31XX 40XX 47XX 48XX 51XX 52XX 53XX	ALL
549	CONSTRUCTION AND PACKAGING MATERIALS	54XX 55XX 56XX 81XX 93XX 96XX	ALL
561	COMMUNICATIONS EQUIPMENT AND COMPONENTS	58XX	XD
584	COMMUNICATIONS EQUIPMENT PARTS	58XX	XF/B
591	COMPUTER AND ELECTRONIC COMPONENTS	59XX 70XX	XD
594	COMPUTER AND ELECTRONIC PARTS	59XX 70XX	XF/B
611	ELECTRICAL EQUIPMENT AND COMPONENTS	6105 6110 6115 6120 6125 6130 6150 62XX 63XX 66XX	XD
614	ELECTRICAL EQUIPMENT PARTS	6105 6110 6115 6120 6125 6130 6150 62XX 63XX 66XX	XF/B
619	BATTERIES, FUEL CELLS, ETC	6116 6135 6140 6145	ALL
679	PHOTO EQUIPMENT AND SUPPLIES	67XX	ALL
689	CHEMICALS, PAINTS, AND PETROLEUM PRODUCTS	68XX 7930 80XX 91XX	ALL
719	HOUSE AND OFFICE EQUIPMENT AND SUPPLIES	71XX 7240 73XX 74XX 75XX 76XX 7910 7920	ALL
849	CLOTHING AND TEXTILES	83XX 84XX 7210 7220 7230 7290	ALL

ATTACHMENT D-4

LIST OF ITEMS IN OUTSIDE STORAGE AT AF BASES

This attachment includes a list of bases surveyed for items in outside storage (Table D-4.1) and a list of all serviceable items in outside storage at base level (Table D-4.2) This list has all duplicate items removed, therefore only one base is identified even if more than one stores the stock numbered item outside.

TABLE D-4.1

BASE		IDENTITY	
BARKSDALE	LA	2711	4608
BERGSTROM	TX	2791	4657
CASTLE	CA	2951	4672
DULUTH	MN	2522	2554
DOVER	DE	2141	4497
ENGLAND	LA	2781	4305
ENT	CO	2812	2505
GRIFFIS	NY	2131	4616
GRISSOM	IN	2431	4654
LANGLEY	VA	2221	4800
LAUGHLIN	TX	2792	3099
LITTLE ROCK	AR	2721	4460
MATHER	CA	2962	3067
MCCORD	WA	2981	4479
MCCONNELL	KS	2621	4621
MINOT	ND	2531	4528
NELLIS	NV	2891	4852
RANDOLPH	TX	2772	3059
RICHARDS GEBUR	MO	1611	3100
SHEPPARD	TX	2752	3020
TRAVIS	CA	2941	4427
TYNGALL	FL	2331	2536
WRIGHT-PATT	OH	2421	2300
ELMENDORF	AK	5082	5000
ALCONBURY	ENG	5022	5643
BENTWATERS	ENG	5022	5644
BITBURG	GERM	5012	5606
RHEINMAIN	GERM	5012	5615
TORREJON	SPAIN	5122	5573
CLARK	PHILIPPINES	5222	5250
HICKAM	HI	5071	5260
KAONA	OKINAWA	5051	5270

TABLE D-4.2

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NATIONAL STOCK NUMBER	ITEMS IN OUTSIDE STORAGE (BASE)								
	UNIT	ERRC	PROD CODE	OOD AAD	WEIGHT POUNDS	DIMENSIONS (INCHES)			CUBIC INCHES
						L	W	D	
1005000726612	EA	0	101	5573	1249	126	35	36	158760
1005004626523	EA	0	101	5644	680	48	31	57	84816
1005008736264	EA	0	101	4852	516	76	39	39	115596
1005010067470	EA	F	104	4852	458	57	32	37	67488
1095000683845	EA	0	102	5250	516	172	23	26	102856
1095002203382	EA	0	102	4852	514	166	21	26	90636
1095004348376	EA	0	102	4852	598	172	23	26	102856
1095009333672	EA	0	102	5644	514	166	21	25	87150
1095009497033	EA	0	102	4852	514	166	21	25	87150
1095009643182	EA	0	102	4852	184	75	25	25	46875
1095009684200	EA	0	102	5644	516	172	23	26	102856
1095009684201	EA	0	102	5250	240	75	23	25	43125
1270009216788	EA	0	121	3067	2600	98	63	66	407484
14400010434748L	EA	0	141	4852	130	59	12	23	16284
14400048975018F	EA	0	141	5644	138	71	12	14	11928
14400078194038F	EA	0	141	5644	200	72	24	30	51340
14400093373088F	EA	0	141	5644	130	88	15	20	26400
1450000773505AE	EA	0	141	4621	666	97	17	26	42874
15600002390288Z	EA	F	154	5644	95	46	35	32	51520
1560000744233JH	EA	0	153	4427	884	105	91	58	554190
15600008290568F	EA	0	153	5644	224	56	56	28	87808
15600008290686F	EA	D	153	5644	224	56	56	28	87808
15600008291188F	EA	0	153	5644	330	108	20	17	56720
1560000843746LG	EA	0	153	5250	400	126	40	57	287280
1560000843747LG	EA	D	153	5250	400	126	40	57	287280
1560001031173MA	EA	D	153	4305	315	82	64	28	146944
1560001288998JH	EA	0	153	4427	2115	296	23	70	476560
1560001333743CG	EA	0	153	4857	136	6	32	13	2496
1560001373779LH	EA	0	153	4427	679	130	72	41	383760
1560001698708GP	EA	D	153	4654	363	137	27	46	170154
1560001698709GP	EA	0	153	4654	363	137	27	46	170154
15600017470598F	EA	D	153	5250	778	173	22	85	323510
1560001753870LH	EA	0	153	4427	679	130	72	41	383760
1560001758109LH	EA	0	153	4427	1435	177	87	96	1478304
1560001758110LH	EA	0	153	4427	1435	177	87	96	1478304
1560001758111LH	EA	0	153	4427	1435	177	87	96	1478304
1560001758112LH	EA	0	153	4427	1435	177	87	96	1478304
1560001800042LH	EA	D	153	4427	679	130	72	41	383760
1560001883596LG	EA	0	153	4460	2664	148	57	79	666444
15600021217808F	EA	0	153	5573	628	144	22	50	285120
15600021218258F	EA	0	153	5644	628	144	22	90	285120
1560002364389LH	EA	0	153	4427	518	113	116	55	720940
15600024661593F	EA	0	153	5644	160	72	48	12	41472
15600025929078F	EA	0	153	5250	325	51	51	81	210661
1560003071910LG	EA	D	153	5250	1130	148	20	83	245680
1560003405210FL	EA	0	153	4654	440	156	58	33	298584
1560003409211FL	EA	0	153	4654	380	151	58	31	271498
1560003454859LG	EA	D	153	4800	876	219	36	40	315360
15600034953498H	EA	0	153	2586	405	140	52	59	429520
1560004045471LG	EA	0	153	5250	956	82	83	85	578510

TABLE D-4.2

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NATIONAL STOCK NUMBER	UNIT	ERRC	PROD CODE	DOO AAD	WEIGHT POUNDS	DIMENSIONS (INCHES)			CUBIC INCHES
						L	W	D	
1560004773608XJ	EA	0	153	5643	794	218	48	44	460416
15600047790798F	EA	0	153	5644	165	45	65	31	90675
15600048966158F	EA	0	153	4852	830	248	43	37	394568
15600048966178F	EA	0	153	4857	400	130	28	28	101920
15600049296938F	EA	0	153	5250	325	51	51	81	210681
1560004945804MA	EA	0	153	4805	275	62	60	55	204600
15600049851428F	EA	0	153	4852	205	48	45	60	129600
1560005205602FL	EA	0	153	4654	440	156	58	33	298584
1560005205607FL	EA	0	153	4654	440	156	58	33	298584
1560005214918LG	EA	0	153	5250	786	248	16	67	265856
1560005259601LG	EA	0	153	4857	956	82	83	85	578510
1560005343440FX	EA	0	153	4852	140	44	42	40	73920
1560005331135FX	EA	0	153	4852	185	51	47	46	110262
1560005391173FX	EA	0	153	4852	98	44	39	19	32604
1560005483622FX	EA	0	153	4800	1158	266	39	45	466830
1560005717667LG	EA	0	153	5250	1352	348	19	70	462840
1560005902069GU	EA	0	153	2586	665	233	36	40	335520
1560006025461LG	EA	0	153	5644	220	63	42	18	47628
1560006152539FG	EA	0	153	4672	460	131	57	40	298680
1560006183881FG	EA	0	153	4672	460	131	57	40	298680
1560006202517LM	EA	0	153	4427	1682	117	70	122	999180
1560006227928LG	EA	0	153	4800	956	82	83	85	578510
1560006227930LG	EA	0	153	5250	1352	351	19	70	466830
1560006227931LG	EA	0	153	5250	1352	348	19	70	462840
1560006258550LG	EA	0	153	5250	786	241	16	67	258352
1560006315577FL	EA	F	154	4654	48	116	18	12	25056
1560006470303FL	EA	0	153	4427	850	189	23	83	360801
1560006562306LG	EA	F	154	4852	324	50	48	84	201600
1560006562307LG	EA	F	154	5644	310	48	48	80	184320
1560006566200FL	EA	0	153	4427	840	183	23	88	370392
1560006566201FL	EA	0	153	4427	840	183	23	88	370392
1560006740913FL	EA	D	153	4672	296	87	17	61	90219
1560006743847FG	EA	0	153	4672	245	154	50	30	231000
1560006793578FG	EA	0	153	4672	320	149	49	17	124117
1560006793579FG	EA	0	153	4672	320	149	49	17	124117
1560006793580FG	EA	0	153	4672	245	128	19	53	128896
1560006793581FG	EA	0	153	4672	245	128	19	53	128896
1560007238009FL	EA	0	153	4654	440	238	17	50	202300
1560007233010FL	EA	D	153	4427	440	238	17	50	202300
1560007242853FL	EA	D	153	5573	347	76	68	62	320416
1560007300864FG	EA	0	153	4672	245	154	50	30	231000
1560007323228LG	EA	D	153	5250	1130	148	20	83	245680
15600073824628F	EA	0	153	4852	710	248	43	43	458552
15600076282013F	EA	D	153	5250	325	51	51	81	210681
1560007867284GY	EA	F	154	5250	581	156	19	91	269724
15600079266598K	EA	0	153	4800	911	171	58	65	644670
1560007941566JH	EA	0	153	4427	280	71	71	25	126025
15600079447273F	EA	0	153	5250	1880	205	90	99	1626550
1560007948962JH	EA	0	153	4427	410	170	44	11	82280
1560007980902FG	EA	D	153	4672	440	131	57	30	224010

TABLE D-4.2

NATIONAL STOCK NUMBER	UNIT	ERRC	PROD CODE	DOD AAO	WEIGHT POUNDS	DIMENSIONS (INCHES)			CUBIC INCHES
						L	W	O	
1560007980903FG	EA	D	153	4672	440	131	57	30	224010
1560008113150GP	EA	D	153	4654	384	146	26	36	136656
1560008182083LG	EA	D	153	4800	1130	148	20	83	245680
1560008191679XE	EA	F	154	4852	83	119	19	10	22610
15600082676718F	EA	F	154	5250	134	87	34	34	100572
15600082676723F	EA	F	154	5573	295	106	42	42	186984
15600082676778F	EA	F	154	5250	190	87	36	40	125280
15600083574888F	EA	D	153	4852	653	67	35	39	91455
15600084008748F	EA	D	153	4852	375	114	24	20	54720
1560008407045FG	EA	D	153	4672	190	91	52	21	99372
1560008567981FG	EA	D	153	4672	72	60	27	43	69660
1560008567982FG	EA	D	153	4672	72	60	27	43	69660
1560008567983FG	EA	D	153	4672	79	54	21	65	73710
1560008567984FG	EA	D	153	4672	79	54	21	65	73710
1560008692577JH	EA	D	153	4479	2970	150	111	91	1515150
1560008722400FL	EA	D	153	4654	440	238	17	50	202300
1560008722401FL	EA	D	153	4654	440	238	17	50	202300
1560008815375JH	EA	D	153	4427	1569	103	82	53	447638
1560008882231LG	EA	D	153	4460	1140	82	81	74	491508
1560008903934MA	EA	D	153	4805	592	191	37	40	282680
1560008976860FG	EA	D	153	5644	340	80	40	45	144000
1560008976860FG	EA	D	153	4672	295	118	26	57	174376
1560008997351LG	EA	D	153	5644	462	73	69	65	327405
1560009054474BK	EA	D	153	2586	1086	285	37	39	411255
1560009105537JH	EA	D	153	4427	187	87	18	24	37584
15600091090998F	EA	D	153	5644	258	102	24	17	41616
15600091166828F	EA	D	153	5250	1484	205	90	96	1771200
1560009139172JH	EA	D	153	4427	559	181	25	30	135750
1560009275007JH	EA	D	153	4427	1970	378	102	56	2159136
1560009275008JH	EA	D	153	4427	1972	378	102	55	2120520
15600093215823F	EA	D	153	5644	145	71	48	15	51120
1560009339707BZ	EA	D	153	5644	680	98	97	19	180614
1560009571680JH	EA	D	153	4427	3004	320	28	95	851200
1560009571681JH	EA	D	153	4479	3004	259	22	76	433046
1560009756075JH	EA	D	153	4427	685	170	48	27	220320
1560009756076JH	EA	D	153	4427	685	170	48	27	220320
15600096791948F	EA	D	153	4852	325	50	50	81	202500
1560009839170JH	EA	D	153	4427	1569	103	80	54	444960
1560009919792FL	EA	D	153	4427	1379	90	52	64	299520
1560010037173FX	EA	D	153	4852	455	137	53	20	145220
1560010117366XJ	EA	D	153	4852	794	218	48	44	460416
1560010145787FX	EA	D	153	4800	498	50	48	99	237600
1560010162218FX	EA	D	153	4852	686	185	18	39	129670
1560010162219FX	EA	D	153	4800	598	159	14	26	57576
15600102003748F	EA	D	153	5644	160	71	48	12	40896
1610000058685	EA	D	153	5644	285	34	33	20	22440
1610007764674	EA	D	153	5250	917	109	34	26	96356
1610007835191	EA	D	153	4460	1682	138	34	30	140760
1615000613067BZ	EA	D	153	4857	966	394	36	18	255312
1615000690093BZ	EA	D	153	5644	460	47	47	30	66270

TABLE D-4.2

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NATIONAL STOCK NUMBER	UNIT	ERRC	PROD CODE	DOD AAD	WEIGHT POUNDS	DIMENSIONS (INCHES)			CUBIC INCHES
						L	W	D	
1615000725799GA	EA	D	153	3089	543	74	34	16	40256
1615001137854TH	EA	D	153	5250	2916	77	77	71	420959
16150013371548Z	EA	D	153	5644	402	60	36	38	22080
16150013314909Z	EA	D	153	5644	194	27	27	36	26244
16150016635889Z	EA	D	153	4357	3821	75	75	101	568125
1615001934024TH	EA	D	153	5250	2916	77	77	71	420359
16150025008868Z	EA	D	153	5644	432	44	44	40	77440
1615002553328TH	EA	D	153	2586	3065	78	78	40	243360
1615004107359TH	EA	D	153	2586	3065	78	78	40	243360
1615004130965GA	EA	D	153	4528	672	46	46	60	126960
16150043356740Z	EA	D	153	5644	216	27	27	36	26244
16150043356758Z	EA	D	153	5644	216	27	27	36	26244
1615004360557TH	EA	D	153	2586	2900	77	77	71	420959
16150045541299Z	EA	D	153	5644	432	44	44	40	77440
16150045541303Z	EA	D	153	5644	432	44	44	40	77440
16150046805669Z	EA	D	153	4357	407	75	75	100	562500
1615004918488TH	EA	D	153	2586	480	348	24	14	116928
16150082334913Z	EA	D	153	5644	125	92	14	25	32200
1615008331556GA	EA	D	153	5250	582	72	33	31	73656
1615009601542TH	EA	D	153	5250	199	49	28	31	42532
1620005459439	EA	D	153	4352	230	50	39	22	42900
1620007390167	EA	D	153	5973	884	90	24	26	56160
1620009196847	EA	D	153	5250	310	60	30	18	32400
1680000740448	EA	D	153	4427	28	12	12	15	2160
1680001095725FL	EA	D	153	4427	1705	363	42	50	762300
1680001095730FL	EA	D	153	4654	1705	363	42	50	762300
1680003220493	EA	D	153	4427	113	20	20	25	10000
1680003481268	EA	D	153	4427	28	12	12	15	2160
1680004982984	EA	D	153	4427	21	18	17	17	5202
1680006116193FL	EA	D	153	3067	1705	363	41	50	744150
1680007029371	EA	D	153	5250	470	186	21	18	70308
1680007620327	EA	D	153	4427	21	11	11	13	1573
16800091568789Z	EA	D	153	5644	60	49	39	31	59241
1680009290030	EA	D	153	5644	417	60	50	41	123000
1730000308396	EA	F	174	5250	195	84	41	12	41328
1730000308397	EA	F	174	4621	95	81	40	6	19440
1730002379063	EA	F	174	4427	533	167	14	14	32732
1730005405031	EA	F	174	2586	40	100	20	18	36000
1730006058818	EA	F	174	5644	120	74	8	7	4144
1730007724208	EA	F	174	5644	190	49	48	8	18816
1730007794787	EA	F	174	4528	310	243	12	15	43740
17300079372438F	EA	F	174	5250	62	93	26	24	58032
173000866710208F	EA	F	174	5644	10	49	19	7	6517
1730009087965FL	EA	F	174	4654	25	68	14	14	13328
1730009149667	EA	F	174	4852	152	33	23	14	10626
2520001565792	EA	D	299	5644	675	36	30	26	28080
2520002218447	EA	F	299	5644	1187	104	31	32	103168
2520004437365	EA	F	299	5606	420	24	23	32	17664
2520005171444	EA	D	299	5606	480	36	36	45	58320
2530006538994	EA	F	299	5644	220	60	16	15	14400

TABLE D-4.2

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NATIONAL STOCK NUMBER	UNIT	ERRC	PROD CODE	DOD AAD	WEIGHT POUNDS	DIMENSIONS (INCHES)			CUBIC INCHES
						L	W	D	
2840000051307PS	EA	0	161	4427	1716	108	108	84	979776
2840000086208PS	EA	0	161	4427	470	49	47	48	110544
2840000151677RV	EA	0	161	4427	1350	66	72	60	285120
28400000304621RT	EA	0	161	2586	2290	68	52	52	183872
2840000782191PL	EA	0	161	5573	800	77	39	42	126126
28400001507233PS	EA	0	161	4427	453	108	108	30	349920
28400001573625PL	EA	0	161	5250	899	103	43	52	230308
28400002691987PQ	EA	0	161	4852	452	90	46	51	211140
28400004150423PL	EA	0	161	4852	1250	33	42	53	207018
28400004356860PL	EA	0	161	4852	764	77	38	42	122392
28400005462898RT	EA	0	161	4800	375	47	47	77	170093
28400007659928RV	EA	0	161	4672	1352	65	72	61	285480
28400007751276PH	EA	0	161	5250	122	35	27	26	24570
28400008670618PL	EA	F	154	5606	145	34	34	24	27744
28400009068973RT	EA	0	161	2586	2230	68	52	52	183872
28400009340403PH	EA	0	161	5250	508	30	30	52	46800
28400009446708PL	EA	F	154	5606	49	38	38	26	37544
28400009477709PQ	EA	0	161	4852	493	52	40	34	70720
28400009968290PL	EA	0	161	4852	192	40	40	57	91200
41200009172840	EA	0	491	5250	2235	94	51	55	263670
41300004111092	EA	F	494	5250	518	83	30	19	47310
42100005947889	EA	0	491	4852	900	96	48	43	198144
4220000925825LS	EA	F	494	4427	31	34	6	6	1224
42400001066850LS	EA	0	491	4427	43	31	10	9	2790
42400004500571LS	EA	0	491	4427	60	19	18	16	5472
43100006468049	EA	0	491	5644	498	39	39	37	56277
43200002578648T	EA	0	491	5644	440	30	26	42	35280
49200005326721	EA	F	494	4852	190	156	9	6	8424
493500097599278F	EA	0	491	5644	6	10	8	8	640
58200009657730AH	EA	0	581	4528	604	40	35	14	19600
58210000872520	EA	0	581	5606	111	6	35	24	5040
58210008388266	EA	0	581	4300	5200	186	48	48	428544
61150001245642AH	EA	0	611	4528	3040	105	54	64	362880
81400001706579	EA	0	719	4852	334	88	22	22	42592
81400003102808	EA	0	719	5250	145	56	19	19	20216
81400007330233	EA	0	719	5250	15	18	8	14	2016
81400009089617	EA	0	719	5250	137	60	19	20	22800
814500002554423F	EA	0	719	4852	453	96	24	8	18432
814500002686918F	EA	0	719	5250	453	96	24	8	18432
81450007669907EW	EA	0	719	5573	299	107	42	29	130326

ATTACHMENT D-5

LIST OF ITEMS IN OUSTIDE STORAGE AT THE ALC'S

This attachment includes a list of all serviceable items in outside storage at the ALC's. The list has all duplicate items removed. Therefore, if more than one ALC has a specific stock number stored outside, only one is shown.

TABLE D-5.1

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NATIONAL STOCK NUMBER	UNIT	ERRC	PROD CODE	DOO AAD	WEIGHT POUNDS	DIMENSIONS (INCHES)			CUBIC INCHES
						L	W	D	
1270009216789	EA	T	121	2065	2580	98	63	66	407484
1440004109017AD	EA	T	141	2027	9999	161	131	134	2826194
1440008765827HB	EA	S	141	2037	2900	168	94	50	789600
1440009522702AE	EA	T	141	2027	2000	181	39	43	303537
1440009612532AH	EA	T	141	2027	692	58	26	18	27144
14500016546700J	EA	S	141	2037	1280	51	42	59	126378
1450004916230AH	EA	T	141	2027	1000	33	3	1	99
1450006053758AA	EA	U	141	2065	1250	156	98	26	397488
1450006681701HC	EA	S	141	2037	406	53	46	54	131652
1450007042060HB	EA	S	141	2037	428	52	36	34	63648
1450007163165HB	EA	S	141	2037	2000	135	60	56	453600
1450007806980AE	EA	S	141	2027	8065	96	67	81	520992
1450008070594AH	EA		141	2027	570	115	31	11	39215
1450008070646AH	EA	T	141	2027	4577	112	106	25	296800
1450008962626HB	EA	S	141	2037	1933	124	56	44	305536
14500090080760J	SE	U	141	2037	482	53	40	33	69460
1450009501750AH	EA	T	141	2027	7382	204	47	49	469812
1450009601751AH	EA	T	141	2027	7382	204	47	49	469812
1450009601752AH	EA	T	141	2027	7382	204	47	49	469812
1560000153435FL	EA	T	153	2037	546	293	37	40	433640
1560000134052BC	EA	T	153	2059	28	198	23	80	364320
1560000199586FG	EA	T	153	2037	2960	438	56	79	1937712
15600002540113C	EA	T	153	2059	559	75	82	22	135300
1560000254055BC	EA	T	153	2059	290	76	59	19	85196
15600002606219C	EA	T	153	2059	238	76	55	17	71060
15600002606243C	EA	T	153	2059	238	76	55	17	71060
1560000307590MJ	EA	T	153	2049	538	164	39	38	243048
15600003491583C	EA	T	153	2059	174	104	22	24	54912
15600003491618C	EA	T	153	2059	168	126	19	22	52668
1560000432041FG	EA	T	153	2037	2290	155	111	92	1562860
1560000556756FL	EA	T	153	2037	400	262	32	21	176064
15600007348704E	EA	T	153	2049	883	288	42	50	604800
1560000741768FL	EA	T	153	2037	546	293	37	40	433640
1560000744238JH	EA	T	153	2065	884	105	91	58	554190
1560000802875FL	EA	T	153	2037	301	150	51	32	244800
15600009201683C	EA	T	153	2059	384	167	13	53	115063
1560000923185FH	EA	T	153	2037	628	90	86	29	224460
1560000923188FH	EA	T	153	2037	785	252	24	102	616896
15600009633193C	EA	T	153	2059	559	75	82	22	135300
15600009634233C	EA	T	153	2059	720	250	17	51	216750
1560001061020FG	EA	T	153	2037	2290	155	111	92	1562860
1560001093582FH	EA	T	153	2037	341	318	22	26	161896
1560001278913JH	EA	T	153	2065	2115	335	23	70	539350
1560001288998JH	EA	T	153	2065	2115	296	23	70	476560
1560001288999JH	EA	T	153	2065	2136	284	31	86	757144
1560001289001JH	EA	T	153	2065	2115	299	23	70	481390
1560001441040LH	EA	T	153	2059	9999	583	115	160	9999999
1560001514342MA	EA	T	153	2037	6182	259	45	214	2763070
1560001633447LG	EA	T	153	2065	1235	211	64	75	1012800
1560001654271GP	EA	T	153	2059	384	146	26	36	136656

TABLE D-5.1

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NATIONAL STOCK NUMBER	UNIT	ERRC	PROD CODE	DOD AAD	WEIGHT POUNDS	DIMENSIONS (INCHES)			CUBIC INCHES
						L	W	D	
1560001662709LK	EA	T	153	2049	727	227	34	36	277848
1560001692095JH	EA	T	153	2065	119	272	10	4	10880
1560001698708GP	EA	T	153	2059	363	137	27	46	170154
1560001698709GP	EA	T	153	2059	363	137	27	46	170154
15600017066718F	EA	T	153	2027	7000	348	87	203	6146028
1560001739121LH	EA	T	153	2059	6755	270	120	141	4568400
15600018123528C	EA	T	153	2059	642	327	21	53	363951
1560001877396LH	EA	T	153	2059	6558	224	130	192	5591040
1560001883601LG	EA	T	153	2065	2664	148	57	79	666444
15600019039368C	EA	T	153	2059	842	327	21	53	363951
1560001910344FH	EA	T	153	2037	341	318	22	26	181896
1560001946118RD	EA	T	153	2037	370	145	18	40	104400
15600019534278C	EA	T	153	2059	137	109	30	18	58860
1560001953714FH	EA	T	153	2037	200	139	31	26	112034
15600019792250B	EA	T	153	2065	400	459	6	5	13770
1560002133926FG	EA	T	153	2037	675	132	30	97	384120
1560002147962FH	EA	T	153	2037	160	46	46	66	139656
1560002161030FG	EA	T	153	2037	675	132	30	97	384120
15600021738738C	EA	T	153	2059	166	129	18	21	48762
15600023200938C	EA	T	153	2059	123	73	25	24	43800
15600023200948C	EA	T	153	2059	123	73	25	24	43800
1560002383893FH	EA	T	153	2037	470	209	18	62	233244
1560002383894FH	EA	T	153	2037	470	209	18	62	233244
1560002407560LG	EA	T	153	2065	5486	600	48	98	2822400
15600025034430E	EA	T	153	2037	592	150	37	110	610500
15600025097718C	EA	T	153	2059	218	127	16	22	44704
1560002517056FL	EA	T	153	2037	1525	270	28	101	763560
1560002560187LH	EA	T	153	2059	5377	240	116	125	3480000
1560003041763FG	EA	T	153	2037	675	132	30	97	384120
1560003064967LC	EA	T	153	2049	592	173	34	38	223516
15600030674668C	EA	T	153	2059	628	223	18	40	160560
15600030674738C	EA	T	153	2059	559	75	82	22	135300
15600030913708C	EA	T	153	2059	169	177	12	19	40356
15600030914238C	EA	T	153	2059	186	58	49	30	85260
1560003122057MA	EA	T	153	2037	1065	204	100	14	285600
1560003122089MA	EA	T	153	2037	1065	204	100	14	285600
1560003262235FL	EA	T	153	2037	546	293	37	40	433640
1560003345861FL	EA	T	153	2037	285	215	18	22	85140
15600034876148C	EA	T	153	2059	422	182	22	55	220220
1560003864200FL	EA	T	153	2037	292	275	32	13	114400
15600038651818C	EA	T	153	2059	238	76	55	17	71060
15600038651823C	EA	T	153	2059	238	76	55	17	71060
15600038651838C	EA	T	153	2059	238	76	55	17	71060
1560003889875FH	EA	T	153	2037	580	172	42	43	310632
1560003889876FH	EA	T	153	2037	327	85	42	43	153510
15600039391998C	EA	T	153	2059	218	127	16	22	44704
1560003943623FH	EA	T	153	2037	905	255	43	43	471495
15600039666518C	EA	T	153	2059	151	108	28	17	51408
15600039667938C	EA	T	153	2059	559	75	82	22	135300
15600039667968C	EA	T	153	2059	422	182	22	55	220220

TABLE D-5.1

NATIONAL STOCK NUMBER	UNIT	ERRC	PROD CODE	DOD AAD	WEIGHT POUNDS	DIMENSIONS (INCHES)			CUBIC INCHES
						L	W	D	
15600039668130C	EA	T	153	2059	138	57	52	33	97812
1560004000534GP	EA	T	153	2059	384	146	26	36	136656
1560004094753BF	EA	T	153	2027	2000	270	60	122	1976400
1560004094754BF	EA	T	153	2027	2436	262	62	120	1949280
15600042031819R	EA	T	153	2049	1281	313	40	47	588440
1560004220076NE	EA	T	153	2037	833	268	42	44	495264
1560004350922EV	EA	T	153	2059	1065	223	42	112	1048992
1560004480378FG	EA	T	153	2037	1015	298	19	77	435974
1560004480379FG	EA	T	153	2037	1015	298	19	77	435974
1560004512001LH	EA	T	153	2059	8431	268	156	146	6103968
1560004626473JH	EA	T	153	2065	4270	303	106	63	2557674
1560004626474JH	EA	T	153	2065	4270	383	106	63	2557674
1560004653793FL	EA	T	153	2037	840	260	19	65	321100
1560004653794FL	EA	T	153	2037	840	260	19	65	321100
1560004731832LC	EA	T	153	2049	592	173	34	38	223516
15600048966158F	EA	T	153	2059	830	248	43	37	394568
1560004944250NE	EA	T	153	2027	306	266	36	54	517104
1560004973552GP	EA	T	153	2059	363	137	27	46	170154
1560005200945SE	EA	T	153	2059	111	102	20	18	36720
1560005205101LG	EA	T	153	2065	2559	283	31	97	850981
1560005205602FL	EA	T	153	2037	440	156	58	33	298584
1560005205607FL	EA	T	153	2037	440	156	58	33	298584
1560005245757FH	EA	T	153	2037	650	317	17	47	253283
1560005245798FH	EA	T	153	2037	650	317	17	47	253283
15600052551648C	EA	T	153	2059	559	75	82	22	135300
15600052551668C	EA	T	153	2059	559	75	82	22	135300
15600055264178R	EA	T	153	2049	1285	312	40	48	599040
1560005587378FG	EA	T	153	2037	1015	298	19	77	435974
1560005587379FG	EA	T	153	2037	1015	298	19	77	435974
1560005587385MA	EA	T	153	2037	735	144	24	69	238464
1560005615535ML	EA	T	153	2049	659	262	36	43	405576
1560005615536ML	EA	T	153	2049	659	262	36	43	405576
1560005629621GU	EA	T	153	2027	2765	266	109	125	3624250
1560005645714SE	EA	T	153	2059	406	172	18	54	167184
1560005665936LG	EA	T	153	2065	2664	148	57	79	666444
15600056831608C	EA	T	153	2059	422	182	22	55	220220
15600056831678C	EA	T	153	2059	325	32	60	24	118080
1560005666276GU	EA	T	153	2027	570	231	36	40	332640
15600058738623C	EA	T	153	2059	3430	217	18	37	144522
1560005902069GU	EA	T	153	2027	665	233	36	40	335520
1560005909825GU	EA	T	153	2027	3580	270	108	111	3236760
1560005948040GU	EA	T	153	2027	2765	266	109	125	3624250
1560005948364ML	EA	T	153	2049	659	262	36	43	405576
1560005948365ML	EA	T	153	2049	659	262	36	43	405576
1560006019437GU	EA	T	153	2027	2765	266	109	125	3624250
1560006059389FG	EA	T	153	2037	2290	155	111	92	1582960
1560006072181FH	EA	T	153	2037	1750	350	84	49	1440600
1560006072182FH	EA	T	153	2037	1750	350	84	49	1440600
1560006083771FL	EA	T	153	2037	285	215	18	22	85140
1560006106947GU	EA	T	153	2027	2765	266	109	125	3624250

AD-A067 069

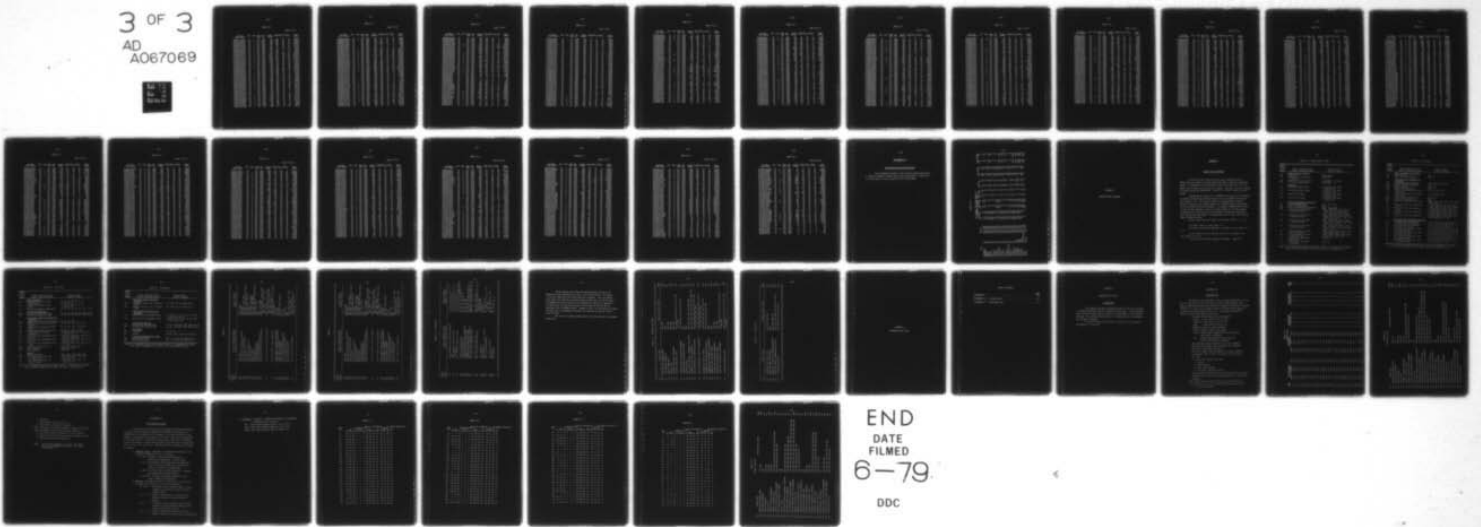
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LOGISTICS PACKAGING ENVIRONMENT. TO HQ AFLC/LOTPP WRIGHT PATER--ETC(U)
JAN 79 6 DERRINGER, R COTE, J WRAY, S PORTER F-33657-77-A-0003

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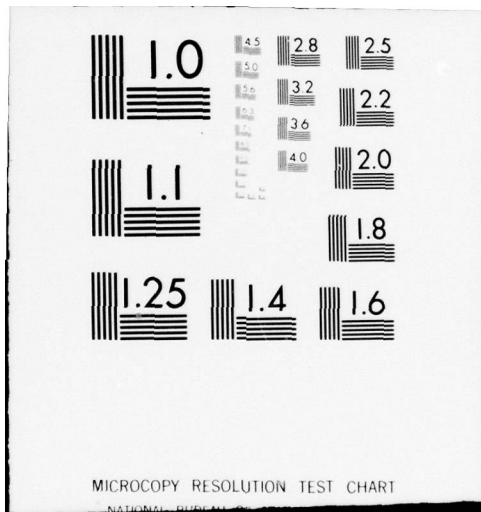


TABLE D-5.1

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NATIONAL STOCK NUMBER	UNIT	ERRC	PROD CODE	000 AAO	WEIGHT POUNDS	DIMENSIONS (INCHES)			CUBIC INCHES
						L	W	D	
1560006111953ML	EA	T	153	2049	659	262	36	43	405576
1560006111954ML	EA	T	153	2049	659	262	36	43	405576
1560006112809ML	EA	T	153	2049	659	262	36	43	405576
1560006112811ML	EA	T	153	2049	659	262	36	43	405576
1560006112812ML	EA	T	153	2049	659	262	36	43	405576
15600061172348C	EA	T	153	2059	319	80	57	23	104880
15600061172358C	EA	T	153	2059	325	82	60	27	132340
1560006202517LH	EA	T	153	2059	1682	117	70	122	999180
1560006202560SE	EA	T	153	2059	33	152	4	4	2432
1560006227931LG	EA	T	153	2065	1352	348	19	70	462940
15600062720798C	EA	T	153	2059	422	182	22	55	220220
1560006284644FG	EA	T	153	2037	2070	387	25	117	1131975
1560006284645FG	EA	T	153	2037	2070	387	25	117	1131975
1560006287870FG	EA	T	153	2037	2070	387	25	117	1131975
1560006287871FG	EA	T	153	2037	2070	387	25	117	1131975
1560006287872FG	EA	T	153	2037	1250	267	23	98	601818
1560006287873FG	EA	T	153	2037	1250	267	23	98	601818
1560006299129FG	EA	T	153	2037	1100	371	22	91	742742
1560006305360ML	EA	T	153	2065	384	167	29	36	174348
15600064702968C	EA	T	153	2059	422	182	22	55	220220
1560006566180FL	EA	T	153	2037	650	189	23	83	360801
1560006566200FL	EA	T	153	2037	840	183	23	68	370392
15600065932570GU	EA	T	153	2027	2765	266	109	125	3624250
1560006591316LG	EA	T	153	2065	786	566	29	8	131312
1560006591317LG	EA	T	153	2065	786	566	29	8	131312
1560006705556FL	EA	T	153	2037	377	262	31	24	194928
1560006760159FL	EA	T	153	2037	350	300	11	11	36300
15600069126888C	EA	T	153	2059	422	182	22	55	220220
15600070170908C	EA	T	153	2059	122	60	32	32	61440
1560007033418FH	EA	T	153	2037	1700	462	25	81	935550
1560007033420FH	EA	T	153	2037	1700	462	25	81	935550
1560007033426FH	EA	T	153	2037	1700	462	25	81	935550
1560007091654LK	EA	T	153	2049	727	227	34	35	270130
1560007163395NE	EA	T	153	2027	883	288	42	50	604600
1560007238010FL	EA	T	153	2037	440	238	17	50	202300
1560007381004LG	EA	T	153	2065	1493	265	23	94	616170
15600073324628F	EA	T	153	2059	710	248	43	43	458552
1560007335407LG	EA	T	153	2065	786	566	29	8	131312
1560007335408LG	EA	T	153	2065	786	566	29	8	131312
1560007385412LG	EA	T	153	2065	826	566	30	8	135640
1560007581592FG	EA	T	153	2037	893	124	94	24	279744
1560007631421XE	EA	T	153	2059	1379	264	13	100	343200
1560007705445LK	EA	T	153	2049	727	227	33	35	262185
1560007772386LH	EA	T	153	2059	1508	452	31	87	1219044
1560007802389FG	EA	T	153	2037	1250	267	23	98	601818
1560007802390FG	EA	T	153	2037	1250	268	23	98	604072
1560007888734ML	EA	T	153	2049	905	288	37	41	436896
1560007888736ML	EA	T	153	2049	911	288	37	41	436896
1560008113150GP	EA	T	153	2059	384	146	26	36	136656
1560008145959RE	EA	T	153	2065	8000	432	43	147	2730672

TABLE D-5.1

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NATIONAL STOCK NUMBER	UNIT	ERRC	PROD CODE	000 AAD	WEIGHT POUNDS	DIMENSIONS (INCHES)			CUBIC INCHES
						L	W	D	
15600083291488H	EA	T	153	2059	359	172	34	29	169592
1560008531013MA	EA	T	153	2037	735	144	24	69	238464
1560008573682FL	EA		153	2037	301	60	25	6	9000
1560008573720FL	EA		153	2037	435	246	50	6	73800
1560008573765FL	EA		153	2037	465	250	55	6	82500
1560008573835FL	EA		153	2037	432	80	5	6	2400
1560008573952FL	EA		153	2037	432	80	6	4	1920
1560008573980FL	EA		153	2037	260	37	21	6	4662
1560008635063FL	EA	T	153	2037	337	244	18	24	105408
1560008641967FL	EA	T	153	2037	1000	260	19	60	296400
1560008641968FL	EA	T	153	2037	840	260	19	65	321100
1560008641969FL	EA	T	153	2037	840	260	19	65	321100
1560008660522XJ	EA	T	153	2059	456	160	28	35	156800
1560008705556FL	EA	T	153	2037	1150	130	30	106	413400
1560008722401FL	EA	T	153	2037	440	238	17	50	202300
1560008884873FH	EA	T	153	2037	370	74	58	52	223184
1560008903934MA	EA	T	153	2037	592	191	37	40	282680
1560008948539FG	EA	T	153	2059	1285	360	27	44	427680
1560009054474BK	EA	T	153	2049	1840	285	37	39	411255
1560009087053NE	EA	T	153	2027	833	268	42	44	495264
1560009097272LG	EA	T	153	2065	5486	600	48	98	2822400
1560009239068BX	EA	T	153	2065	5011	402	46	116	2145072
1560009239069BX	EA	T	153	2065	5011	420	46	116	2241120
1560009275007JH	EA	T	153	2065	1970	378	102	56	2159136
1560009283105LG	EA	T	153	2065	1493	287	23	94	620494
1560009459275FL	EA		153	2037	592	375	38	8	114000
1560009459276FL	EA		153	2037	925	376	35	8	105280
1560009459277FL	EA		153	2037	1140	390	79	6	164860
1560009459278FL	EA		153	2037	925	376	66	6	148896
1560009459291FL	EA		153	2037	391	211	29	1	6119
1560009487457XJ	EA	T	153	2059	370	139	21	27	78813
1560009490508FL	EA		153	2037	1142	390	80	6	187200
1560009513263FL	EA		153	2037	1142	390	80	6	187200
1560009566420XJ	EA	T	153	2059	370	139	21	27	78813
1560009571664JH	EA	T	153	2065	2995	320	28	93	833280
1560009571680JH	EA	T	153	2065	3004	320	28	95	851200
1560009571681JH	EA	T	153	2065	3004	259	22	76	433048
1560009609837FL	EA	T	153	2037	850	189	23	83	360801
1560009609838FL	EA	T	153	2037	850	189	23	83	360801
1560009675259FL	EA	T	153	2037	840	183	23	88	370392
1560009675260FL	EA	T	153	2037	840	183	23	88	370392
1560009694277FL	EA	T	153	2037	1785	307	30	134	1234140
1560009694278FL	EA	T	153	2037	1785	307	30	134	1234140
1560009706021LK	EA	T	153	2049	727	227	33	35	262185
1560009761962FL	EA	T	153	2037	304	203	37	17	127687
1560009772177FL	EA	T	153	2037	1785	307	31	135	1284795
1560009772181FL	EA	T	153	2037	2400	327	39	160	2040480
1560009772184FL	EA	T	153	2037	1785	307	31	135	1284795
1560009812352FL	EA		153	2037	586	378	47	6	106596
1560009812353FL	EA		153	2037	586	378	47	6	106596

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NATIONAL STOCK NUMBER	UNIT	ERRC	PROD CODE	DOO AAD	WEIGHT POUNDS	DIMENSIONS (INCHES)			CUBIC INCHES
						L	W	D	
1560009812354FL	EA		153	2037	528	202	65	6	78780
1560009812355FL	EA		153	2037	528	202	65	6	78780
1560009812356FL	EA		153	2037	480	173	79	6	82002
1560009812357FL	EA		153	2037	480	173	79	6	82002
1560009899170JH	EA	T	153	2065	1569	103	80	54	444960
1560009964459NE	EA	T	153	2037	409	165	18	54	160380
1560010043934LG	EA	T	153	2065	6000	594	65	193	7451730
1560010043935LG	EA	T	153	2065	6000	594	65	193	7451730
1560010052718FL	EA		153	2037	1223	186	87	7	113274
1560010052719FL	EA		153	2037	1223	186	87	7	113274
1560010063626AM	EA		153	2037	400	141	43	23	139449
1560010068689AM	EA	T	153	2037	1200	301	22	82	543004
1560010080683AM	EA	T	153	2037	471	86	81	27	168082
1560010081622FG	EA	T	153	2037	1640	294	32	65	611520
1560010085583AM	EA	T	153	2037	432	91	60	20	109200
1560010099301FJ	EA	T	153	2049	1281	313	40	47	588440
1560010117366XJ	EA	T	153	2059	794	218	48	44	460416
1560010156441XE	EA	T	153	2059	1379	264	13	100	343200
1560010214192AM	EA	T	153	2037	349	76	69	61	319884
1560010214819FL	EA		153	2037	786	241	68	4	65552
1560010332926XJ	EA	T	153	2059	2801	315	33	110	1143450
1615000740113JC	PR	T	153	2027	725	297	29	21	188873
1615001523482GA	EA	T	153	2027	564	274	34	18	167688
1615004554130BZ	EA	T	153	2027	432	44	44	40	77440
1615004918483TH	EA	T	153	2027	480	348	24	14	116928
1615007382104JC	EA	T	153	2027	786	59	39	39	89739
1630006902368	EA		153	2027	5	204	3	1	612
1650006083200	EA	T	153	2037	720	56	44	40	98560
1650008570293	EA	T	153	2037	572	51	50	48	122400
1660000993184	EA		153	2027	3	17	5	4	340
1660006855521	EA		153	2027	1	8	3	3	72
1670000816849	EA		153	2059	127	104	25	2	5200
1670000855609	EA		153	2059	54	96	7	1	672
1670002457922	EA	T	153	2059	200	206	11	11	24926
1670007984240LG	EA		153	2059	235	133	24	6	13152
1670007996220LG	EA		153	2059	129	121	24	10	29040
1670007996226LG	EA		153	2059	181	164	26	11	46904
1670007996260LG	EA		153	2059	180	97	26	10	25220
1670007996265LG	EA		153	2059	210	128	24	10	30720
1670008132837CT	EA	U	153	2065	220	89	57	5	25365
1670008204896CT	EA	S	153	2065	3222	108	88	29	275616
1670009853149CT	EA	U	153	2065	1716	88	54	29	137806
1680000895211	EA	T	153	2027	35	16	16	10	2560
1680001095725FL	EA	T	153	2037	1705	363	42	50	762300
1680001095730FL	EA	T	153	2037	1705	363	42	50	762300
1680004670687	EA	T	153	2027	21	15	11	11	1815
1680005206513	EA	T	153	2027	11	6	6	16	576
1680005445014	EA		153	2059	113	116	8	8	7424
1680006776319	EA	T	153	2027	40	14	14	14	2744
1680007594651	EA	T	153	2059	166	108	24	12	31104

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NATIONAL STOCK NUMBER	UNIT	ERRC	PROD CODE	DOO AAD	WEIGHT POUNDS	DIMENSIONS (INCHES)			CUBIC INCHES
						L	W	D	
1710000138853	EA	T	171	2059	750	79	79	18	112338
1710000138854	EA		171	2059	303	51	51	15	39015
1710000138863	EA		171	2059	1649	54	54	25	72900
1710000215158	EA		171	2059	75	22	36	80	63360
1710001114089	EA		171	2059	666	33	27	25	22275
1710001164179	EA		171	2059	564	46	46	30	63480
1710001164180	EA		171	2059	460	44	44	13	25168
1710001195860	EA		171	2059	290	73	73	1	5329
1710001332230	EA		171	2059	360	36	37	15	19980
1710002454326	EA		171	2059	360	40	40	10	16000
1710002454398	EA		171	2059	385	40	40	10	16000
1710003412064	EA	T	171	2059	322	67	25	19	31825
1710003511250	EA		171	2059	384	33	33	18	19602
1710003511251	EA		171	2059	436	76	76	18	103968
1710003572482	EA		171	2059	232	83	20	13	21560
1710003695944	EA		171	2059	240	84	20	12	20160
1710005611034	EA		171	2059	365	19	32	32	19456
1710005611036	EA		171	2059	331	19	32	32	19456
1710005611041	EA		171	2059	301	36	36	10	12960
1710005611043	EA		171	2059	679	20	38	38	28880
1710007544852	EA		171	2059	422	33	33	18	19602
1710007544853	EA		171	2059	406	33	33	18	19602
1710007751414	EA		171	2059	692	32	32	14	14336
1710008670179	EA		171	2059	448	42	42	22	38808
1710008675910	EA		171	2059	391	33	33	19	20691
1710008675911	EA		171	2059	391	33	33	19	20691
1710008675913	EA		171	2059	377	25	25	10	6250
1710008675917	EA		171	2059	391	33	33	19	20691
1710008675921	EA		171	2059	24	33	33	18	19602
1710008675923	EA		171	2059	592	36	36	14	13144
1710008675924	EA		171	2059	432	34	34	22	25432
1710008675925	EA		171	2059	628	36	36	20	25920
1710008675926	EA		171	2059	653	36	36	20	25920
1710008675928	EA		171	2059	628	36	36	20	25920
1710009064773	EA		171	2059	432	26	26	19	12844
1710009067231	EA		171	2059	331	30	30	18	16200
1710009067233	EA		171	2059	523	35	35	22	26950
1710009113125	EA		171	2059	283	27	27	7	5103
1710009207802	EA		171	2059	581	35	35	18	22050
1710009223897	EA		171	2059	604	40	40	18	28800
1710009366380	EA		171	2059	543	30	30	15	13500
1710009432361	EA		171	2059	310	27	27	7	5103
1710009991907	EA		171	2059	175	27	27	7	5103
1730000012275	EA	U	171	2059	245	55	43	78	184470
17300000866196	EA	T	171	2059	300	67	48	36	115776
1730000120863	EA	U	171	2059	125	62	20	14	17360
1730000154121	EA	U	171	2059	120	106	106	17	191012
1730000154137	EA	U	171	2059	1250	155	88	78	1063920
1730000157968	EA	U	171	2059	316	120	44	38	200640
1730000157973	EA	U	171	2059	307	96	29	17	47328

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NATIONAL STOCK NUMBER	UNIT	ERRC	PROD CODE	DOD AAD	WEIGHT POUNDS	DIMENSIONS (INCHES)			CUBIC INCHES
						L	W	D	
1730000158018	EA	U	171	2059	49	78	34	19	50388
1730000178885	EA	U	171	2059	250	260	15	15	58500
17300002323048F	EA	U	171	2027	859	124	18	22	49104
1730000252362	EA	U	171	2059	101	130	34	10	44200
1730000252366	EA	U	171	2059	21	52	9	9	4212
1730000252952	EA		171	2059	87	86	49	7	29498
1730000252953	EA		171	2059	72	86	48	7	28896
1730000252956	EA		171	2059	50	60	11	11	8228
1730000308336	EA		171	2059	57	56	22	13	16016
1730000308391	EA		171	2059	24	77	40	1	3080
1730000308392	EA		171	2059	65	74	33	6	14652
1730000308393	EA		171	2059	67	76	34	7	18088
1730000308396	EA		171	2059	195	84	41	12	41328
1730000308397	EA		171	2059	95	81	40	6	19440
1730000458357	EA	U	171	2059	305	130	26	32	108160
1730000513544	EA	U	171	2059	956	74	74	30	164260
1730000552942	EA		171	2059	159	120	46	10	55200
17300001036797	EA		171	2059	145	74	8	7	4144
17300001036843XJ	EA	U	171	2059	109	89	34	29	87754
17300001054360	EA	U	171	2059	130	44	33	16	23232
17300001273773	EA		171	2059	7	48	10	3	1440
17300001327963	EA		171	2059	125	127	4	4	2032
17300001327964	EA		171	2059	250	122	27	8	26352
17300001327965	EA		171	2059	250	123	28	9	30996
17300001403510	EA	U	171	2059	9999	348	108	114	4284576
17300001439272	EA	U	171	2059	295	227	13	11	32461
17300001489111	EA	U	171	2059	2059	150	72	37	399600
17300001522788	EA	U	171	2037	9999	400	96	132	5068800
17300001612197	EA		171	2059	5	103	2	2	412
17300001626240	EA	T	171	2059	214	34	25	26	22100
17300001626261	EA	T	171	2059	1931	259	27	38	265734
17300001626263	EA		171	2059	108	293	7	6	11886
17300001626266	EA		171	2059	103	224	8	4	7168
17300001626287	EA		171	2059	91	103	7	4	2884
17300001626308	EA		171	2059	129	2d1	7	4	7868
17300001654654	EA	U	171	2059	6040	254	80	119	2418080
17300001669109	EA	T	171	2059	1750	304	30	15	136800
17300001678122	EA	U	171	2059	1365	116	57	36	238032
17300001686574	EA		171	2059	37	18	4	4	288
17300001843555	EA	T	171	2059	650	117	14	12	19656
17300002000005	EA		171	2059	101	101	18	2	3636
17300002015847	EA	T	171	2059	1352	97	66	52	332904
17300002034001	EA		171	2059	157	107	47	26	130754
17300002038998	EA	U	171	2059	57	86	24	5	10320
17300002139137	EA	U	171	2059	130	42	45	32	60480
17300002151117	EA		171	2059	130	48	42	39	78624
17300002151968	EA	U	171	2059	679	66	58	45	172260
17300002151969	EA	U	171	2059	679	66	58	45	172260
17300002224465	EA	S	171	2059	90	91	12	9	9628
17300002224466	EA	U	171	2059	121	85	40	13	44200

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NATIONAL STOCK NUMBER	UNIT	ERRC	PROD CODE	OOD AAD	WEIGHT POUNDS	DIMENSIONS (INCHES)			CUBIC INCHES
						L	W	D	
1730002253342	EA	T	171	2059	152	44	18	13	10296
1730002253364	EA	T	171	2059	202	96	34	20	65280
1730002260426	EA	U	171	2059	104	38	28	28	29792
1730002320971	EA		171	2059	28	96	7	7	4704
1730002320979	EA		171	2059	575	106	56	48	284428
1730002329669	EA		171	2059	565	158	12	11	20656
1730002329672	EA		171	2059	12	15	15	8	1800
1730002329678	EA	T	171	2059	2264	401	32	36	461952
1730002329679	EA	T	171	2059	3025	401	32	36	461952
1730002329693	EA		171	2059	635	123	14	13	22386
1730002356433	EA	U	171	2059	150	31	49	36	160524
1730002379063	EA		171	2059	533	167	14	14	32732
1730002379124	EA	T	171	2059	1035	366	30	30	329400
1730002379125	EA	T	171	2059	3625	420	50	35	735000
1730002385866	EA	U	171	2059	509	75	56	28	117600
1730002385902	EA	U	171	2059	453	95	43	20	81700
1730002388019	EA	U	171	2059	262	59	42	12	29736
1730002388083	EA	T	171	2059	1500	101	69	36	250884
1730002460433	EA	U	171	2059	16	12	6	6	432
1730002460435	EA	U	171	2059	12	40	12	4	1920
1730002460436	EA	U	171	2059	40	42	39	6	9828
1730002467172	EA	U	171	2059	230	42	40	26	43680
1730002467174	EA		171	2059	615	240	20	17	81600
1730002495638	EA	U	171	2059	49	28	27	12	9072
1730002504740	EA	U	171	2059	70	94	15	7	9870
1730002539453	EA		171	2059	122	96	10	12	11520
1730002566550	EA	S	171	2059	850	193	44	24	203808
1730002737751	EA		171	2059	180	124	14	10	17360
1730002737790	EA		171	2059	108	144	5	14	10080
1730002795143	EA		171	2059	150	72	46	25	82800
1730002933776	EA	U	171	2059	270	60	32	9	17280
1730002933821	EA	U	171	2059	150	135	17	10	22950
1730002933838	EA	U	171	2059	316	88	34	8	23936
1730002933843	EA	U	171	2059	255	89	37	9	29637
1730002933845	EA	U	171	2059	81	237	19	18	81054
1730002933849	EA	U	171	2059	240	64	60	37	142080
1730002942993	EA	U	171	2059	186	53	14	10	7420
1730002943004	EA	U	171	2059	119	32	27	12	10368
1730002943022	EA	U	171	2059	575	139	71	18	254322
1730002943031	EA	U	171	2059	107	157	10	9	14130
1730002943038	EA	U	171	2059	136	123	18	11	24354
1730002943202	EA	U	171	2059	295	200	17	14	47600
1730002943397	EA	U	171	2059	3222	158	86	42	570696
1730002943456	EA	U	171	2059	265	194	16	14	43456
1730002943458	EA	U	171	2059	331	236	15	9	31860
1730002943129	EA	U	171	2059	9500	341	98	100	3341000
1730003050954	EA		171	2059	55	140	2	2	560
1730003058629	EA	U	171	2059	1508	151	66	33	328978
1730003120000	EA		171	2059	28	67	43	2	5762
1730003120001	EA		171	2059	41	84	43	2	7224

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NATIONAL STOCK NUMBER	UNIT	ERRC	PROD CODE	DOO AAD	WEIGHT POUNDS	DIMENSIONS (INCHES)			CUBIC INCHES
						L	W	D	
1730003120006	EA		171	2059	59	72	42	2	6048
1730003315610	EA	S	171	2059	208	34	31	28	29512
1730003319610	EA	U	171	2059	260	64	53	8	27136
1730003355231	EA	U	171	2059	83	61	35	26	55510
1730003411971	EA	U	171	2059	140	44	20	18	15840
1730003411988	EA	U	171	2059	153	98	12	10	11760
1730003429535	EA	U	171	2059	139	63	47	19	56259
1730003430021	EA	U	171	2059	202	21	21	19	8379
1730003430040	EA	U	171	2059	387	83	28	16	37184
1730003869386	EA	U	171	2059	110	47	27	8	10152
1730003952781	EA	U	171	2059	265	87	49	8	34104
1730003984884	EA		171	2059	40	73	7	6	3066
1730004281250	EA		171	2059	220	178	8	5	7120
1730004534706	EA	U	171	2059	310	176	18	11	34848
1730004534707	EA	U	171	2059	230	110	21	21	48510
1730004599506NQ	EA	S	171	2059	667	55	48	50	132000
1730004657050	EA	U	171	2059	6367	180	72	44	570240
1730004719561	EA	T	171	2059	543	96	50	46	220800
1730004741393	EA	U	171	2059	172	124	23	13	37076
1730004750684	EA		171	2059	246	40	34	24	32640
1730004770480	EA		171	2059	3	102	6	6	3672
1730004896458	EA		171	2059	135	128	17	16	34816
1730004923606	EA		171	2059	100	50	14	14	9800
1730004923743	EA		171	2059	80	120	46	10	55200
1730004924018	EA		171	2059	25	121	15	4	7260
1730004924038	EA		171	2059	252	61	46	17	47702
1730004924042	EA		171	2059	135	121	36	9	39204
1730005039104	EA		171	2059	500	125	21	14	36750
1730005178289	EA		171	2059	105	115	26	26	77740
1730005198318	EA	N	171	2059	32	146	4	4	2336
1730005222746	EA	U	171	2059	1914	71	56	74	294224
1730005223378	EA		171	2059	50	86	13	15	16770
1730005223379	EA		171	2059	50	133	48	8	51072
1730005223384	EA		171	2059	50	86	13	15	16770
1730005223389	EA		171	2059	49	98	17	11	18326
1730005297891	EA	U	171	2037	7830	150	70	84	882000
1730005297922	EA		171	2059	210	104	42	21	91728
1730005298231	EA	U	171	2059	570	38	43	40	65360
1730005298885	EA	U	171	2037	9999	360	132	96	4561420
1730005340563	EA	U	171	2059	67	92	25	5	11500
1730005340583	EA	U	171	2059	138	47	20	18	16920
1730005345571	EA		171	2059	26	23	42	12	11592
1730005369033	EA		171	2059	405	200	9	9	16200
1730005369034	EA		171	2059	183	189	9	9	15309
1730005388780	EA		171	2059	473	209	15	10	31350
1730005388783	EA		171	2059	225	190	9	9	15350
1730005403967	EA		171	2059	795	99	56	40	221760
1730005404885	EA	U	171	2059	216	84	14	14	16464
1730005405031	EA		171	2059	40	100	20	18	36000
1730005405933	EA	U	171	2037	275	254	30	28	213360

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NATIONAL STOCK NUMBER	UNIT	ERRC	PROD CODE	OOD AAD	WEIGHT POUNDS	DIMENSIONS (INCHES)			CUBIC INCHES
						L	W	D	
1730005408889	EA	U	171	2059	78	141	21	9	26649
1730005443687	EA	U	171	2059	275	105	34	90	321300
1730005443776	EA	U	171	2059	1325	92	90	62	513360
1730005542508	EA		171	2059	60	64	35	34	76160
1730005542509	EA		171	2059	105	102	24	22	53856
1730005544921	EA	U	171	2059	110	36	14	26	13104
1730005545437	EA		171	2059	88	106	21	20	44520
1730005555129	EA	U	171	2059	234	110	35	19	73150
1730005557040	EA	U	171	2059	206	63	52	26	85176
1730005607226	EA	U	171	2059	170	56	55	13	40040
1730005676139	EA	U	171	2059	226	208	34	14	49008
1730005680437	EA	U	171	2059	489	66	67	18	79596
1730005680626	EA		171	2059	42	42	12	14	7056
1730005700765	EA	U	171	2059	135	47	42	36	71064
1730005700766	EA	U	171	2059	135	47	42	36	71064
1730005705028	EA	U	171	2059	218	114	32	8	29184
1730005800657	EA	U	171	2059	236	221	38	13	109174
1730005867403	EA	U	171	2059	1108	74	48	56	198912
1730005947326	EA	U	171	2059	800	69	48	29	96048
1730006012290	EA		171	2059	100	293	7	5	10255
1730006027975	EA	U	171	2059	195	60	16	28	26880
1730006037346	EA	U	171	2037	2012	108	56	69	417312
1730006041668	EA	U	171	2059	560	120	63	10	816480
1730006065391	EA	U	171	2059	3750	148	50	44	325600
1730006127892	EA	U	171	2059	1205	161	55	35	309925
1730006129508	EA	U	171	2059	218	56	15	22	16480
1730006146166	EA	U	171	2059	270	178	40	40	264800
1730006146168	EA	U	171	2059	340	88	59	31	160952
1730006146174	EA		171	2059	175	69	16	18	19672
1730006147195	EA	U	171	2059	117	34	19	15	23940
1730006193646	EA		171	2059	120	92	24	19	41952
1730006217850	EA		171	2059	75	145	9	3	3915
1730006241131	EA	U	171	2059	131	43	20	9	7740
1730006241137	EA	U	171	2059	498	99	49	8	38808
1730006249400	EA	U	171	2059	154	57	47	30	80370
1730006308399	EA	U	171	2059	152	57	47	30	80370
1730006320058	EA	U	171	2059	457	142	24	16	54528
1730006328425	EA	U	171	2059	911	83	34	29	81838
1730006407086	EA	U	171	2059	154	33	15	10	12450
1730006407092	EA	U	171	2059	97	84	16	9	12096
1730006408080	EA	U	171	2059	756	145	46	30	200100
1730006467513	EA	U	171	2059	248	64	44	23	64768
1730006529873	EA	U	171	2059	172	50	47	34	79900
1730006548344	EA	U	171	2059	275	52	52	26	70304
1730006553064	EA	U	171	2037	3400	174	72	29	363312
1730006600992	EA	U	171	2059	275	94	28	25	65300
1730006652196	EA	U	171	2037	9999	322	108	136	4729536
1730006653623	EA	U	171	2059	210	75	61	11	50325
1730006701556	EA	U	171	2059	270	88	43	13	49192
1730006709295	EA		171	2059	185	87	17	5	7395

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NATIONAL STOCK NUMBER	UNIT	ERRC	PROD CODE	OOD AAD	WEIGHT POUNDS	DIMENSIONS (INCHES)			CUBIC INCHES
						L	W	O	
1730006709311	EA		171	2059	138	88	18	2	3168
1730006709312	EA		171	2059	138	88	18	2	3168
1730006709624	EA	U	171	2059	260	125	12	10	15000
1730006717988	EA		171	2059	25	39	31	8	9672
1730006740019	EA		171	2059	120	121	12	8	11616
1730006766848	EA	U	171	2059	985	166	6	2	1992
1730006894346	EA		171	2059	450	96	22	16	33792
1730006894347	EA		171	2059	450	96	22	16	33792
1730006897812	EA	U	171	2059	115	132	18	22	52272
1730006911899	EA	U	171	2059	326	92	44	21	85002
1730006919764	EA	U	171	2059	616	51	35	46	82110
1730007068014	EA	U	171	2059	1493	30	33	96	95040
1730007087961	EA	U	171	2059	295	92	31	26	74152
1730007093773	EA		171	2059	198	83	41	12	40836
1730007107306	EA	U	171	2059	172	5	45	17	3825
1730007172245	EA	U	171	2059	175	238	52	25	309400
1730007234837	EA	U	171	2059	185	65	47	18	54990
17300072624508J	EA	U	171	2049	3130	291	48	146	2039328
1730007309194	EA	U	171	2059	810	98	48	24	112896
1730007357661	EA	U	171	2059	80	21	20	13	5460
1730007365781	EA		171	2059	543	68	68	65	300560
1730007365789	EA		171	2059	69	184	6	6	6624
1730007365790	EA		171	2059	37	249	5	5	6225
1730007365825	EA		171	2059	884	72	72	24	124416
1730007365826	EA		171	2059	859	63	62	58	226548
1730007365834	EA		171	2059	2000	31	39	41	49569
1730007577236	EA		171	2059	75	128	7	5	4480
1730007632382	EA	U	171	2059	80	19	12	12	2736
1730007640224	EA		171	2059	600	112	20	20	44800
1730007640275	EA		171	2059	340	160	20	21	67200
1730007640278	EA		171	2059	340	160	20	21	67200
1730007642441	EA	U	171	2059	270	60	42	40	100800
1730007689710	EA	U	171	2059	230	42	34	21	29988
1730007714147	EA	U	171	2059	137	44	42	11	20326
1730007726892	EA		171	2059	44	41	33	8	10824
1730007733570	EA		171	2059	219	103	18	12	22246
1730007733579	EA		171	2059	78	37	14	16	8288
1730007733591	EA		171	2059	356	114	35	15	59850
1730007738591	EA	U	171	2059	764	142	69	24	235152
1730007756817	EA	U	171	2059	270	96	71	38	259008
1730007794787	EA		171	2059	310	243	12	15	43740
1730007794788	EA		171	2059	570	248	17	25	105400
1730007794789	EA		171	2059	448	121	18	21	45738
1730007794791	EA		171	2059	966	240	23	25	138000
1730007868609	EA	U	171	2059	653	102	66	36	242352
1730007891249	EA	U	171	2059	3225	158	86	42	570696
1730007936165	EA		171	2059	135	177	9	6	9558
1730007974320	EA	U	171	2059	436	151	70	24	253680
1730008006155	EA		171	2059	64	127	22	17	47498
1730008047435	EA	U	171	2059	120	32	22	22	15468

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NATIONAL STOCK NUMBER	UNIT	ERRC	PROD CODE	DOD AAD	WEIGHT POUNDS	DIMENSIONS (INCHES)			CUBIC INCHES
						L	W	D	
1730008059188	EA	U	171	2059	45	30	24	24	17280
1730008160579	EA	U	171	2059	4670	408	126	72	3701376
1730008188412	EA	S	171	2059	3563	108	102	48	528768
1730008236589	EA	U	171	2059	307	141	26	26	95316
1730008241280	EA	U	171	2059	316	108	30	17	55080
1730008373849	EA	U	171	2059	418	114	52	16	94848
1730008422208	EA	U	171	2059	2012	130	46	48	267040
1730008422214	EA	U	171	2059	1153	145	116	54	908260
1730008606401	EA		171	2059	301	195	10	14	27300
1730008632891	EA	U	171	2059	95	45	30	32	43200
1730008636606	EA	U	171	2059	51	56	35	13	25480
1730008636615	EA	U	171	2059	145	60	12	14	10080
1730008657838	EA	U	171	2059	1065	96	48	41	188928
1730008698183	EA	U	171	2059	1508	79	53	28	117236
1730008726151	EA	U	171	2059	157	42	38	8	12768
1730008749617	EA	U	171	2037	9999	384	97	138	5140224
1730008761376	EA		171	2059	20	87	24	5	10440
1730008762793	EA	T	171	2059	352	78	64	13	64896
1730008767308	EA		171	2059	32	44	35	25	38500
1730008767339	EA	T	171	2059	363	83	57	26	123006
1730008843813	EA	U	171	2059	210	30	20	24	14400
1730008930809	EA	U	171	2059	1211	144	60	41	354240
1730008940012	EA	U	171	2059	3	6	5	5	150
1730009101811	EA	U	171	2059	1407	220	6	6	7920
1730009101813	EA	U	171	2059	653	139	29	94	378914
1730009106151	EA		171	2059	17	31	6	5	930
1730009124499	EA	U	171	2059	9999	142	66	48	586176
1730009149667	EA		171	2059	152	33	23	14	10626
1730009171044	EA	U	171	2059	628	69	48	28	92736
1730009174820	EA	U	171	2059	430	130	44	95	543400
1730009174830	EA	U	171	2059	168	62	34	24	50592
1730009173010	EA	U	171	2059	3000	207	131	76	2060892
1730009173011	EA	U	171	2059	2400	172	100	81	1393200
1730009173028	EA		171	2059	2094	108	70	62	468720
1730009183269	EA	U	171	2059	410	243	21	14	71442
1730009207720	EA	U	171	2059	2361	137	73	48	480048
1730009216324	EA	S	171	2059	4710	348	46	22	352176
1730009216325	EA	U	171	2059	198	48	34	24	39168
1730009231171	EA	U	171	2059	462	90	54	31	150660
1730009249844	EA	U	171	2059	65	22	22	12	5008
1730009384118	EA	U	171	2059	190	135	12	6	9720
1730009422272	EA		171	2059	301	126	7	5	4410
1730009432225	EA	U	171	2059	121	36	34	12	14688
1730009435549	EA	U	171	2059	422	109	52	25	141700
1730009450760	EA	U	171	2059	265	144	25	16	57500
1730009452657	EA	U	171	2059	76	88	54	10	47520
1730009452658	EA		171	2059	224	54	23	18	22356
1730009462907	EA	U	171	2059	672	87	72	87	544968
1730009548751	EA	U	171	2059	270	72	22	6	9504
1730009578114	EA	U	171	2059	175	70	16	12	13440

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NATIONAL STOCK NUMBER	UNIT	ERRC	PROD CODE	DOD AAD	WEIGHT POUNDS	DIMENSIONS (INCHES)			CUBIC INCHES
						L	W	D	
1730009650568	EA	U	171	2059	1180	104	53	63	347256
1730009740120	EA	U	171	2059	3030	141	90	66	837540
1730009869206	EA		171	2059	1821	308	45	40	554400
1730009869209	EA		171	2059	130	236	7	6	9912
1730009869210	EA		171	2059	100	115	5	5	2875
1730009869211	EA		171	2059	1320	262	40	21	220080
1730009904690	EA	U	171	2059	83	45	27	21	25515
1730009921193	EA		171	2059	1211	90	61	70	384300
1730010046550	EA	U	171	2059	3900	144	52	40	299520
1730010092434	EA		171	2059	1500	86	36	34	105264
1730010122158	EA		171	2059	200	60	37	24	53280
1730010236753	EA	U	171	2059	146	89	32	14	39872
1740000158032	EA	U	171	2059	84	36	26	24	22464
1740000258367	EA	U	171	2059	275	53	36	29	55332
1740000880596	EA		171	2059	78	96	2	2	384
1740000998101	EA	S	171	2059	920	108	90	61	787320
1740001068512	EA	U	171	2059	1442	130	80	96	998400
1740001186914	EA	U	171	2059	548	61	61	43	160003
1740001384765	EA		171	2059	120	96	8	4	2752
1740001500026PE	EA	U	171	2059	363	70	52	41	149240
1740001799233	EA	U	171	2059	1260	106	52	58	319696
1740001799234	EA	U	171	2059	26	60	12	13	9360
1740002000148	EA	U	171	2059	391	75	42	32	100800
1740002121915	EA	U	171	2059	107	55	36	8	15840
1740002121946	EA	U	171	2059	3457	160	99	32	506880
1740002139218	EA	U	171	2059	260	71	42	50	149100
1740002343398	EA	U	171	2059	260	80	56	19	85120
1740002943403	EA	U	171	2059	1617	126	78	29	285012
1740002943406	EA	U	171	2059	377	60	59	23	81420
1740002943426	EA	U	171	2037	1682	137	94	33	424974
1740002943638	EA	U	171	2059	2340	154	59	78	708708
1740003560704EW	EA	S	171	2065	770	160	68	31	337280
1740003944507	EA	U	171	2059	356	180	80	53	763200
1740003981544	EA		171	2059	226	74	25	36	66600
1740004624802	EA	U	171	2059	260	81	45	45	164025
1740004728390NE	EA	T	171	2049	7492	483	78	80	3013920
1740004910361	EA	U	171	2059	200	82	45	44	162360
1740004910374	EA	U	171	2059	2224	162	91	52	766584
1740005161663	EA	U	171	2059	800	107	94	53	533074
1740005167473	EA	U	171	2059	155	47	33	30	46530
1740005167929	EA	U	171	2059	246	132	58	40	306240
1740005167930	EA	U	171	2059	559	132	60	40	316800
1740005260853	EA		171	2059	260	78	29	23	52026
1740005399278	EA	U	171	2059	2630	159	96	123	1877472
1740005541667	EA	U	171	2059	850	135	72	51	495720
1740005556601	EA	U	171	2059	1858	131	66	45	389070
1740005556602	EA	U	171	2059	480	36	48	31	127468
1740005680568	EA		171	2059	65	52	20	26	27040
1740005680569	EA		171	2059	83	54	22	27	32076
1740005680575	EA		171	2059	70	136	8	7	7616

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NATIONAL STOCK NUMBER	UNIT	ERRC	PROC CODE	DOD AAD	WEIGHT POUNDS	DIMENSIONS (INCHES)			CUBIC INCHES
						L	W	D	
1740005800494	EA	U	171	2059	720	154	76	22	257488
1740006408501	EA	U	171	2059	2053	162	74	64	767232
1740006538816	EA	U	171	2059	2361	256	84	89	1913856
1740006557736	EA	U	171	2059	706	160	63	48	483840
1740006892616	EA	U	171	2059	1821	132	84	38	421344
1740006905284	EA	U	171	2059	453	110	48	35	184600
1740006971604	EA	U	171	2059	50	80	9	6	4320
1740006972746	EA	U	171	2059	706	117	60	36	252720
1740007003271	EA	U	171	2059	165	68	28	12	22848
1740007011477	EA	U	171	2059	319	64	56	24	86016
17400070885688J	EA	U	171	2049	3715	228	48	111	1214764
1740007113135	EA	U	171	2059	295	110	46	23	116380
1740007135908	EA	U	171	2059	700	155	54	40	334800
1740007181579	EA	U	171	2059	1435	156	57	78	653576
1740007684652	EA	U	171	2059	2361	256	84	89	1913856
1740008675903	EA	U	171	2059	192	155	8	7	8680
1740008749337	EA	U	171	2059	749	103	81	68	567324
1740008785980	EA	U	171	2059	1296	121	38	32	147136
1740009166946	EA	U	171	2059	1554	18	81	92	134136
1740009360225	EA	U	171	2059	144	48	33	25	39600
1740009458457	EA	U	171	2059	6462	180	96	40	691200
17400095771358Z	EA	S	171	2065	1895	145	78	69	780390
2040000409735	EA	T	209	2059	210	38	14	25	13300
2040002136341	EA	T	209	2059	679	150	30	30	135000
2520005292178YZ	EA	T	299	2059	550	68	21	19	27132
2340000641300PQ	EA	T	161	2037	1480	132	55	59	428340
2340000846724PQ	EA	T	161	2037	3	19	19	8	2688
2340001234020PQ	EA	T	161	2037	1285	50	41	46	150880
2340003440763PQ	EA	T	161	2037	462	30	30	40	36000
2340004031954PQ	EA	T	161	2037	1605	54	54	52	151632
2840004038536PQ	EA	T	161	2037	1590	140	55	60	462000
2340004910806PQ	EA	T	161	2037	2200	54	54	52	151632
2340005303289PQ	EA	T	161	2037	493	52	40	34	70720
2340005303293PQ	EA	T	161	2037	493	52	40	34	70720
2840006053176TB	EA	T	161	2059	128	25	25	20	12500
2340006177999PQ	EA	T	161	2037	1285	80	41	46	150880
2340006466563RU	EA	T	161	2037	1431	129	48	51	315792
2840006750491RU	EA	T	161	2037	654	89	41	39	142311
2840009334496RU	EA	T	161	2037	834	51	44	84	188496
2340009813230RV	EA	T	161	2037	127	58	58	18	60552
2340010182532CN	EA	T	161	2037	301	34	33	35	39270
3040002614661	EA	U	299	2059	185	194	10	10	19400
30400067033154H	EA	T	299	2027	285	150	6	6	5400
3040009285052AH	EA	U	299	2027	50	96	4	4	1536
3655001300448YD	EA	S	491	2037	810	96	55	41	216480
3655002288024	EA	U	491	2037	1920	107	65	40	278200
3655005340564	EA	U	491	2059	172	57	42	32	76608
3655005402620	EA	U	491	2059	2130	105	68	71	506940
3655005559607	EA	U	491	2059	6740	142	63	89	796194
3655007028014	EA	U	491	2059	1285	107	53	32	181472

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NATIONAL STOCK NUMBER	UNIT	ERRC	PROD CODE	DOD AAD	WEIGHT POUNDS	DIMENSIONS (INCHES)			CUBIC INCHES
						L	W	D	
3825007323312	EA		249	2059	1404	101	66	94	626604
3920005673722YZ	EA	S	491	2059	171	44	26	27	30888
3950003294210	EA	S	491	2065	2875	180	52	51	477360
3950009981227	EA	U	491	2065	6860	193	95	75	1375125
3950009998443YZ	EA		491	2059	17	8	8	8	512
3990003084475	EA	U	491	2065	2283	115	96	13	143520
3990005279003	EA	U	491	2065	1250	88	66	6	34048
4010001136535YZ	EA		539	2059	1024	32	32	19	19456
4010001857702YZ	EA		539	2059	630	40	40	20	32000
4010004515418YZ	EA		539	2059	630	42	42	24	42336
4010004515420YZ	EA		539	2059	950	39	39	24	36504
4120001199384	EA	U	491	2059	4400	133	72	60	574560
4120005416792	EA	U	491	2059	4140	99	72	72	513216
4120007783075	EA	U	491	2059	9999	240	87	84	1753920
4120009016119	EA	U	491	2059	4140	108	72	72	559872
4120010098917	EA	U	491	2059	7773	145	77	78	870870
4130006537538	EA		491	2059	452	60	47	14	39480
4140005678489	EA	U	491	2059	390	42	40	38	63840
4210002727816	EA		491	2065	510	350	13	3	13650
4210002727817	EA		491	2065	510	350	13	3	13650
4220000925825LS	EA		491	2027	31	34	6	6	1224
4220005357231LS	EA		491	2027	20	34	8	8	2176
4220009203651	EA		491	2027	2	14	4	4	224
4310001142964	EA	S	491	2059	1825	80	63	68	342720
4310002453500	EA	S	491	2037	3050	89	62	56	309008
4310004546662	EA	S	491	2059	1352	95	64	48	291840
4310005370833	EA	S	491	2059	1850	82	67	60	329640
4310006838850	EA	S	491	2059	1097	91	48	53	231504
4310006847579	EA	S	491	2059	3150	81	62	74	371628
4310007391599	EA	S	491	2059	985	84	47	47	185556
4310008116102	EA	S	491	2037	1352	95	64	48	291840
4310008941311	EA	S	491	2059	985	84	47	47	185556
4310008983160	EA	S	491	2037	2196	90	63	53	300510
4310009378478	EA	S	491	2037	1272	93	51	43	203949
4320005489551YZ	EA	U	491	2059	2200	101	59	53	315827
4320006294224HS	EA	T	491	2037	400	45	32	35	50400
4320006294225HS	EA	T	491	2037	400	45	32	35	50400
4320006497689HS	EA	T	491	2037	400	45	32	35	50400
4520008171793	EA	S	491	2037	1300	82	42	48	165312
4710001508290YZ	EA		539	2059	2	72	4	2	576
4710006575152FL	EA		539	2037	2	215	2	1	430
4710009232640YZ	EA		539	2059	271	121	9	9	9801
4910000991091	EA	U	491	2059	620	52	20	60	62400
4910001032646	EA	U	491	2059	332	56	35	44	86240
4910001571450	EA	U	491	2059	319	54	33	33	58806
4910007950189	EA	U	491	2059	1500	111	53	48	282384
4910008J32365	EA	U	491	2059	842	77	36	30	83160
4910009690939	EA	U	491	2059	391	66	46	24	72864
4920000030777	EA	U	491	2059	373	60	60	42	151200
4920000205053	EA	U	491	2059	796	57	53	51	154071

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NATIONAL STOCK NUMBER	UNIT	ERRC	PROD CODE	DOD AAD	WEIGHT POUNDS	DIMENSIONS (INCHES)			CUBIC INCHES
						L	W	O	
4920000446975MA	EA	U	491	2037	1000	116	87	76	766992
4920000475354	EA	N	491	2059	300	53	46	39	99216
4920000553687	EA	T	491	2059	436	48	48	82	188928
4920000564055	EA	U	491	2059	2150	84	54	50	226800
4920000680906	EA	U	491	2059	1900	110	83	81	739530
4920000721809	EA	U	491	2059	508	61	57	33	114741
4920000780480LS	EA	U	491	2027	27	30	18	15	8100
4920000866900	EA	U	491	2059	343	94	55	13	67210
4920000894923	EA	U	491	2059	8000	93	66	39	239382
4920001024832	EA	U	491	2059	859	96	88	32	270336
4920001033040	EA	U	491	2037	3250	107	60	65	417300
4920001479171	SE	U	491	2059	82	35	20	15	10500
4920001630094	EA	U	491	2059	422	61	64	58	226432
49200016901950Q	EA	S	491	2059	1750	100	52	60	312000
4920001735433	EA	U	491	2059	3900	116	110	29	370040
4920001735434	EA	U	491	2059	2008	103	103	27	286443
4920001795447	EA	U	491	2059	2000	120	58	62	431520
4920001797169	EA	U	491	2059	3000	121	105	61	775005
4920001817390	EA	S	491	2059	489	71	60	39	166140
4920001817392	EA	S	491	2059	250	44	37	30	48840
4920001819907	EA	U	491	2059	200	55	55	40	121000
4920001951660	EA	S	491	2059	6000	240	96	96	2211840
4920002032036	EA	U	491	2059	462	69	37	42	107226
4920002040137	EA	U	491	2059	313	65	37	34	81770
4920002042466	EA	U	491	2059	304	37	33	41	50061
4920002042468	EA	U	491	2059	230	46	31	28	39928
4920002042570	EA	U	491	2059	2000	75	60	50	225000
4920002138949	EA	U	491	2059	508	68	68	22	101728
4920002138997	EA	U	491	2059	1153	73	72	52	273312
4920002361685	EA	U	491	2059	685	72	72	50	259200
4920002363785	EA	U	491	2059	462	39	34	22	29172
4920002381736	EA	U	491	2059	686	76	59	54	242136
4920002381745	EA	U	491	2059	2745	132	66	95	827640
4920002417934	EA	U	491	2059	315	181	9	5	8145
4920002460446	EA	U	491	2059	5113	100	83	42	348600
4920002874937	EA	U	491	2059	1004	79	51	27	108783
4920002945631	EA	U	491	2059	966	98	77	25	188650
4920003002851	EA	U	491	2059	1716	95	60	60	342000
4920003276025	EA	U	491	2059	3100	76	57	53	229596
4920003344769	EA	U	491	2059	498	131	42	15	32530
4920003450404	EA	S	491	2059	230	55	29	40	63800
4920003451155	EA	U	491	2059	282	49	46	17	38318
4920003467342	EA	U	491	2059	44	65	24	6	9360
4920003479455	EA	U	491	2059	3040	109	59	57	366567
4920003389323	EA	U	491	2059	670	76	58	53	233624
4920003952806	EA	U	491	2059	394	90	36	42	136080
4920003961055	EA	U	491	2059	523	92	42	34	131376
492000396088	EA	S	491	2059	270	45	41	37	60265
4920004272512	EA	U	491	2059	1076	91	79	20	143780
4920004295214	EA	U	491	2059	300	58	58	58	195112

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NATIONAL STOCK NUMBER	UNIT	ERRC	PROD CODE	OOD AAD	WEIGHT POUNDS	DIMENSIONS (INCHES)			CUBIC INCHES
						L	W	D	
4920004314251	EA		491	2059	1000	109	109	10	118810
4920004353168JM	EA	S	491	2065	7465	163	82	72	962352
4920004432211	EA	U	491	2059	200	56	39	30	65520
4920004470605	EA		491	2059	391	77	73	66	370986
4920004515403	EA	U	491	2059	248	42	38	36	57456
4920004573777	EA	U	491	2059	373	69	45	24	74520
4920004759965	EA	U	491	2059	270	40	36	43	61920
4920004762230	EA	S	491	2059	2270	151	68	81	831708
4920004831889	EA		491	2059	8	8	6	6	288
4920004843113	EA	U	491	2059	4900	122	69	70	589260
4920004851275	EA	U	491	2059	559	91	42	14	53508
4920005104481	EA	U	491	2059	150	67	37	23	57017
4920005222207	EA	U	491	2059	2745	87	52	71	321204
4920005260560	EA		491	2059	115	36	9	6	1944
4920005301622	EA	T	491	2059	9999	160	150	112	2688000
4920005326721	EA		491	2059	190	156	9	6	8424
4920005351033	EA	S	491	2059	90	122	42	18	92232
4920005405309	EA	U	491	2059	218	38	38	38	54872
4920005454439	EA	U	491	2059	45	66	24	6	9504
4920005662456	EA	U	491	2057	4623	118	62	66	482856
4920005707384	EA	U	491	2059	331	53	48	31	78864
4920005708999	EA	U	491	2059	242	75	75	31	174375
4920005869018	EA	S	491	2059	1004	73	33	45	108405
4920005891396	EA	U	491	2059	2508	115	63	32	231840
4920005891397	EA	U	491	2027	1649	115	57	41	268755
4920005896831	EA	U	491	2059	230	152	30	16	72960
4920005908215	EA	U	491	2059	406	35	35	25	30625
4920005916975	EA	U	491	2059	1100	61	61	40	148840
4920005925560	EA	U	491	2059	151	55	22	13	15730
4920005929034	EA	S	491	2059	1086	127	19	46	110998
4920005945787	EA	S	491	2059	1523	143	61	80	697840
4920006016923	EA	U	491	2059	1682	51	57	74	215118
4920006100645	EA	S	491	2059	175	91	26	15	35490
4920006106855	EA	U	491	2059	154	56	19	15	15960
4920006119709	EA	T	491	2059	21	65	25	23	37375
4920006148691	EA	S	491	2059	185	62	22	10	13640
4920006254268	EA	U	491	2059	653	160	29	15	69600
4920006259774	EA	U	491	2059	1014	93	93	45	389205
4920006304001	EA	S	491	2059	144	103	19	18	35226
4920006306682	EA	U	491	2059	146	36	28	39	39312
4920006320096	EA	U	491	2059	189	52	38	34	67184
4920006329572	EA	S	491	2059	410	103	44	64	250048
4920006402303	EA	U	491	2059	640	62	55	49	167090
4920006404126	EA	U	491	2059	119	38	37	25	35150
4920006404127	EA	U	491	2059	825	66	59	23	89562
4920006404299	EA	U	491	2059	315	43	43	38	70262
4920006506312	EA	S	491	2059	966	74	78	50	288600
4920006519497	EA	S	491	2059	234	62	31	17	32674
4920006546842	EA	U	491	2059	307	86	42	30	108360
4920006702592	EA	S	491	2059	498	47	50	46	108100

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NATIONAL STOCK NUMBER	UNIT	ERRC	PROD CODE	DOD AAD	WEIGHT POUNDS	DIMENSIONS (INCHES)			CUBIC INCHES
						L	W	D	
4920006711108	EA	U	491	2059	118	66	41	40	108240
4920006789055	EA	U	491	2059	181	34	34	54	62424
4920006799605	EA	U	491	2059	185	61	20	21	25620
4920007074534	EA	U	491	2059	214	57	57	41	133209
4920007077442	EA	U	491	2059	4862	113	75	75	635625
4920007087970	EA	U	491	2059	282	63	50	29	91350
4920007095510	EA	S	491	2059	406	42	40	40	67200
4920007133261	EA	U	491	2059	298	59	51	24	72216
4920007249612	EA	U	491	2059	650	153	52	30	238680
4920007325869	EA	S	491	2059	356	87	36	12	37584
4920007689943	EA	U	491	2059	325	54	22	15	17820
4920007721080	EA	U	491	2059	337	53	36	46	87768
4920007748979	EA	U	491	2059	57	31	17	4	2108
4920007759381	EA	U	491	2059	490	119	15	22	39270
4920007761087	EA	U	491	2059	307	63	62	7	27342
4920007761158	EA	U	491	2059	101	36	35	8	10080
4920007763513	EA	U	491	2059	580	90	90	40	324000
4920007763550	EA	U	491	2059	175	50	48	13	31200
4920007774572	EA	U	491	2059	214	56	51	19	54264
4920007842003	EA	U	491	2059	140	38	42	34	54264
4920007854550	EA	S	491	2059	2620	112	78	107	934752
4920007892911	EA	S	491	2059	1360	84	82	27	185976
4920007914854	EA	U	491	2059	462	66	30	16	31680
4920007961973	EA	U	491	2059	132	33	32	31	32736
4920007965117	EA	U	491	2059	548	63	58	16	58464
4920007976536	EA	U	491	2059	184	156	10	8	12480
4920007977471	EA	U	491	2059	218	51	48	24	58752
4920008037498	EA	U	491	2059	1840	66	66	37	161172
4920008164123	EA	U	491	2059	230	38	38	37	53428
49200083167598J	EA	U	491	2049	8140	146	100	126	1839600
4920008387106	EA	U	491	2059	756	72	13	14	18144
4920008613068	EA	U	491	2059	366	65	52	50	169000
4920008623908	EA	U	491	2059	325	13	7	6	546
4920008667340	EA	U	491	2059	121	44	42	18	33264
4920008705218	EA	U	491	2059	1933	126	85	45	461450
4920008711239	EA	S	491	2059	1153	107	88	36	338976
4920008789924	EA	U	491	2059	2385	102	57	81	470534
4920008872268	EA	T	491	2059	628	88	82	34	245344
4920008879598	EA	T	491	2059	859	98	87	43	366618
4920008884188	EA	S	491	2059	1086	106	68	55	356440
4920008931087	EA	S	491	2059	670	99	50	51	252450
4920008975623	EA	U	491	2059	1270	98	56	22	120736
4920009016043	EA	U	491	2059	466	68	57	68	263568
4920009051614	EA	U	491	2059	253	34	34	9	10404
4920009067150	EA	U	491	2059	61	26	26	15	10140
4920009081294	EA	U	491	2059	47	22	22	22	10648
4920009081334	EA	U	491	2059	159	40	40	28	44800
4920009081342	EA	U	491	2059	157	26	26	18	12168
4920009152692	EA	U	491	2059	275	73	33	63	151767
4920009158281	EA	U	491	2059	415	118	26	13	39884

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NATIONAL STOCK NUMBER	UNIT	ERRC	PROD CODE	DOD AAD	WEIGHT POUNDS	DIMENSIONS (INCHES)			CUBIC INCHES
						L	W	D	
4920009180221	EA	U	491	2059	1505	81	65	66	347490
4920009248365	EA	U	491	2059	198	133	37	29	142709
4920009288425	EA	U	491	2059	244	12	4	3	144
4920009419550	EA	U	491	2059	548	104	73	34	258128
4920009441623	EA	S	491	2059	734	84	62	48	249984
4920009468435	EA	U	491	2059	902	72	48	18	62208
49200094745003F	EA	U	491	2027	1019	75	65	30	146250
49200094745019F	EA	U	491	2027	1019	75	65	30	146250
4920009483919	EA	U	491	2059	884	110	80	96	844800
49200094963390Q	EA	S	491	2059	1750	96	52	61	304512
4920009744181	EA	U	491	2059	462	35	31	52	56420
4920009777731	EA	S	491	2059	2200	96	76	65	474240
4920009790085	EA	S	491	2059	730	87	77	21	140679
4920009817602	EA	U	491	2059	66	35	19	8	5320
4920009883101	EA	U	491	2059	287	46	44	43	87032
4920009913680	EA	U	491	2059	616	94	80	91	684320
4920009917578	EA	U	491	2059	2	33	9	8	2376
4920010040033	EA	U	491	2059	4000	115	59	71	481735
4920010057665	EA		491	2059	2000	88	88	74	573056
4920010145258	EA		491	2059	1400	75	63	51	240975
4920010163338	EA	U	491	2037	3400	101	60	71	430250
4920010174491	EA	T	491	2059	400	55	55	36	108900
4920010323835	EA		491	2059	150	108	30	9	29160
4920010349000	EA		491	2059	150	108	30	9	29160
4920010349001	EA		491	2059	150	108	30	9	29160
4920010349002	EA		491	2059	150	108	30	9	29160
4925009623445	EA	S	491	2027	1407	108	74	28	223776
4930001344822	EA	U	491	2059	9999	104	102	45	477360
4930007374141	EA		491	2059	52	49	49	7	16807
4930008536156	EA		491	2059	489	156	122	19	361608
4930010113879	EA	U	491	2059	2100	96	75	65	468000
4935006018225HB	EA	S	491	2037	5000	192	66	32	405504
4935007160404HB	EA	S	491	2037	800	84	82	42	289296
4935008419647JJ	EA	T	491	2027	25	20	7	8	1120
4935008481022AE	EA	U	491	2027	453	68	58	52	205088
4940002445936	EA	U	491	2059	2640	137	80	84	920640
4940005232986	EA	U	491	2059	2170	88	68	50	299200
4940010152233	EA	U	491	2059	3746	140	83	102	1185240
5210010389798LH	EA	S	539	2059	100	50	48	36	86400
5410000099852EJ	EA	U	549	2065	4220	159	96	96	1465344
5410004563307	EA	U	549	2049	500	77	17	10	13090
5410004903389	EA	U	549	2037	7000	152	105	100	1596000
5430001828620	EA	U	549	2059	2508	144	55	68	538560
5445003501429	EA	U	549	2037	1500	132	44	11	63888
5445008069439	EA	U	549	2065	1000	288	46	26	344448
5445009956973	EA	U	549	2037	4000	265	49	44	571340
5445009957123	EA	U	549	2037	3585	168	44	15	110980
5680000896391	EA	U	549	2065	6119	168	30	29	146160
5680004508490	EA	U	549	2065	2890	146	30	29	127020
5820000716492	EA	T	581	2037	450	100	100	25	250000

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NATIONAL STOCK NUMBER	UNIT	ERRC	PROD CODE	DOO AAD	WEIGHT POUNDS	DIMENSIONS (INCHES)			CUBIC INCHES
						L	M	O	
5820000888052	EA	T	581	2037	210	175	55	6	57750
5820004092398JA	EA	S	581	2037	436	75	75	75	421875
5820004787041	EA	T	581	2037	1500	132	75	101	999900
5820005050459	EA	S	581	2065	3300	147	84	84	1037232
5820005575574	EA	T	581	2037	250	218	15	15	49050
5820006136901	EA	T	581	2037	920	158	40	44	278080
5820006474912	EA	T	581	2037	502	172	62	108	1151712
5820007247413	EA	T	581	2037	1770	215	20	28	120400
5820009113302	EA	T	581	2037	1108	155	122	128	2420480
5820009126347	EA	T	581	2037	559	102	102	26	270504
5820009186499	EA	T	581	2037	1352	132	132	21	365904
5820009572937AH	EA	T	581	2027	110	28	28	28	21952
5820009657730AM	EA	T	581	2027	604	40	35	14	19600
5825004009225	EA	U	581	2037	938	204	65	45	596700
5825004769342	EA	T	581	2037	706	80	65	15	78000
5825004769343	EA	T	581	2037	706	80	65	15	78000
5825005050971	EA	S	581	2049	78	160	94	94	1393760
5825007861134	EA	S	581	2037	6210	123	90	92	1018440
58400033327912K	EA	T	581	2037	3625	185	96	26	461760
58400071226712C	EA	S	581	2049	6002	120	108	35	453600
5865006499223FD	EA	T	581	2037	850	110	61	98	657580
58950007195702K	EA	T	581	2037	885	128	93	56	666624
58950007135712K	EA	T	581	2037	885	128	93	56	666624
58950007651122K	EA	T	581	2037	800	137	51	90	628830
58950006901542G	EA	T	581	2059	498	108	64	56	387072
5895004517068CP	EA	T	581	2049	1710	100	95	58	551000
58950049117902R	EA	S	581	2049	1733	141	83	72	842616
58950065971022K	EA	T	581	2037	423	106	92	53	516856
53950073960272C	EA	T	581	2049	3065	222	80	160	2841600
58950091089512K	EA	T	581	2037	221	204	52	33	350064
59650022362022X	EA	T	581	2037	300	80	31	36	89280
6110003162246	EA	U	611	2059	1065	81	46	57	212382
6110003294144	EA	T	611	2059	518	67	55	55	202675
6115001162218	EA	S	611	2037	7500	122	45	85	466650
6115001162219	EA	S	611	2059	9800	146	60	89	779640
6115001263024	EA	S	611	2037	1095	77	44	43	145684
6115001263025	EA	S	611	2037	4931	142	91	59	762398
6115001339103	EA	S	611	2059	7167	121	48	80	464640
6115001339104	EA	S	611	2049	9999	130	59	89	682630
6115002257663	EA	S	611	2059	4140	134	64	80	686080
6115004208486	EA	S	611	2037	4140	134	64	80	686080
6115004649442	EA	S	611	2049	9999	149	54	81	651726
6115004649443	EA	S	611	2049	9999	149	54	81	651726
6115005533957	EA	S	611	2059	2959	105	56	59	346920
6115006355595	EA	S	611	2059	2959	105	56	59	346920
6115008324859	EA	S	611	2049	9999	164	60	89	875760
6115008324895	EA	S	611	2049	9999	164	60	89	875760
6115008324895	EA	S	611	2049	9999	164	60	89	875760
6115008438501	EA	S	611	2059	2959	105	56	59	346920
6115009143444	EA	S	611	2049	9999	154	63	98	950756

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NATIONAL STOCK NUMBER	UNIT	ERRC	PROD CODE	DOD AAD	WEIGHT POUNDS	DIMENSIONS (INCHES)			CUBIC INCHES
						L	W	D	
6115009143447	EA	S	611	2065	9999	163	65	95	1006525
6115009643040	EA	S	611	2059	3230	151	82	80	990560
6115009674482	EA	S	611	2049	3860	146	82	65	778160
6115009992659	EA	S	611	2059	3910	146	82	65	778180
6115010149093	EA	S	611	2049	2012	152	84	53	676704
6115010366389	EA	S	611	2059	2559	106	57	59	356478
6125005833225	EA	S	611	2049	8100	122	82	78	780312
6130005578558	EA	S	611	2037	2300	82	62	66	335544
6145009548340AM	FT		619	2027	2500	84	84	60	423360
6230007522082	EA	S	611	2037	1950	99	70	62	429660
6230008779172	EA	S	611	2037	1950	99	70	62	429660
6625000384510	EA	S	581	2037	4600	103	60	68	420240
66250011616418F	EA	U	581	2027	3400	49	48	45	105840
6625001870527	EA	S	581	2037	1200	33	70	61	354410
6625004891301	EA	S	581	2037	3520	124	68	64	539648
6625008930122	EA	S	581	2037	3770	107	60	61	391620
6625009071776	EA	S	581	2059	1050	70	36	51	128520
6635004015561	EA	S	581	2059	625	62	43	56	149296
6635007746967	EA	S	581	2059	1200	72	43	62	191952
6685005268846	EA	S	581	2059	150	82	19	19	29602
6685003708088	EA	S	581	2059	1076	44	33	108	156816
6780000170579	EA	S	678	2027	7840	204	96	114	2232576
6780000170581	EA	S	678	2027	7988	204	96	114	2232576
6780000170582	EA	S	678	2027	8994	204	96	114	2232576
6780000170585	EA	S	678	2027	8223	204	96	114	2232576
6780000170586	EA	S	678	2027	8512	204	96	114	2232576
6780000170587	EA	S	678	2027	6213	204	96	114	2232576
6780000170588	EA	S	678	2027	5122	204	96	114	2232576
6780000756546	EA	S	678	2027	6380	204	96	114	2232576
6780004887350	EA	S	678	2027	5974	204	96	114	2232576
6780004887363	EA	S	678	2027	5924	204	96	114	2232576
6780009451228	EA	S	678	2027	7091	204	96	114	2232576
6920001340248CH	EA	S	999	2065	2070	203	28	31	176204
69200065997378L	EA	U	999	2065	365	91	14	19	24206
8115005262863AS	EA	S	719	2059	170	36	20	18	12960
8120002633354	EA	U	719	2065	96	9	9	51	4131
8120002854772	EA	U	719	2065	59	12	12	36	5184
8120008034467	EA	U	719	2059	330	56	10	10	5600
8140000367744	EA		719	2027	20	17	17	5	1445
8140003507787	EA	T	719	2027	59	35	17	17	10115
8140004229741	EA	T	719	2027	43	25	25	42	26250
8140004247409	EA	T	719	2027	87	36	30	25	27000
8140004247414	EA	T	719	2027	141	44	32	37	52096
8140005630200	EA	T	719	2027	80	35	18	18	11340
8140007604196	EA	T	719	2027	513	80	15	20	24000
8140008620269	EA	T	719	2027	150	50	34	14	23800
8145000189505EW	EA		719	2037	510	114	30	38	129960
8145000255440GU	EA		719	2027	447	96	24	8	15432
81450002554429F	EA	T	719	2027	453	96	24	8	18432
8145000326705AS	EA	S	719	2059	610	62	40	45	111600

TABLE D-5.1

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NATIONAL STOCK NUMBER	UNIT	ERRC	PROO CODE	OOD AAD	WEIGHT POUNDS	DIMENSIONS (INCHES)			CUBIC INCHES
						L	W	D	
8145000448858AS	EA	S	719	2059	5	12	42	47	23688
8145000495204AS	EA	S	719	2059	706	112	46	50	257600
8145001938954NT	EA	T	719	2027	58	31	28	27	23436
8145002003396	EA	T	719	2027	45	28	21	14	8232
8145002867859	EA	T	719	2027	33	25	20	13	6500
8145003481652MA	EA		719	2065	516	96	37	10	35520
8145003717788	EA		719	2065	1880	142	42	42	250488
8145003905565AP	EA	S	719	2059	1523	63	63	67	265923
8145003905575AP	EA	S	719	2059	2829	129	71	75	686425
8145003946561PT	EA	P	719	2059	1055	92	46	51	215832
8145003996066AP	EA	S	719	2059	2012	98	65	74	471380
8145004656374NQ	EA	S	719	2059	1312	68	34	50	115600
8145005256229	EA		719	2027	10	22	18	14	5544
8145005305307	EA	T	719	2027	77	37	28	31	32116
8145005507451AS	EA	S	719	2059	1523	166	58	59	568052
81450057587798F	EA	U	719	2027	90	70	32	24	53760
8145005972775	EA	T	719	2027	49	32	20	18	11520
8145005987848AN	EA	S	719	2065	4058	198	64	76	963072
8145006263681AN	EA	U	719	2037	3000	163	62	74	747844
8145008081488	EA		719	2027	35	21	18	14	5292
8145008396690	EA		719	2027	69	37	27	15	14985
8145008396698	EA		719	2027	25	22	18	8	3168
8145008396699	EA		719	2027	33	25	20	13	6500
8145008457668AS	EA	S	719	2059	1393	96	48	60	276480
8145008457670AS	EA	S	719	2059	616	60	41	47	115620
8145008476025	EA	T	719	2027	50	26	24	20	12480
8145008476030	EA		719	2027	45	32	20	16	10240
8145008476037	EA		719	2027	59	37	28	14	14504
8145008476041	EA		719	2027	30	22	18	13	5148
8145008476043	EA		719	2027	49	32	20	18	11520
8145008561073AN	EA		719	2037	250	149	12	6	10728
8145008561096AN	EA		719	2037	125	154	8	5	6160
8145008871949AS	EA	S	719	2059	400	47	44	43	88324
8145008879328AN	EA	S	719	2059	2900	171	64	65	711360
8145008883698AS	EA	S	719	2059	1554	126	51	61	391986
8145008911114CX	EA	T	719	2065	5386	166	60	65	647400
8145009280038PQ	EA	S	719	2037	520	54	54	84	244944
8145009893676AS	EA	S	719	2059	202	50	31	30	46500
8145009943823AS	EA	S	719	2059	610	66	40	44	116160
9510007822679	DR		689	2037	482	23	23	35	18515
9510002289179	FT		549	2037	33	12	4	4	192
9510002934202	FT		549	2037	14	12	2	2	48
9510005419657	FT		549	2037	24	12	3	3	108
9510005419659	FT		549	2037	8	12	2	2	48
9520002774902	FT	N	549	2037	1	12	2	2	48
9520005961879	FT		549	2037	12	12	8	3	288
9520009545646	FT		549	2037	7	12	3	3	108
9530002306351	FT		549	2037	12	12	4	3	144

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ATTACHMENT D-6

BASE STORAGE IN USE AND AVAILABLE

This attachment includes a table of Base storage capabilities in terms of hundreds of square feet in use and available. (Table D-6.1)
It is the result of a mail survey of 32 Air Force bases.

TABLE D-6.1

BASE	IDENTITY	BASE STORAGE IN USE AND AVAILABLE (HUNDREDS OF SQUARE FEET)				HEATED				UNHEATED				HUM CONT				SHED		O/S PAVED		O/S UNPAVED	
		USE	AVL	USE	AVL	USE	AVL	USE	AVL	USE	AVL	USE	AVL	USE	AVL	USE	AVL	USE	AVL	USE	AVL	USE	AVL
BARCKSOLE	2711 4608	717	717	15	16	230	240	50	58	500	942	0	0	0	0	0	0	0	0	0	0	0	0
BERGSTROM	2791 4857	0	0	823	1150	7	8	12	12	700	810	0	0	0	0	0	0	0	0	0	0	0	0
CASTLE	2951 4672	508	508	17	17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	38	53	0
DULUTH	2522 2554	248	374	1	2	0	0	0	0	22	69	0	0	0	0	0	0	0	0	0	0	0	0
DOVER	2141 4497	459	1213	0	0	0	0	0	0	151	282	0	0	0	0	0	0	0	0	0	0	0	0
ENGLAND	2781 4905	461	502	47	47	2	2	42	53	210	220	0	0	0	0	0	0	0	0	0	0	0	0
ENT	2812 2505	528	528	8	8	0	0	32	32	285	285	0	0	0	0	0	0	0	0	0	180	180	0
GRIFFIS	2131 4616	1934	2520	0	0	10	31	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GRISSOM	2431 4654	174	264	0	0	0	0	0	0	106	296	0	0	0	0	0	0	0	0	0	0	0	0
LANGLEY	2221 4800	709	709	14	14	5	5	23	23	241	241	0	0	0	0	0	0	0	0	0	0	0	0
LAUGHLIN	2792 3099	0	0	446	446	0	0	17	17	230	230	0	0	0	0	0	0	0	0	0	0	0	0
LITTLE ROCK	2721 4460	1462	1462	192	192	2	2	0	0	975	975	0	0	0	0	0	0	0	0	0	0	0	0
MATHER	2962 3067	99	99	1083	1083	0	0	14	14	144	1293	0	0	0	0	0	0	0	0	0	0	0	0
MCCORD	2981 4479	1365	1365	0	0	3	3	0	0	300	300	0	0	0	0	0	0	0	0	0	100	100	0
MCCONNELL	2621 4621	939	939	14	14	13	13	18	18	137	137	0	0	0	0	0	0	0	0	0	0	0	0
MINOT	2531 4528	628	628	19	19	0	0	12	12	350	350	0	0	0	0	0	0	0	0	0	270	270	0
NELLIS	2891 4852	1316	1316	0	0	0	0	29	29	803	903	0	0	0	0	0	0	0	0	0	0	0	0
RANGOLPH	2772 3089	614	614	0	0	0	0	23	23	0	0	0	0	0	0	0	0	0	0	0	742	742	0
RICHARDS	1611 3100	820	970	0	0	1	1	0	0	420	420	0	0	0	0	0	0	0	0	0	0	0	0
SHEPPARD	2752 3020	979	1049	121	123	14	14	2	3	379	404	0	0	0	0	0	0	0	0	0	0	0	0
TRAVIS	2941 4427	727	727	0	0	0	0	1	1	155	155	0	0	0	0	0	0	0	0	0	0	0	0
TYNJALL	2331 2586	158	158	850	850	0	0	10	10	700	700	0	0	0	0	0	0	0	0	0	0	0	0
WRIGHT-PATT	2421 2300	5660	6740	10	12	50	50	10	10	140	140	0	0	0	0	0	0	0	0	0	0	0	0
ELMENDORF	5082 5000	1985	1985	125	125	0	0	0	0	600	600	0	0	0	0	0	0	0	0	0	4500	13000	0
ALCONBURY	5022 5643	514	514	43	43	0	0	0	0	19	31	0	0	0	0	0	0	0	0	0	0	0	0
BENTWATERS	5022 5644	399	407	512	562	0	0	96	120	822	822	0	0	0	0	0	0	0	0	0	1489	1489	0
BITJURG	5012 5606	1098	1098	257	257	0	0	165	165	148	148	0	0	0	0	0	0	0	0	0	0	0	0
RHEINMAIN	5012 5615	1127	1127	100	100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1395	1396	0
TORREJON	5122 5573	896	896	223	243	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1960	1960	0
CLARK	PHILIPPINES	0	0	4456	4456	6	6	108	108	5850	5850	0	0	0	0	0	0	0	0	0	0	0	0
HICKAM	5071 5260	0	0	2614	2614	32	32	40	40	159	159	0	0	0	0	0	0	0	0	0	950	1719	0
KADENA	5051 5270	0	0	1841	1841	89	89	0	0	0	0	0	0	0	0	0	0	0	0	0	3200	3200	0

APPENDIX E

PRODUCT GROUP STRUCTURE

APPENDIX E

PRODUCT GROUP STRUCTURE

The Product Group Structure was initially established by the DODMDS panel as a means of reducing large quantities of data into compatible groups. The DODMDS effort was centered on distribution patterns of all DOD supplies and the mode by which they were shipped. Therefore, for their purpose, 69 product groups were established. Table E-1 is a list of these 69 product groups.

Through initial analysis of the DODMDS data files and the development of compatible storage and distribution data files, the DODMS product groups were reduced to 43. The principal change in the aggregation of product groups to arrive at this reduced number was to combine product groups where the only difference was the item weight. For example, DODMDS product groups 141 and 142 were combined to make 141, product groups 144 and 145 combined to make 144 and a new code 145 was established to accumulate storage data when the ERRC code was unknown. In establishing the 43 codes, the following added rationale was used.

For XD items, the third digit of the product codes is 1, 2 or 3.

For XF/XB items, the third digit is a 4

For items for which the ERRC code is unknown, the third digit is 5 or 6.

For all items for which the ERRC code was not considered, the third digit is a 8 or 9.

A list of the 43 product grouping is attached. (Table E-2)

TABLE E-1. DODMDS PRODUCT GROUPS

DODMDS Product Group Number	Generic Commodity Group/ Product Group Description	Federal Supply Groups or Classes
	<u>Weapons and Fire Control</u>	
101	Small Arms	1005R, 1010R
102	Guns Over 75 mm and Major Components	1015-1095R
104	Arms and Fire Control-Parts	1005-1095C, 1210-1290C
121	Fire Control-Reparables	1210-1290R
	<u>Missiles</u>	
141	Missile-Reparables-Small	1410-1450R, 1810-1860R (under 50 lb)
142	Missile-Reparables-Large	1410-1450R, 1810-1860R (over 50 lb)
144	Missile Parts-Small	1410-1450C, 1810-1860C (under 50 lb)
145	Missile Parts-Large	1410-1450C, 1810-1860C (over 50 lb)
	<u>Aircraft Equipment and Materiel</u>	
151	Fixed Wing-Reparables	1510, 1540, 155C
152	Rotary Wing-Reparables	1520
153	Structural Components-Reparables	1560R, 1610-1680R
154	Aircraft Structural Parts- Consumables-Medium	1560C, 1610-1680C, 2810C, 2840C, 2915C, 2845C, 2925C, 2935C, 2945, 2995 (over 10 lb < 50 lb)
155	Aircraft Structural Parts- Consumables-Large	1560C, 1610-1680C, 2810C, 2840C, 2915C, 2845C, 2925C, 2935C, 2945, 2995 (over 50 lb)
156	Aircraft Structural Parts Consumables-Small	1560C, 1610-1680C, 2810C, 2840C, 2915C, 2845C, 2925C, 2935C, 2945, 2995 (1 lb < 10 lb)
157	Aircraft Structural Parts- Consumables-Small	1560C, 1610-1680C, 2810C, 2840C, 2915C, 2845C, 2925C, 2935C, 2945, 2995 (< 1 lb)
161	Aircraft Engines and Major Components-Small	2810R, 2840R, 2845R, 2915R, 2925R, 2935R, 2950 (under 50 lb)
162	Aircraft Engines and Major Components-Large	2810R, 2840R, 2845R, 2915R, 2925R, 2935R, 2950 (over 50 lb)
171	Ground Support Equipment- Reparables	1710-1740
174	Ground Support Equipment- Consumables	1710-1740

Note: R: All reparable (major and secondary items); C: Consumables, all items other than R; Undesignated FSC's imply all items contained therein.

TABLE E-1. (Continued)

DODMDS Product Group Number	Generic Commodity Group/ Product Group Description	Federal Supply Groups or Classes
	<u>Ships and Boats and Equipment</u>	
191	Ships and Boats	19R
204	Ships and Boats Equipment	19C, 20
	<u>Tank Automotive Equipment and Materiel</u>	
221	Railway Equipment-Reparables	2210, 2220, 2230, 2240
224	Railway Materiel-Consumables	2250
231	Wheeled Vehicles	2300-2340
232	Combat Tracked Vehicles	2350
241	Tractors and Construction Equip- ment-Large	24, 38 (over 50 lb)
244	Tractors and Construction Equip- ment-Small	24, 38 (under 50 lb)
264	Tires and Tubes Nonaircraft	2610, 2630
265	Tires and Tubes Aircraft	2620
281	Engines and Repairable Components	2850R, 2815, 2820, 2825, 2830, 2835, 2850, 2895
294	Misc. Auto Parts and Components- Medium	25, 2640, 2805C, 2910, 2920, 2930, 2940, 2990, 30 (over 10 lb<50 lb)
295	Misc. Auto Parts and Components- Large	25, 2640, 2805C, 2910, 2920, 2930, 2940, 2990, 30 (over 50 lb)
296	Misc. Auto Parts and Components- Small	25, 2640, 2805C, 2910, 2920, 2930, 2940, 2990, 30 (1 lb<10 lb)
297	Misc. Auto Parts and Components-	25, 2640, 2805C, 2910, 2920, 2930, 2940, 2990, 30 (< 1 lb)
	<u>Maintenance and Industrial Equipment</u>	
491	Shop Equipment and Industrial Machines, Rep.-Small/Medium	32, 34, 35, 36, 37, 39, 41, 42, 43, 44, 45, 46, 49 (under 50 lb)
492	Shop Equipment and Industrial Machines, Rep.-Large	32, 34, 35, 36, 37, 39, 41, 42, 43, 44, 45, 46, 49 (over 50 lb)
494	Misc. Shop and Industrial Items- Consumables-Medium	32, 34, 35, 36, 37, 39, 41, 42, 43, 44, 45, 46, 49 (over 10 lb<50 lb)
495	Misc. Shop and Industrial Items- Consumables-Large	32, 34, 35, 36, 37, 39, 41, 42, 43, 44, 45, 46, 49 (over 50 lb)
496	Misc. Shop and Industrial Items- Consumables-Small	32, 34, 35, 36, 37, 39, 41, 42, 43, 44, 45, 46, 49 (1 lb<10 lb)
497	Misc. Shop and Industrial Items- Consumables-Small	32, 34, 35, 36, 37, 39, 41, 42, 43, 44, 45, 46, 49 (< 1 lb)

Note: R: All reparable (major and secondary items); C: Consumables, all items other than R; Undesignated FSC's imply all items contained therein.

TABLE E-1. (Continued)

DODMDS Product Group Number	Generic Commodity Group/ Product Group Description	Federal Supply Groups or Classes
	<u>Common Hardware</u>	
534	Hardware and Related Items- Medium/Large	31, 40, 47, 48, 51, 52, 53 (over 10 lb)
536	Hardware and Related Items- Small	31, 40, 47, 48, 51, 52, 53 (1 lb<10 lb)
537	Hardware and Related Items-Small	31, 40, 47, 48, 51, 52, 53 (< 1 lb)
	<u>Construction Materials</u>	
544	Construction Materials-Small	54, 55, 56, 93, 95, 96 (under 50 lb)
545	Construction Materials-Large	54, 55, 56, 93, 95, 96 (over 50 lb)
	<u>Electronics, Optical Equipment and Materials</u>	
581	Communications Electronics-Reparable	58, 59, 66, 70R
584	Communications Electronics-Other- Medium	58, 59, 66, 70C (over 10 lb)
586	Communications Electronics-Other- Small	58, 59, 66, 70C (1 lb<10 lb)
587	Communications Electronics-Other	58, 59, 66, 70C (< 1 lb)
611	Electrical Power Equipment- Reparable	6105-6115, 6120-6130, 6150, 62, 63 (over 50 lb)
614	Misc. Electrical Equipment-Other- Medium	6105-6115, 6120-6130, 6150, 62, 63 (over 10 lb<50 lb)
616	Misc. Electrical Equipment-Other- Small	6105-6115, 6120-6130, 6150, 62, 63 (1 lb<10 lb)
617	Misc. Electrical Equipment-Other- Small	6105-6115, 6120-6130, 6150, 62, 63 (< 1 lb)
615	Batteries, Fuel Cells, etc.	6116, 6135, 6140, 6145
671	Photo Equipment	6710-6740, 6780
674	Photo Supplies	6750-6770
	<u>Medical</u>	
651	Medical Equipment	6515, 6520, 6525, 6540, 6545
654	Misc. Medical Equipment and Supplies-Small	6505, 6508, 6510, 6530, 6532 (under 50 lb)
655	Misc. Medical Equipment and Supplies-Large	6505, 6508, 6510, 6530, 6532 (over 50 lb)

Note: R: All reparables (major and secondary items); C: Consumables, all items other than R; Undesignated FSC's imply all items contained therein.

TABLE E-1. (Continued)

DODMDS Product Group Number	Generic Commodity Group/ Product Group Description	Federal Supply Groups or Classes
	<u>Chemicals, Paints, Petroleum Products</u>	
684	Chemicals, Paints, Petr. Products- Small	68, 7930, 80, 91 (under 50 lb)
685	Chemicals, Paints, Petr. Products- Large	68, 7930, 80, 91 (over 50 lb)
	<u>House and Office Supplies and Equipment</u>	
714	House and Office Equipment-Small	71, 7240, 73, 74, 75, 76, 81, 7910, 7920 (under 50 lb)
715	House and Office Equipment-Large	71, 7240, 73, 74, 75, 76, 81, 7910, 7920 (over 50 lb)
	<u>Clothing and Textiles</u>	
844	Clothing and Textiles-Small	83, 84, 7210-7230, 7290 (under 50 lb)
845	Clothing and Textiles-Large	83, 84, 7210-7230, 7290 (over 50 lb)
	<u>Subsistence</u>	
895	Subsistence	85, 87, 89
895	DICOMMS	Specific NSNs within various FSCs
	<u>Other Miscellaneous/Minor Items</u>	
994	Miscellaneous-Small	69, 77, 78, 88, 99 (under 50 lb)
995	Miscellaneous-Large	69, 77, 78, 88, 99 (over 50 lb)

Note: R: All reparables (major and secondary items); C: Consumables, all items other than R; Undesignated FSC's imply all items contained therein.

TABLE E-2

Product Group Number	Generic Commodity Group/ Product Group Description	Federal Supply Groups or Classes
101	Small Arms	1005R, 1010R
102	Guns Over 75 mm & Major Components	1015-1095R
104	Arms and Fire Control-Parts	1005-1095C, 1210-1290C
105	Arms and Fire Control Parts	1005-1095, 1210-1290 (ERRC Unknown)
106	Fire Control	1210-1290 (ERRC Unknown)
121	Fire Control-Reparables	1210-1290R
141	Missile-Reparables	1410-1450R, 1810-1860R
144	Missile Parts	1410-1450C, 1810-1860C
145	Missile Parts	1410-1450, 1810-1860 (ERRC Unknown)
151	Fixed Wing-Reparables	1510, 1540, 1550
152	Rotary Wing-Reparables	1520
153	Structural Components-Reparables	1560R, 1610-1680R
154	Aircraft Structural Parts-Consumables	1560C, 1610-1680C, 2810C, 2840C, 2915C, 2845C, 2925C, 2935C, 2945, 2995
155	Aircraft Structural Parts-Consumables	1560, 1610-1680, 2810, 2840, 2915, 2845, 2925, 2935, 2945, 2995 (ERRC Unknown)
161	Aircraft Engines & Major Components	2810R, 2840R, 2845R, 2915R, 2925R, 2935R, 2950
171	Ground Support Equipment-Reparables	1710-1740
174	Ground Support Equipment-Consumables	1710-1740
175	Ground Support Equipment	1710-1740 (ERRC Unknown)
209	Ships & Boats Equipment	19C, 20
249	Tractors & Construction Equipment	24, 38
268	Tires and Tubes Non-Aircraft	2610, 2630
269	Tires and Tubes Aircraft	2620
289	Engines and Components	2850, 2815, 2820, 2825, 2830, 2835, 2850, 2895
299	Misc. Auto Parts & Components	25, 2640, 2805C, 2910, 2920, 2930, 2940, 2990, 30

TABLE E-2

Product Group Number	Generic Commodity Group/ Product Group Description	Federal Supply Groups or Classes
101	Small Arms	1005R, 1010R
102	Guns Over 75 mm & Major Components	1015-1095R
104	Arms and Fire Control-Parts	1005-1095C, 1210-1290C
105	Arms and Fire Control Parts	1005-1095, 1210-1290 (ERRC Unknown)
106	Fire Control	1210-1290 (ERRC Unknown)
121	Fire Control-Reparables	1210-1290R
141	Missile-Reparables	1410-1450R, 1810-1860R
144	Missile Parts	1410-1450C, 1810-1860C
145	Missile Parts	1410-1450, 1810-1860 (ERRC Unknown)
151	Fixed Wing-Reparables	1510, 1540, 1550
152	Rotary Wing-Reparables	1520
153	Structural Components-Reparables	1560R, 1610-1680R
154	Aircraft Structural Parts-Consumables	1560C, 1610-1680C, 2810C, 2840C, 2915C, 2845C, 2925C, 2935C, 2945, 2995
155	Aircraft Structural Parts-Consumables	1560, 1610-1680, 2810, 2840, 2915, 2845, 2925, 2935, 2945, 2995 (ERRC Unknown)
161	Aircraft Engines & Major Components	2810R, 2840R, 2845R, 2915R, 2925R, 2935R, 2950
171	Ground Support Equipment-Reparables	1710-1740
174	Ground Support Equipment-Consumables	1710-1740
175	Ground Support Equipment	1710-1740 (ERRC Unknown)
209	Ships & Boats Equipment	19C, 20
249	Tractors & Construction Equipment	24, 38
268	Tires and Tubes Non-Aircraft	2610, 2630
269	Tires and Tubes Aircraft	2620
289	Engines and Components	2850, 2815, 2820, 2825, 2830, 2835, 2850, 2895
299	Misc. Auto Parts & Components	25, 2640, 2805C, 2910, 2920, 2930, 2940, 2990, 30

TABLE E-2. (Continued)

Product Group Number	Generic Commodity Group/ Product Group Description	Federal Supply Groups or Classes
491	Shop Equipment and Industrial Machines Rep	32, 34, 35, 36, 37, 39, 41, 42, 43, 44, 45, 46, 49
494	Misc. Shop and Industrial Items-Consumables	32, 34, 35, 36, 37, 39, 41, 42, 43, 44, 45, 46, 49
495	Misc. Shop and Industrial Items	32, 34, 35, 36, 37, 39, 41, 42, 43, 44, 45, 46, 49 (ERRC Unknown)
539	Hardware & Related Items	31, 40, 47, 48, 51, 52, 53
549	Construction Materials	54, 55, 56, 93, 95, 96
581	Communications Electronics-Reparable	58, 59, 66, 70R
584	Communications Electronics-Other	58, 59, 66, 70C
585	Communications Electronics-Other	58, 59, 66, 70 (ERRC Unknown)
611	Electrical Power Equipment-Reparable	6105-6115, 6120-6130, 6150, 62, 63
614	Misc. Electrical Equipment-Other	6105-6115, 6120-6130, 6150, 62, 63
619	Batteries, Fuel Cells, etc.	6116, 6135, 6140, 6145
616	Misc. Electrical Equipment-Other	6105-6115, 6120-6130, 6150, 62, 63 (ERRC Unknown)
678	Photo Equipment	6710-6740, 6780
679	Photo Supplies	6750-6770
689	Chemicals, Paints, Petr. Products	68, 7930, 80, 91
719	House & Office Equipment	71, 7240, 73, 74, 75, 76, 81, 7910, 7920
849	Clothing and Textiles	83, 84, 7210-7230, 7290
899	Subsistence	85, 87, 89
999	Miscellaneous	69, 77, 78, 88, 99

Further analysis and statistical manipulations resulted in 26 compatible product grouping which were in the final matrices. The impact of the last reduction on the final matrices is minimal. The only produce codes which lost discrete distribution data are 581, 584, 591 and 594 since the DODMDS distribution data did not differentiate between the components. In other words, the distribution data for the codes 591 and 594 was not obtainable from the DODMDS records. Because of this, the distribution/climate/corrosion data is represented as exactly the same for 581 and 591 as well as 584 and 594.

The list of 26 product groups used in the final matrices is attached.
(Table E-3)

TABLE E-3. PRODUCT CODE INDEX

P/C	Generic Name	National Supply Classes	ERRC
104	ARMS AND FIRE CONTROL PARTS	10XX 12XX	XF/B
121	FIRE CONTROL COMPONENTS	12XX	XD
141	MISSILE COMPONENTS	14XX 18XX	XD
144	MISSILE PARTS	14XX 18XX	XF/B
153	AIRCRAFT STRUCTURAL COMPONENTS	1560 16XX	XD
154	AIRCRAFT STRUCTURAL PARTS	1560 16XX 2810 2840 2845 2915 2925 2935 2945 2995	XF/B
161	AIRCRAFT ENGINES AND MAJOR COMPONENTS	2810 2840 2845 2915 2925 2935 2950	XD
179	GROUND SUPPORT EQUIPMENT AND PARTS	17XX	ALL
269	TIRES AND TUBES	26XX	ALL
289	NON AIRCRAFT ENGINES, COMPONENTS, AND PARTS	2815 2820 2825 2830 2835 2850 2895	ALL
299	AUTOMOTIVE PARTS AND COMPONENTS	25XX 2640 2805 2910 2920 2930 2940 2990 30XX	ALL
491	SHOP EQUIPMENT AND INDUSTRIAL MACHINES	32XX 34XX 35XX 36XX 37XX 39XX 41XX 42XX 43XX 44XX 45XX 46XX 49XX	XD
494	SHOP AND INDUSTRIAL PARTS AND CONSUMABLES	32XX 34XX 35XX 36XX 37XX 39XX 41XX 42XX 43XX 44XX 45XX 46XX 49XX	XF/B
539	HARDWARE AND RELATED ITEMS	31XX 40XX 47XX 48XX 51XX 52XX 53XX	ALL
549	CONSTRUCTION AND PACKAGING MATERIALS	54XX 55XX 56XX 81XX 93XX 96XX	ALL
581	COMMUNICATIONS EQUIPMENT AND COMPONENTS	58XX	XD
584	COMMUNICATIONS EQUIPMENT PARTS	58XX	XF/B
591	COMPUTER AND ELECTRONIC COMPONENTS	59XX 70XX	XD
594	COMPUTER AND ELECTRONIC PARTS	59XX 70XX	XF/B
611	ELECTRICAL EQUIPMENT AND COMPONENTS	6105 6110 6115 6120 6125 6130 6150 62XX 63XX 66XX	XD
614	ELECTRICAL EQUIPMENT PARTS	6105 6110 6115 6120 6125 6130 6150 62XX 63XX 66XX	XF/B

TABLE E-3. (Continued)

P/C	Generic Name	National Supply Classes	ERRC
619	BATTERIES, FUEL CELLS, ETC	6116 6135 6140 6145	ALL
679	PHOTO EQUIPMENT AND SUPPLIES	67XX	ALL
689	CHEMICALS, PAINTS, AND PETROLEUM PRODUCTS	68XX 7930 80XX 91XX	ALL
719	HOUSE AND OFFICE EQUIPMENT AND SUPPLIES	71XX 7240 73XX 74XX 75XX 76XX 7910 7920	ALL
849	CLOTHING AND TEXTILES	83XX 84XX 7210 7220 7230 7290	ALL

APPENDIX F
INTEGRATED DATA FILES

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APPENDIX F

INTEGRATED DATA FILES

INTRODUCTION

This appendix includes information related to the first iteration of merging distribution data and climatic/corrosion data. The first attachment concerns corrosion data in relation to a percentage of each commodity grouping. The second attachment relates to climate data as a percentage of each commodity grouping.

Both sets of data are described at the start of the respective attachments. (F-1 and F-2).

ATTACHMENT F-1

Corrosion Data

The matrix in this attachment (F-1) is arranged numerically by product code and reflects the "Pacer Lime" corrosion index grouping, topography, industrial pollutant and proximity to population/industrial complexes. (Table F-1.1) Table F-1.2 provides an index of product groups related to the product codes contained in Table F-1.1. The elements contained in Table F-1.1 are further defined as follows.

Corrosion Index (percent of total commodity)

Severe = Index value of 1.67 to 2.00

Moderate = Index value of 2.01 to 2.85

Mild = Index value of 2.86 to 3.33

Topography (percent of total commodity)

Coast = Within 50 miles of sea coast

Plain = Greater than 50 miles of sea coast and less than 3000 ft. elevation.

Mtn. = Greater than 50 miles of sea coast and greater than 3000 ft. elevation

Photochemical Oxidants (Probability that the commodity will see values greater than or equal to the indicated multiple of the primary standard).

The 1-hour primary national ambient air quality standard is $160 \mu\text{g}/\text{m}^3$ which is not to be exceeded more than once per year -

0 = less than standard or no data

1 = standard

2 = twice standard

3 = three times standard

4 = four times standard or greater

Sulfur Dioxide (Probability that the commodity will see values greater than or equal to the indicated multiple of the primary standard)

The 24-hour primary national ambient air quality standard is $365 \mu\text{g}/\text{m}^3$ which is not to be exceeded more than once per year

0 = less than standard

TABLE F-1.1
CORROSION DATA

PROD CODE	CORROSION INDEX % OF COMMODITY		CORROSION DATA			PHOTO OXIDANTS (PROBABILITY)			SULFUR DIOXIDE (PROBABILITY)			PROX PROB 20%			
	SEVERE	MODERATE	MILD	COAST	TOPOGRAPHY % OF COMMODITY	PLAIN	1%	5%	10%	20%	1%		5%	10%	20%
104	16.1	32.2	51.6	16.3	44.5	39.2	3	3	3	2	2	2	2	1	5
121	13.1	69.2	17.6	16.8	2.4	80.8	4	3	3	2	2	2	1	0	5
141	21.2	38.1	40.7	20.8	22.5	56.7	4	4	4	2	3	2	2	1	4
144	31.7	33.7	34.5	31.7	20.8	47.5	3	3	3	2	2	2	2	1	4
153	20.2	57.8	22.0	20.4	9.8	69.8	3	3	3	2	2	2	1	1	5
154	10.7	68.3	21.0	10.8	7.1	82.0	3	3	3	2	3	2	1	0	5
161	6.6	79.1	14.3	6.5	7.2	86.3	3	3	3	2	3	1	1	0	5
179	19.2	65.7	15.2	19.3	2.7	78.0	3	3	3	2	3	2	2	1	5
269	23.2	57.6	19.2	24.8	3.1	72.1	3	3	3	2	3	2	1	1	5
289	9.8	84.4	5.8	9.8	1.7	88.5	3	3	2	2	2	1	1	0	5
299	16.2	74.1	9.8	17.4	1.8	80.8	3	3	3	2	2	2	1	0	5
491	18.0	68.3	13.6	18.1	3.5	78.4	3	3	2	2	2	2	1	0	5
494	24.3	64.7	11.0	23.4	3.2	73.4	3	3	3	2	2	2	1	0	5
539	10.3	69.7	20.0	10.8	10.8	79.2	3	3	3	2	2	2	1	0	5
549	2.7	77.3	20.0	2.9	2.8	94.3	3	2	1	0	1	1	1	1	3
591	17.4	67.9	14.7	17.7	5.0	77.3	3	3	3	3	2	2	1	1	5
584	30.3	57.2	12.5	30.7	5.2	64.2	3	3	3	2	2	2	2	1	5
591	17.4	67.9	14.7	17.7	5.0	77.3	3	3	3	3	2	2	1	1	5
594	13.8	74.0	12.2	30.7	5.0	64.2	3	3	3	2	2	2	2	1	5
611	13.8	74.0	12.2	12.7	3.2	84.1	3	3	3	3	2	2	1	0	5
614	15.1	66.2	18.7	16.0	2.7	81.3	3	3	3	3	2	2	1	0	5
619	17.5	41.8	40.6	16.5	25.1	58.4	4	3	3	2	2	2	1	0	5
679	25.3	33.1	41.5	21.9	37.2	40.9	3	2	2	2	2	2	1	1	5
689	6.7	86.7	6.7	6.3	.4	93.3	3	2	2	0	3	2	0	0	3
719	16.6	68.7	14.7	16.3	5.4	78.3	3	3	3	3	3	3	2	1	5
849	17.8	61.1	21.1	17.8	5.6	76.5	3	3	3	2	3	2	2	1	5

TABLE F-1.2

P/C	GENERIC NAME	PRODUCT CODE INDEX	NATIONAL SUPPLY CLASSES	ERRC
104	ARMS AND FIRE CONTROL PARTS	10XX 12XX		XF/B
121	FIRE CONTROL COMPONENTS	12XX		XD
141	MISSILE COMPONENTS	14XX 18XX		XD
144	MISSILE PARTS	14XX 18XX		XF/B
153	AIRCRAFT STRUCTURAL COMPONENTS	1560 16XX		XD
154	AIRCRAFT STRUCTURAL PARTS	1560 16XX 2610 2640 2645 2915 2925 2935 2945 2995		XF/B
161	AIRCRAFT ENGINES AND MAJOR COMPONENTS	2810 2840 2845 2915 2925 2935 2950		XD
179	GROUND SUPPORT EQUIPMENT AND PARTS	17XX		ALL
269	TIRES AND TUBES	26XX		ALL
289	NON AIRCRAFT ENGINES, COMPONENTS, AND PARTS	2815 2820 2825 2830 2835 2850 2895		ALL
299	AUTOMOTIVE PARTS AND COMPONENTS	25XX 2640 2805 2910 2920 2930 2940 2990 30XX		ALL
491	SHOP EQUIPMENT AND INDUSTRIAL MACHINES	32XX 34XX 35XX 36XX 37XX 39XX 41XX 42XX 43XX 44XX 45XX 46XX 49XX		XD
494	SHOP AND INDUSTRIAL PARTS AND CONSUMABLES	32XX 34XX 35XX 36XX 37XX 39XX 41XX 42XX 43XX 44XX 45XX 46XX 49XX		XF/B
539	HARDWARE AND RELATED ITEMS	31XX 40XX 47XX 48XX 51XX 52XX 53XX		ALL
549	CONSTRUCTION AND PACKAGING MATERIALS	54XX 55XX 56XX 81XX 93XX 96XX		ALL
581	COMMUNICATIONS EQUIPMENT AND COMPONENTS	58XX		XD
584	COMMUNICATIONS EQUIPMENT PARTS	58XX		XF/B
591	COMPUTER AND ELECTRONIC COMPONENTS	59XX 70XX		XD
594	COMPUTER AND ELECTRONIC PARTS	59XX 70XX		XF/B
611	ELECTRICAL EQUIPMENT AND COMPONENTS	6105 6110 6115 6120 6125 6130 6150 62XX 63XX 66XX		XD
614	ELECTRICAL EQUIPMENT PARTS	6105 6110 6115 6120 6125 6130 6150 62XX 63XX 66XX		XF/B
619	BATTERIES, FUEL CELLS, ETC	6116 6135 6140 6145		ALL
679	PHOTO EQUIPMENT AND SUPPLIES	67XX		ALL
689	CHEMICALS, PAINTS, AND PETROLEUM PRODUCTS	68XX 7930 80XX 91XX		ALL
719	HOUSE AND OFFICE EQUIPMENT AND SUPPLIES	71XX 7240 73XX 74XX 75XX 76XX 7910 7920		ALL
849	CLOTHING AND TEXTILES	83XX 84XX 7210 7220 7230 7290		ALL

1 = standard

2 = approximately twice the standard

3 = three times the standard or greater

- PROX Proximity to population/industrial complex (Probability that the commodity will see more extreme conditions)

3 = less than 50 miles from small city (50 to 100,000)

4 = greater than 50 miles from large city (100,000 or more)

5 = less than 50 miles from large city

(NOTE: Only the 20% probability is shown. This value is 5 for all commodities at the 10%, 5%, and 1% probabilities.)

ATTACHMENT F-2

Environmental Elements

These matrices contained in this attachment are arranged numerically by product code and represent temperature and humidity data related to a probability that a commodity will be exposed to the value indicated or more extreme. Four matrices are provided, one for each of the four probabilities; 1%, 5%, 10%, and 20%. In addition to the matrices, Table F-2.5 is attached to provide an index of product groups related to product codes in the matrices. (F-2.1, F-2.2, F-2.3, and F-2.4). Specific terms in the matrices are defined as follows:

- Temperature Data: Represents the temperatures expected at the probability expressed at top of the matrix.
 - LOW - the 90th, 95th, and 99th percentile of expected low temperatures - (lowest month)
 - MO \leq the number of months where the low temperature is 0° or less at the 90th, 95th, and 99th percentile of expected low temperatures.
 - HIGH - the 90th, 95th, and 99th percentile of expected high temperatures (highest month)
 - Day Rng - the annual mean daily temperature range (mean of monthly computations)
- Humidity: Represents the Relative Humidities to be expected at the probability expressed at the top of the matrix.
 - All RH = The median relative humidity based on hourly readings over ten years during all weather (highest month)
 - MO > 70 = number of months when the median relative humidity exceeded 70 percent during all weather
 - NP = the median relative humidity based on hourly readings over ten years with readings taken during precipitation ignored
 - Mo > 70 = number of months when the median relative humidity exceeded 70 percent with no precipitation

- Corrosion - (percent of commodity independent of probability expressed at top of matrix)

SEV = Pacer Lime Corrosion index of 1.67 to 2.00

MOD = Pacer Lime Corrosion index of 2.01 to 2.85

MILD = Pacer Lime Corrosion index of 2.86 to 3.33

TABLE F-2.1

PROD CODE	LEVELS OF ENVIRONMENT										(1 PERCENT PROBABILITY)			
	TEMPERATURE DATA									DAY RNG	HUMIDITY			
	LOW			MO ≤ 0			HIGH				ALL RH >70	MO NP	MO RH >70	
90%	95%	99%	90%	95%	99%	90%	95%	99%						
104	-13	-17	-24	3	4	5	110	111	114	30	90	12	90	12
121	-25	-28	-28	4	5	5	105	106	110	30	90	12	90	12
141	-46	-50	-57	6	7	7	110	111	114	30	90	12	90	12
144	-25	-28	-33	4	5	5	105	106	110	30	90	12	90	12
153	-46	-50	-57	6	7	7	110	111	114	30	90	12	90	12
154	-17	-23	-32	4	5	5	110	111	114	30	90	12	90	12
161	-13	-17	-24	3	4	5	110	111	114	30	90	12	90	12
179	-46	-50	-57	6	7	7	110	111	114	30	90	12	90	12
269	-25	-28	-33	4	5	5	110	111	114	30	90	12	90	12
289	-25	-28	-33	4	5	5	105	106	114	30	90	12	90	12
299	-46	-50	-57	6	7	7	110	111	114	30	90	12	90	12
491	-46	-50	-57	6	7	7	110	111	114	30	90	12	90	12
494	-46	-50	-57	6	7	7	110	111	114	30	90	12	90	12
539	-23	-26	-33	4	5	5	110	111	114	30	90	12	90	12
549	-10	-17	-23	2	4	5	102	103	108	30	90	12	80	12
581	-46	-50	-57	6	7	7	110	111	114	30	90	12	90	12
584	-46	-50	-57	6	7	7	110	111	114	30	90	12	90	12
591	-46	-50	-57	6	7	7	110	111	114	30	90	12	90	12
594	-46	-50	-57	6	7	7	110	111	114	30	90	12	90	12
611	-23	-26	-33	4	5	5	110	111	114	30	90	12	90	12
614	-23	-26	-33	4	5	5	110	111	114	30	90	12	90	12
619	-25	-28	-33	4	5	5	110	111	114	30	90	12	90	12
679	-	-11	-18	2	3	5	110	111	114	30	90	12	90	12
689	-46	-50	-57	6	7	7	105	106	110	30	90	12	90	12
719	-1	-6	-18	1	2	5	103	105	108	30	90	12	90	12
849	-46	-50	-55	6	7	7	110	111	114	30	90	12	90	12

TABLE F-2.2

PROD CODE	LEVELS OF ENVIRONMENT											(5 PERCENT PROBABILITY)			
	TEMPERATURE DATA									HUMIDITY					
	LOW			MO SO			HIGH			DAY	ALL	MO	NP	MO	
	90%	95%	99%	90%	95%	99%	90%	95%	99%	RNG	RH	>70	RH	>70	
104	8	4	-8	0	0	1	105	106	110	30	90	12	90	12	
121	-16	-19	-24	4	4	5	102	104	110	25	90	12	90	12	
141	-23	-26	-33	4	5	5	103	105	108	30	80	12	80	12	
144	-23	-26	-33	4	5	5	97	98	104	30	90	12	90	12	
153	-13	-17	-23	3	4	4	103	105	110	30	90	12	80	12	
154	0	-5	-13	1	2	3	105	106	110	30	80	12	80	9	
161	8	4	-8	0	0	2	105	111	110	25	80	12	80	8	
179	0	-6	-11	2	3	4	105	101	110	30	90	12	80	12	
269	-11	-17	-21	3	4	4	105	105	110	30	90	12	80	12	
289	-9	-14	-21	3	3	4	105	106	110	25	80	12	80	11	
299	-10	-14	-23	3	3	4	105	108	110	30	90	12	80	12	
491	-9	-14	-23	3	3	4	105	106	110	30	80	12	80	11	
494	-9	-14	-24	3	3	4	105	106	110	30	90	12	80	12	
539	-1	-5	-13	1	2	3	105	106	110	30	80	12	80	9	
549	11	8	-8	0	0	1	100	101	107	30	80	9	70	5	
581	-10	-14	-24	3	3	4	105	106	110	30	80	12	80	12	
584	-17	-23	-32	4	5	5	105	106	110	25	90	12	90	12	
591	-10	-14	-24	3	3	4	105	106	110	30	80	12	80	12	
594	-17	-23	-32	4	5	5	105	106	110	30	90	12	90	12	
611	-16	-19	-24	4	4	5	105	106	110	30	80	12	80	9	
614	-10	-14	-24	3	3	4	110	106	110	30	80	12	80	12	
619	-25	-28	-33	4	5	5	102	103	108	30	80	12	80	11	
679	0	-5	-11	1	1	3	101	103	107	30	80	12	80	10	
689	14	8	0	0	0	1	105	106	110	25	80	12	80	7	
719	8	4	-8	0	0	1	103	105	108	30	80	12	80	10	
849	-13	-17	-23	3	4	4	110	111	114	30	80	12	80	10	

TABLE F-2.3

PROD CODE	LEVELS OF ENVIRONMENT (10 PERCENT PROBABILITY)													
	TEMPERATURE DATA									HUMIDITY				
	LOW			MO ≤ 0			HIGH			DAY	ALL MO	NP	MO	
	90%	95%	99%	90%	95%	99%	90%	95%	99%	RNG	RH	>70	RH	>70
104	8	4	-8	0	0	1	101	103	107	30	80	12	80	10
121	-10	-14	-24	3	4	4	102	103	108	25	90	12	60	12
141	-17	-23	-32	4	5	5	101	103	107	30	80	12	80	10
144	-23	-26	-33	4	5	5	96	98	103	25	80	12	80	11
153	-8	-10	-16	2	3	4	102	103	108	25	80	12	80	10
154	5	0	-8	0	1	2	105	106	110	25	60	10	80	6
161	9	4	-8	0	0	1	105	111	110	25	80	8	70	5
179	10	4	0	1	1	3	105	101	110	25	80	12	80	9
269	-5	-5	-13	1	3	3	102	103	109	30	80	12	80	11
239	8	4	-8	0	0	1	105	106	110	25	80	10	80	6
299	0	-5	-11	1	1	3	105	106	110	25	80	12	80	9
491	1	-2	-10	0	1	3	105	106	110	25	60	12	80	8
434	0	-5	-13	1	2	3	105	106	110	25	80	12	80	9
539	5	0	-8	0	1	2	105	106	110	25	80	9	80	6
549	14	8	0	0	0	1	98	100	104	30	80	8	70	5
581	0	-5	-13	1	2	3	105	106	110	25	80	12	80	9
564	-10	-14	-23	3	3	4	102	103	108	25	80	12	80	11
551	0	-5	-13	1	2	3	105	106	110	25	80	12	80	9
594	-10	-14	-23	3	3	4	102	103	108	25	80	12	80	11
611	0	-5	-17	1	2	3	105	106	110	25	60	12	80	8
614	-5	-10	-16	1	3	4	102	104	109	25	80	12	80	8
619	-23	-26	-33	4	5	5	102	103	108	30	80	12	80	10
679		4	-8	0	0	1	100	101	105	25	80	12	80	9
639	16	10	5	0	0	0	102	100	104	25	80	8	80	5
719	14	10	4	0	0	0	102	103	108	30	80	12	80	8
849	-8	-11	-18	2	3	4	105	106	110	30	80	12	80	9

TABLE F-2.4

PROD CODE	LEVELS OF ENVIRONMENT										(20 PERCENT PROBABILITY)				
	TEMPERATURE DATA									DAY RNG	HUMIDITY				
	LOW			MO SO			HIGH				ALL RH >70	MO RH >70	NP RH >70	MO	
90%	95%	99%	90%	95%	99%	90%	95%	99%	90%	95%	99%				
104	8	4	-8	0	0	1	96	100	101	25	80	8	70	6	
121	1	4	-11	1	2	3	101	101	106	25	80	10	70	5	
141	0	-6	-13	1	2	3	98	100	101	30	80	12	80	8	
144	-10	-17	-19	2	4	5	95	96	99	25	80	12	80	11	
153	8	4	-8	0	0	2	100	101	105	25	80	10	80	6	
154	10	4	0	0	0	1	105	106	110	25	80	6	70	4	
161	10	4	0	0	0	1	105	106	110	25	70	5	70	4	
179	16	10	5	0	0	1	105	106	110	25	80	11	80	6	
269	9	6	-1	0	0	1	100	100	107	25	80	11	80	6	
289	16	10	5	0	0	0	105	106	110	25	80	7	70	4	
299	12	6	0	0	0	0	105	106	110	25	80	9	70	5	
491	10	4	0	0	0	1	105	106	110	25	80	8	70	7	
494	10	4	0	0	0	1	105	106	110	25	80	11	80	8	
539	8	4	0	0	1	1	105	106	110	25	70	6	70	4	
549	14	8	0	0	0	1	98	100	104	25	80	8	70	5	
581	10	4	0	0	0	1	102	103	108	25	80	9	70	5	
584	9	4	-5	0	0	1	100	101	105	25	80	12	80	9	
591	10	4	0	0	0	1	102	103	108	25	80	9	70	5	
594	9	4	-8	0	0	1	100	101	105	25	80	12	80	9	
611	15	10	5	0	0	0	105	106	110	25	80	6	70	4	
614	11	8	0	0	0	1	102	103	108	25	80	8	70	5	
619	-5	-17	-23	4	5	5	95	97	103	30	80	8	70	6	
679	6	4	-8	0	0	1	95	96	104	25	80	12	80	9	
689	23	18	13	0	0	0	95	97	101	25	80	8	70	5	
719	21	18	13	0	0	0	102	103	108	25	80	6	80	6	
849	10	4	-8	0	0	2	101	101	107	25	80	11	80	8	

TABLE F-2.5

PRODUCT CODE INDEX

P/C	GENERIC NAME	NATIONAL SUPPLY CLASSES	ERRC
104	ARMS AND FIRE CONTROL PARTS	10XX 12XX	XF/B
121	FIRE CONTROL COMPONENTS	12XX	XD
141	MISSILE COMPONENTS	14XX 10XX	XD
144	MISSILE PARTS	14XX 18XX	XF/B
153	AIRCRAFT STRUCTURAL COMPONENTS	1560 16XX	XD
154	AIRCRAFT STRUCTURAL PARTS	1560 16XX 2810 2840 2845 2915 2925 2935 2945 2995	XF/B
161	AIRCRAFT ENGINES AND MAJOR COMPONENTS	2810 2840 2845 2915 2925 2935 2950	XD
179	GROUND SUPPORT EQUIPMENT AND PARTS	17XX	ALL
269	TIRES AND TUBES	26XX	ALL
289	NON AIRCRAFT ENGINES, COMPONENTS, AND PARTS	2815 2820 2825 2830 2835 2850 2895	ALL
299	AUTOMOTIVE PARTS AND COMPONENTS	25XX 2640 2805 2910 2920 2930 2940 2990 30XX	ALL
491	SHOP EQUIPMENT AND INDUSTRIAL MACHINES	32XX 34XX 35XX 36XX 37XX 39XX 41XX 42XX 43XX 44XX 45XX 46XX 49XX	XD
494	SHOP AND INDUSTRIAL PARTS AND CONSUMABLES	32XX 34XX 35XX 36XX 37XX 39XX 41XX 42XX 43XX 44XX 45XX 46XX 49XX	XF/B
539	HARDWARE AND RELATED ITEMS	31XX 40XX 47XX 48XX 51XX 52XX 53XX	ALL
549	CONSTRUCTION AND PACKAGING MATERIALS	54XX 55XX 56XX 81XX 93XX 96XX	ALL
581	COMMUNICATIONS EQUIPMENT AND COMPONENTS	58XX	XD
584	COMMUNICATIONS EQUIPMENT PARTS	58XX	XF/B
591	COMPUTER AND ELECTRONIC COMPONENTS	59XX 70XX	XD
594	COMPUTER AND ELECTRONIC PARTS	59XX 70XX	XF/B
611	ELECTRICAL EQUIPMENT AND COMPONENTS	6105 6110 6115 6120 6125 6130 6150 62XX 63XX 66XX	XD
614	ELECTRICAL EQUIPMENT PARTS	6105 6110 6115 6120 6125 6130 6150 62XX 63XX 66XX	XF/B
619	BATTERIES, FUEL CELLS, ETC	6116 6135 6140 6145	ALL
679	PHOTO EQUIPMENT AND SUPPLIES	67XX	ALL
689	CHEMICALS, PAINTS, AND PETROLEUM PRODUCTS	68XX 7930 80XX 91XX	ALL
719	HOUSE AND OFFICE EQUIPMENT AND SUPPLIES	71XX 7240 73XX 74XX 75XX 76XX 7910 7920	ALL
849	CLOTHING AND TEXTILES	83XX 84XX 7210 7220 7230 7290	ALL