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FOUNDATIONS FOR MATERIEL MANAGEMENT
FUNCTIONAL MANPOWER STANDARDS

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<p>This project examines the factors that must be considered before meaningful manpower standards can be established for the Directorates of Materiel Mgmt. (D/MMs) within the Air Logistics Centers (ALCs). The project included Systems Analytic discussions with management cadres at such D/MM, surveys of D/MM customers and user directorates, and computer-aided D/MM functional performance profile evaluation by ALC and D/MM executives. Major findings indicate there is a clear agreement among D/MM management regarding the functions and roles of the D/MMs. Differences of opinion regarding the functions and roles are greater within each D/MM than across the different ALCs. Useful manpower standards can be established when the functions and roles are more precisely defined and when measures of effectiveness that relate functions and outcomes are developed.</p>			
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INTRODUCTION

PURPOSE

The purpose of this project is to assist the Air Force Logistics Command (AFLC) in clarifying the functions, activities and indicators of effectiveness for the Directorates of Materiel Management (D/MMs) of the Air Logistics Centers (ALCs). The results are intended to lay the groundwork for development of the ability to identify, defend, and project manpower requirements for the Material Management Directorates.

BACKGROUND

At present the D/MMs do not have manpower standards. This makes it difficult to defend current manpower levels or to justify needed manpower increases. In the past manpower standards have been proposed or used for the D/MMs. These were met with resistance by various levels of D/MM management who believed the standards were inappropriate and did not accommodate the differences between the individual ALCs. D/MM management believed that, because of the different weapon systems being supported and the different missions assigned to each ALC, the role, structure and manpower requirements of each D/MM would be unique. There was also the belief that certain responsibilities of the D/MMs, such as technical and engineering support, did not fit the industrial engineering standards approaches. Since those responsibilities related to problem identification and solving, they were therefore "level of effort" rather than output oriented.

This study uses the views of persons in and out of D/MM to develop and evaluate functional profiles of the D/MMs that might provide a basis for future manpower standards and includes three major elements:

- 1) Systems analytic discussions of Materiel Management with D/MM Division and Branch heads.
- 2) Surveys of customers (LGs of the Major Commands) and users (other ALC Directorates and HQ-AFLC) regarding D/MM products, services and performance.
- 3) Computer simulated evaluation of D/MM functional performance profiles by ALC, D/MM, and HQ executives.

This report includes a section with description and results for each of the three major elements and a conclusion section. Supporting documents are included in the appendices.

SYSTEMS ANALYTIC DISCUSSIONS

One of the aims of the study was to develop common understanding of D/MM functions, activities, priorities and options. A major mechanism for this was a series of discussions with groups of D/MM Division and Branch heads at the ALCs and at HQAFLC. The discussions were intended 1) to provide information to the researchers concerning the perceptions of D/MM personnel about their primary functions and priorities, 2) to investigate possible measures of effectiveness which might be appropriately used to evaluate D/MM performance, and 3) to develop common understanding among D/MM personnel of D/MM functions and priorities and to sensitize them to alternatives for greater effectiveness.

PROCEDURE

Visits were scheduled with each ALC and at HQAFLC through letters and informal contact. The visits were structured so that the researchers had opportunities to brief the Commander or Vice-Commander and the D/MM Director or Deputy. The briefs explained the nature of the research and requested cooperation in making personnel available for further discussions. These executives were also asked to discuss how they viewed the functions of their organization and how they believed its performance should be evaluated.

Two-hour discussion periods were conducted with groups of Division and Branch heads and deputies. Two such discussion groups were held at each ALC and HQ. The groups were structured to provide a broad cross-section of the D/MM and did not normally contain both a manager and one of his or her direct subordinates. This structure was designed to encourage diversity of views and the free flow of discussion. Up to ten persons were involved in each discussion. The typical level of the participants was GM 13-14 and military 05. The participants in the discussions were provided a short case study which included a set of questions around which the discussion would revolve. A copy of the case is provided in Appendix I.

To initiate the discussion, participants were given a brief overview of the study and the contribution which they could make to it. They were then introduced to the structure of a systems analysis study. That structure was applied to their situation, stressing the need for a D/MM and how its activities were directed to meeting that need. The discussion then turned to the case study and asked the participants to explain to the researchers and to each other how D/MM could be viewed as a system and what its primary functions and supporting functions might be. The discussion moved to the other questions in the case as time permitted.

RESULTS

All groups quickly agreed that the basic need D/MM sought to address was the provision of logistics support to the operating forces, active and reserve, of the US and other nations. This was sometimes phrased as "Rubber on the ramp", "Sorties flown", or "Bombs on target". However, in attempting to more specifically define the role of D/MM in actual materiel support of operations, considerable disagreement emerged.

The primary function of D/MM was often phrased as item management or system management. Vigorous disagreement occurred over which was the correct focus. The disagreement stems both from the individual's experience and current job and from the need for items and systems to compete for needed resources, both personnel and money. We did not get the feeling that managers were trying to blow their own horns or build empires, but that they were strongly motivated to provide needed support to the operating forces. Through the discussions, considerable progress was made by the discussants in understanding the other point of view. The AFLC organization structure seems to contribute to the problem, as there is no clear locus of system responsibility, no clear flow of authority over system requirements.

The nature of D/MM's role in the logistics process makes it difficult, if not impossible, to discuss its function without also including the functions of other directorates or organizations. The discussants could easily point to the outcomes of the overall process, e.g., fully mission-capable aircraft, equipment which was not operational, sortie capability of squadrons, wartime readiness, etc. None of these, however, is solely attributable to the efforts of D/MM. Changes in the outcomes may be due to policy changes, political pressures, failure of a contractor to deliver the proper item at the right time, or unscheduled changes in the operating tempo of the forces, as well as performance difficulties in other directorates.

Some of the groups tried to move the effectiveness measure from readiness to something closer to their efforts and suggested that their function was to procure, store, and deliver items. Again the involvement of other organizations creates problems in definition and measurement since D/MM does none of these activities, but is involved in the direction, control, and planning of all of them. The next step in the chain of activities leads to an impossibly long list of all the individual activities that D/MM engages in. A list of individual activities does not help D/MM to focus on what it does since the individual acts are minute and are interwoven with each other to form the fabric of logistics. As in a fabric, the threads are in the pattern but are not the pattern. What is true of a fabric is also true of a system, the outcome is determined by the relationships as well as the elements. D/MM is the overseer and architect of many elements of the logistics system, but is not,

in and of itself, a logistics system.

In some of the discussions we introduced the recently promulgated Combat Support Doctrine as a means of guiding the discussants in focusing on the role of D/MM. They found it not to be a useful way of dealing with D/MM functions because the functions change, depending on the particular piece of equipment or system and particular point in its life cycle.

We also used a view of an organization as a system which takes a set of inputs, puts them through a transformation process, and produces outputs. The outputs then interact with the environment to produce outcomes. Although D/MM may view itself as the transformation process that produces output, other organizations are also a part of that transformation process.

Discussants tended to fall back on analogy to describe the function of D/MM. A favorite analogy is that of the quarterback on a football team. The quarterback calls the signals that tell other team members how to perform their duties for a particular play. Without the coordinating function of the quarterback, there would be no team directed toward a common goal, but a set of individuals doing what seemed best at the moment. Another favorite analogy is the hub of a wheel. The hub acts to hold the wheel together and to control the spokes and rim in the performance of their duties. Both analogies break down when pursued very far.

Although they clearly knew what they did and why, the discussants were not able to articulate this knowledge in a way which obtained full agreement of the other members of the group. However, the group members were in a better position at the end of the sessions to understand the broad picture of their own and others' work in the D/MM. The discussions also provided extensive lists of activities and other information used in formulating the list of functions utilized in later parts of the study. The list of functions is provided as Figure 1.

When asked to spell out the priorities of the functions or activities of their organization, discussants encountered considerable difficulty. Responses to questions of what they do when resources are too scarce generally fell into three categories:

- 1) Cut all the activities by the same amount, or continue to do everything but with less precision or depth,
- 2) Delay or not perform things like file maintenance, and
- 3) Cut or omit some of the things with no immediate consequence such as long term product improvement, reverse engineering, re-analysis of failure data or ILS planning. This lack of agreement on the priorities means that managers have little common guidance when faced with the decision to allocate scarce resources in their organization. It also increases the likelihood of conflict, since managers lack a set of mutual

FIGURE 1

MATERIEL MANAGEMENT FUNCTIONS

- A. Data Collection Analysis and Reporting
 - A1. Item/Equipment/Tech Data Specification
 - A2. Operational/Failure Data/Requirements
 - A3. System/Configuration Support and Records
 - A4. Logistics Resource Plans/POM/Budget Data
 - A5. Inventory/Status Management
 - A6. Inspection/Readiness/Status Reporting
 - A7. System/Maintenance/Equipment Conferences/Surveys

- B. Requirements Determination and Programming
 - B1. Systems/ILS/PMRT Planning and Review
 - B2. Parts/Items/Supplies Planning and Allocation
 - B3. Test/Support Equipment Planning and Allocation
 - B4. Budget/Resource Planning and Allocation
 - B5. WRSK/Mobilization Planning and Review
 - B6. Disposal/Disposition

- C. Technical and Engineering Support
 - C1. Technical Orders/Manuals/Procedures
 - C2. Modifications/Improvements/Problem Solutions
 - C3. Software Design/Development
 - C4. Safety/Mishap/Defect Investigation
 - C5. Configuration/Integration Management
 - C6. Hardware/Equipment Design and Management

- D. Acquisition and Distribution
 - D1. Production Planning and Support
 - D2. Purchase Initiation and Management
 - D3. Distribution Planning and Direction
 - D4. Contractor Qualification/Evaluation/Interface
 - D5. Maintenance/Repair/Modification Management

expectations of the availability of support from others in terms of resources, information, technical data or plans.

Lack of agreed-upon priorities forces managers into a reactive mode. If it is true, as one group maintained, that 50% of their work is in reaction to a current crisis, change in policy, or change in plans, the manager will focus on the short term problems at the expense of the other 50%. The long run health of the logistics system will deteriorate as managers run short of resources and lessen the pro-active role of dealing with the underlying causes of the problems. The result of this neglect may appear two to six years in the future.

In most of the discussion groups, time did not permit exploring the participants' suggestions of improvement alternatives in D/MM. When these were discussed, many of the alternatives mentioned were the same as those covered by the survey responses (see Appendix V). Coming from D/MM rather than customer or user viewpoints, they had some views not duplicated in the surveys.

The most important of these seems to be to request Congress, DoD, and USAF to eliminate some of the resource fences, regulations, policies and over-management that prevent D/MM from effectively managing the available resources. The need for managerial flexibility is paramount. Clarification of authority and responsibility is also vital. The LOC and AFALC were most often cited as sources of disruption due to unclear authority and responsibility.

Managers pointed to the need for effective employee development programs. Although they cannot do this themselves, they realize there are many long-term problems such programs could help avoid. The need for accurate current data is felt throughout D/MM, but the new ADP systems will intensify the need for employee development.

D/MM managers are subject to more than 185 management indicators. These are not systematized so as to provide guidance. The managers need measures of merit that connect job plans, etc, to higher level measures. Each new management fad or policy perturbation creates new reporting and audit requirements without adding to the reality of efficiency or effectiveness.

SURVEYS

The research plan called for a survey of D/MM customers concerning the support needed or received from D/MM. The term "customer" included the other directorates within the ALCs and the LGs at the major commands. The D/MMs felt it would be more appropriate to refer to the other ALC directorates as "users", since to the D/MMs a customer can only be one of the other major commands such as TAC or SAC. Accordingly, the research was then divided into two parts to include surveys of customers and users i.e. ALC directorates that use or receive D/MM output.

PROCEDURE

In order to develop the survey, we prepared a preliminary open-ended survey that we took to the first three sets of systems analytic discussions. We asked the directors or deputy directors of each D/MM to review it and make comments. We also sent it to a small sample of the survey population. The final survey (Appendix II) was developed using the input from this preliminary survey and incorporates many of the ideas put forth in the systems analytic discussions.

The survey provided a list of four major functions divided into 24 subfunctions of the D/MMs. For each subfunction, respondents were asked to evaluate the performance of D/MM, assess its importance to the respondent's organization and describe the role currently being performed by D/MM. There were six role definitions; tasking, policy, coordination, advice and information, service, and control, plus an option of no role. Respondents were then asked to go through the functions again but this time indicating the roles that D/MM should be performing. These responses might or might not agree with their initial responses. They were also asked to assess the importance of these "should" subfunctions/roles to their organization.

The intent of the survey was to identify customer and user perceptions of the subfunctions and roles being performed by the D/MMs. It was also intended to provide feedback to D/MM regarding customer and user perception of D/MM performance as well as assessment of subfunction importance. We also hoped to identify areas where customers and users believe that D/MM is performing unnecessary or incorrect roles or is not performing necessary roles. This does not imply that D/MM is in error in such instances but it does point out areas where further investigation is indicated.

Copies of the survey were sent to the major directorates at each of the five ALCs and to the LGs at the major commands. Copies were also sent to HQAFLC-MM at their request. Responses were entered into a database -DBASE III- so that sorting and comparisons could be performed. Using the database we were able

to aggregate the data and perform statistical analysis using statistical software packages -STATGRAPHICS and LOTUS 123.

RESULTS

We received 135 responses to the survey, of which 122 were complete and usable. The characteristics of the sample indicates that it is broadly representative of D/MM customers and users. The experience, tenure and knowledge of the respondents, as shown below, makes their views highly credible and worthy of serious consideration.

60% of the respondents have worked in a Directorate of Materiel Management. The median personal frequency of contact with a D/MM is once a week or more often. The support received from D/MM is rated satisfactory by at least 50% of the sample. Concerning their knowledge of Materiel Management, on a scale of 1 (very little knowledge) to 6 (highly knowledgeable), the median response was 4; the interquartile range (middle 50%) rated themselves as either 4 or 5. The median time in current position was 27 months, with the middle 50% having 13 to 48 months. Half of the respondents said their organization's mission performance was greatly or very greatly dependent on D/MM. Half also said that D/MM's performance was greatly dependent on their organization.

Appendix III summarizes, by organization code, the number of respondents who indicated for each subfunction a specific role that they believe D/MM is actually performing versus the roles they would prefer D/MM to perform with respect to their organization. This data may assist D/MM in examining the appropriateness of the roles for each subfunction.

Appendix IV provides the average performance ratings, on a scale of 1 to 5, given in response to the question "To what extent does D/MM maintain an adequate level of performance for this function?" This information is provided for D/MM review and use.

The survey gave respondents opportunities to make open-end comments. These are listed in Appendix V, organized by position or organization code. The following is a synopsis of those comments:

Survey Part IV -Evaluation- "On what basis do you think the ALC Directorate of Materiel Management should be evaluated? List as many criteria as you believe appropriate."

Respondents in all categories mentioned customer support and MICAP rates as bases for evaluation. Most of the other comments fell into the categories of quality, timeliness, efficiency and accuracy. By organization code, the number of such comments are shown in Table 1.

Table 1

FREQUENCY OF EVALUATION CRITERIA CITATIONS

	<u>Quality</u>	<u>Timeliness</u>	<u>Efficiency</u>	<u>Accuracy</u>	<u>Other</u>
<u>CR</u>					1
<u>DS</u>	4	9	8	4	6
<u>MA</u>	12	9	5	20	5
<u>PM</u>	11	14	18	6	7
<u>QA</u>	3	3		1	
<u>SI</u>		2	3	2	2
<u>SW/SF</u>			2		
<u>XR</u>	2		3	1	
<u>LG</u>	5	22	1	10	11
<u>HQ/MM</u>	7	5	8	2	1
	—	—	—	—	—
Total	44	44	48	46	33

Survey Part V -Improvements - "Please list specific things that could be done to improve the efficiency or effectiveness of ALC D/MM."

Seventy nine of the 122 respondents provided one or more comments in this part of the survey. While a few could be characterized as gripes, the preponderance of the comments dealt with problems or areas of importance to the respondents.

Twenty seven of the comments can be classified as dealing with organization and management of D/MM. These include topics within D/MM, between D/MM and other directorates, and across the ALC. Included are such topics as suggested changes in authority and responsibility, reduction of meetings, reassignment of reporting responsibility, job rotation policies, and streamlining of decision-making processes.

Twenty of the comments were about the training and knowledge of personnel within the D/MM. Lack of familiarity

with field and other directorate operations were noted as well as the need for both in-depth and cross training for all D/MM personnel, especially IMs and SMs.

Sixteen comments were made about specific operating procedures that might improve productivity.

There were also sixteen references to inadequacies, improper usage, or suggested improvements in data and information systems.

Two-way communications were the focus of fifteen comments. The principal concern was the need for greater communications, coordination, and understanding among those concerned with logistics services to the operating forces.

Nine comments addressed a perception that some D/MM personnel appear to have uncaring and unhelpful attitudes toward their jobs and the needs of others.

Seven commented on the need to improve the results of planning, estimating, forecasting and requirements computation procedures.

Seven also commented on the need to reduce procurement lead times and improve response time for inquiries and TO changes.

A wide variety of other suggestions were made in these comments. It should be noted that only three mentioned staffing levels and only five seen to be directed toward inventory levels and availability of parts.

Survey Part VI -Comments- "Please use this space for comments you wish to make or to address other questions you believe should have been included in the survey."

Thirty two of the 122 survey respondents made comments in this section. Considering the time required to complete the previous sections, this indicates a deep concern about D/MM on the part of the respondents.

Fifteen comments referred to the survey itself. These included those who felt the survey did not allow them to correctly describe their relationship with D/MM and those who sought to amplify or clarify their responses to previous sections.

Ten comments were critical of current D/MM actions and attitudes or suggested ways D/MM could change its actions internally or with other organizations.

Five comments concerned problems or recommendations related to current organization structure.

Additional comments dealt with the need for parts, the role of reserve components, shortcomings in D/MM knowledge of the operating forces and difficulties with existing information systems and their uses.

PROFILE MODELS

The research plan called for the utilization of the information from the systems analysis discussions and the surveys to develop a list of ALC-D/MM functions that would form the basis of profiles of various aspects of D/MM performance. Attaching weights to the functions and sub-functions would enable us to examine the extent of agreement among executives and establish common ground for use in application of manpower standards.

The functions list (see Figure 1) includes four major D/MM functions:

A) Data Collection, Analysis, and Reporting (seven sub-functions),

B) Requirements Determination and Programming (six sub-functions),

C) Technical and Engineering Support (six sub-functions),

D) Acquisition and Distribution (five sub-functions).

This set of functions can be viewed as a hierarchy that, taken as a whole, represents the basis upon which overall D/MM performance can be judged.

PROCEDURE

Putting the functions into a computer program, EXPERT87, provided a means to simulate the judgment tasks that would be involved in evaluating D/MM performance using this structure. EXPERT87 is called a quasi-artificial intelligence approach to decision support. It is designed to: 1) capture a decision-maker's intuitive judgments of the relative importance of a hierarchy of decision criteria, 2) develop a set of mathematical weights, and 3) to use the captured judgments to evaluate alternatives in which the decision maker is interested. The judgment capture and weight development features are used in this study. Use of the alternative evaluation features would require performance data from the various D/MMS in terms of the list of functions. Such data is not available at this time.

Two hour time blocks were requested of the Commander or Vice-Commander of each ALC, the Director and Deputy Director of the D/MMS, DCS-MM and his staff, and other individuals knowledgeable about overall D/MM operations. Because of the length of time required, vacations, TDY, and other factors, not all of the requested appointments could be established, substitution occurred of an acting manager for the regular manager, and some individuals were unable to complete the evaluation of the entire hierarchy of D/MM functions.

The EXPERT87 program and the D/MM hierarchy of functions were installed on a GRID brief-case portable computer. This enabled the executives to perform the evaluations in their own offices where they could most easily put themselves in the mode of

examining and evaluating D/MM performance.

The list of functions was shown to the executive and its development process was explained. Opportunity was given for the executive to add or delete functions if they chose to do so. No additional functions were proposed and none were deleted by the executives. The purpose of the research was also explained and the projected reporting of the results. Following a brief introduction to the simulation process, each executive then evaluated the relative importance of the four major functions and each set of sub-functions. After the completion of each set of functions the executive was shown the weights which the computer program had calculated for that set and asked whether he or she agreed that the weights represented their judgments of the relative importance of the various functions or sub-functions. When the weights were felt to diverge from what they intended, that set of functions was redone.

The simulation used to develop the weights operates by providing a set of statistically derived profiles of the functions. The executive is asked to assume that a given profile represents the actual measures of performance of a D/MM for a particular week and judge the overall or summary performance level value that he or she would assign that particular profile of performance. After receiving their judgments about a series of these profiles, the program then develops the set of mathematical weights that are implied in the executive's judgments.

RESULTS

Usable results were obtained from twenty three executives who completed all or most of the five sets of profiles. These included eleven officers (2 Major Generals, 4 Brigadier Generals, and 5 Colonels) and twelve civilians (4 Executive Service and 8 GS grades). They were from all ALCs and HQ (5 HQ-AFLC, 3 OC-ALC, 4 OO-ALC, 4 SA-ALC, 4 SM-ALC, and 3 WR-ALC). Thus the sample, while not perfectly balanced, is broadly representative of Materiel Management executives across the various locations and includes both military and civilian perspectives.

Results of the profiles were compared to determine areas of agreement and disagreement in terms of the relative weight or importance attached to each function and sub-function. Bar graphs of the weights are presented in Appendix VI. Two bar graphs of the four major functions are shown in Figures 2 and 3 representing the average and individual weights of the four primary functions. Even though the averages in Figure 2 obscure some of the variation in the results, the graphs show clearly the wide diversity among the executives regarding the importance of the primary functions.

The average weights given by these executives as the relative contribution of the primary functions to overall D/MM performance were:

Figure 2
 PRIMARY MM FUNCTIONS
 % BY LOCATION

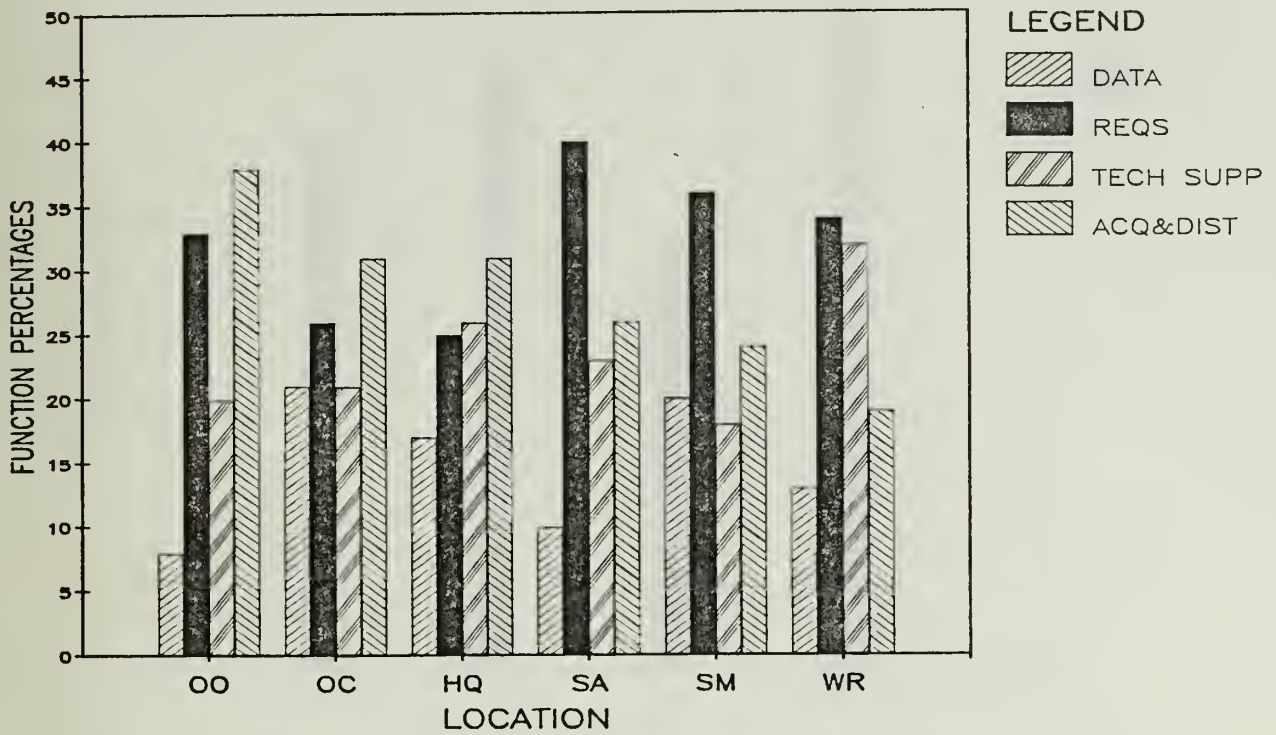
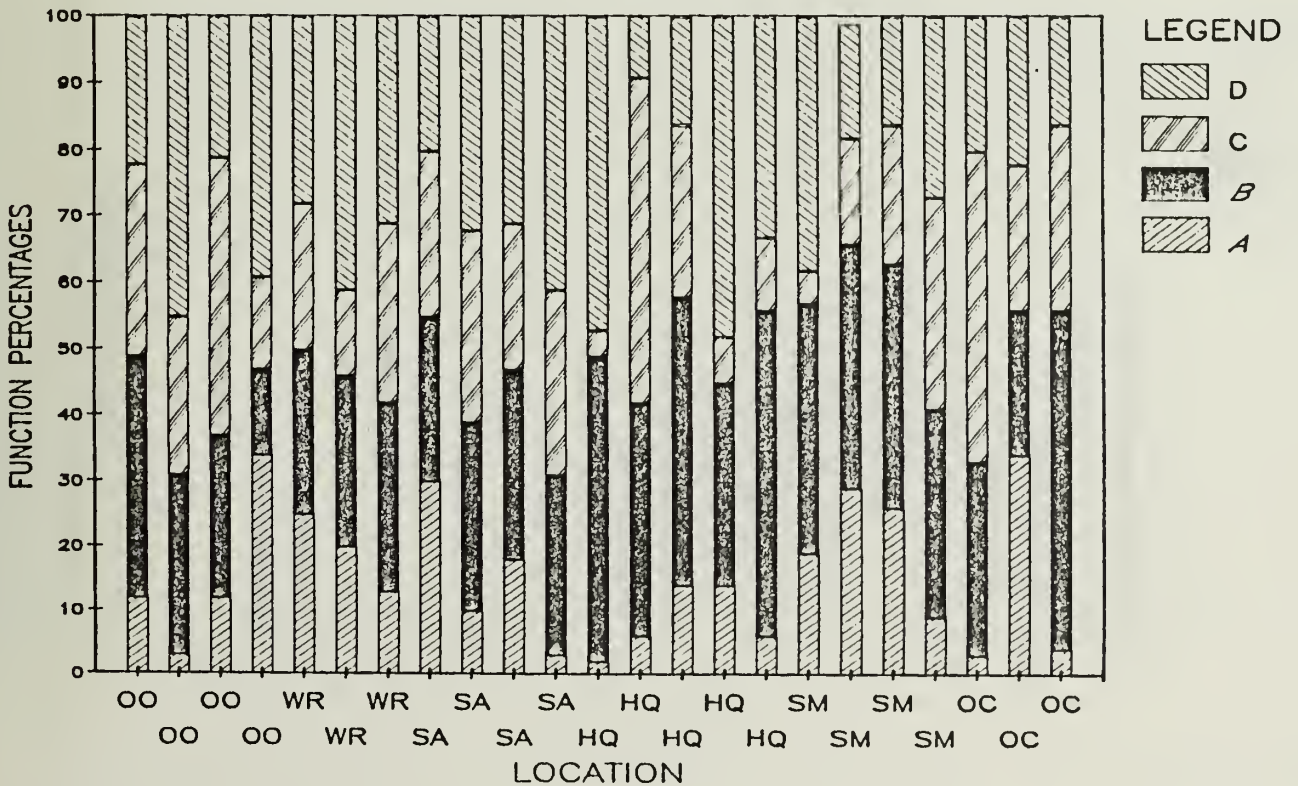


Figure 3
 PRIMARY MM FUNCTIONS
 INDIVIDUAL VALUES
 BY LOCATION



Data Collection Analysis and Reporting	weight = .15
Requirements Determination and Programming	weight = .33
Technical and Engineering Support	weight = .24
Acquisition and Distribution	weight = .29

In Figure 2 the primary function weights show the considerable diversity of the D/MM locations from each other as well as from the overall averages, shown above. Does this diversity indicate basic differences in mission and responsibilities among the various ALCs? In discussions with D/M people across the ALCs, they commonly cited differences in mission and assigned support programs as reasons why the D/MMs at the several ALCs could not be measured by common yardsticks nor be expected to conform to common manpower standards. The answer to the diversity question, then, is important to the idea that there may be a common framework for discussing or measuring the D/MMs.

In order to examine this question an analysis of variance (ANOVA) was conducted for the set of four primary functions and for each set of sub-functions. The analysis of variance consistently showed the F-ratio (the statistical sampling distribution used to test the ratio of the variances) for the between group variance to be too small relative to the total variance to be considered significant. This means that although the averages from each location differ from each other, the difference is not attributable to location but is simply due to random variation in the responses. Put another way, this says that the differences in the views within each location are so large that one cannot attribute any difference in the weights to the assigned responsibilities of the D/MMs. This is illustrated in the bar graphs in Figure 3.

Further illustration is provided by the box and whisker plot in Figure 4. The box for each location represents the inter-quartile range or the middle 50% of the responses, 25% above and 25% below the median response. Whiskers or lines extend up and down from the box to indicate the range of the responses. The wide variation of the responses within each location is easily seen and clearly overshadows any differences between the median values of the location groups. Requirements Determination, 4b, has the highest F-ratio of the four primary functions, resulting from the greater difference between locations and lesser variation within most locations.

Are there significant differences between locations for the sets of sub-functions, as Figure 5 seems to show? ANOVA was again used, with the value being computed for each of the twenty four sub-functions. The F-ratio for the amount of the total variance that could be attributed to the groups reached significance level of .05 only once out of twenty four times, which is what would be expected by chance alone. There do not appear to be any important differences in the weights that can be attributed to the location of the respondent.

Figure 4

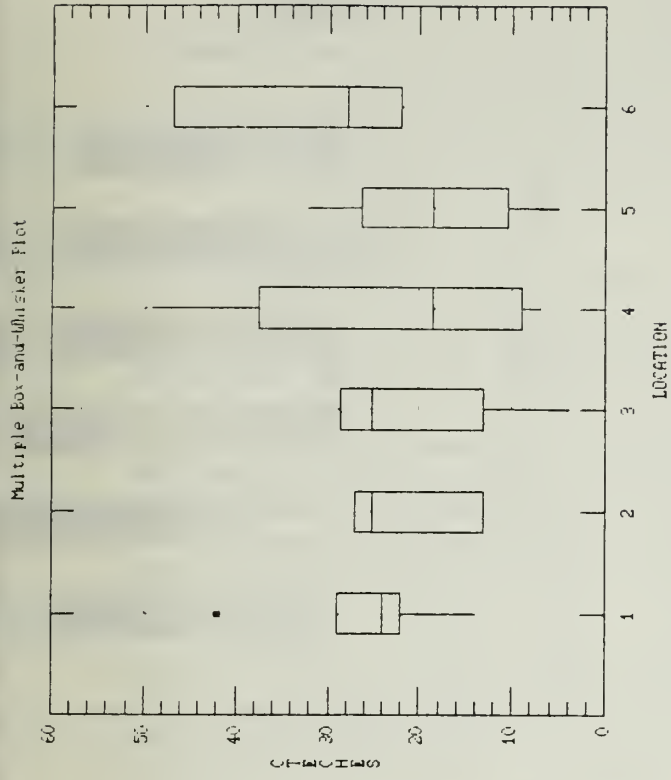


Fig. 4c

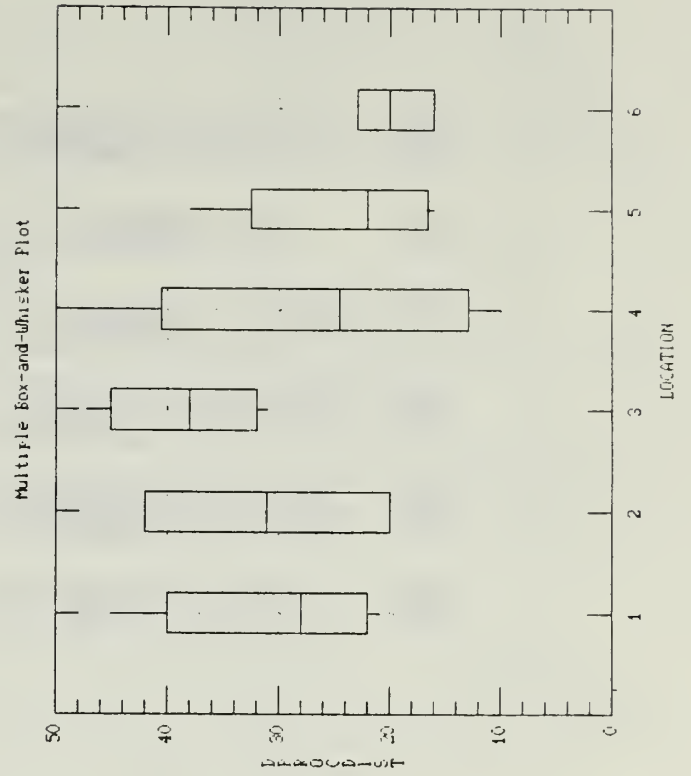


Fig 4d

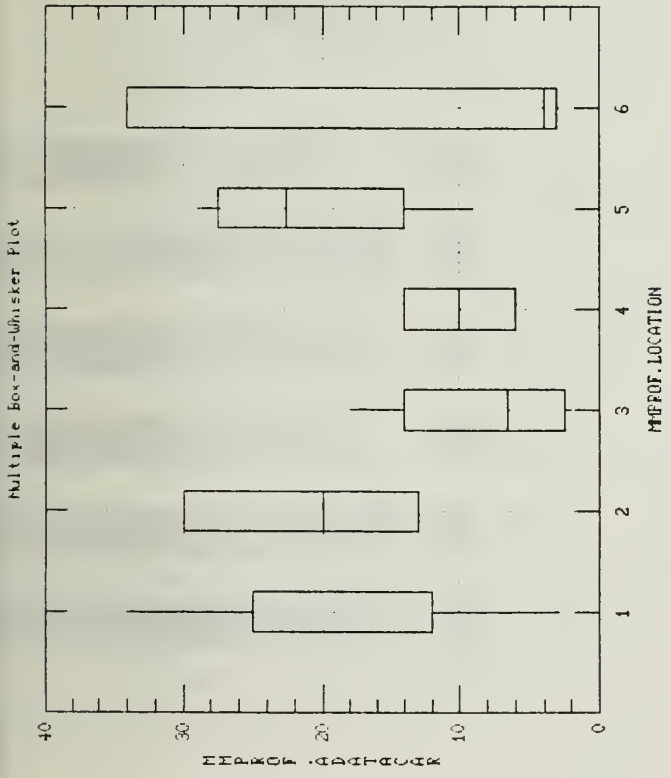


Fig. 4a

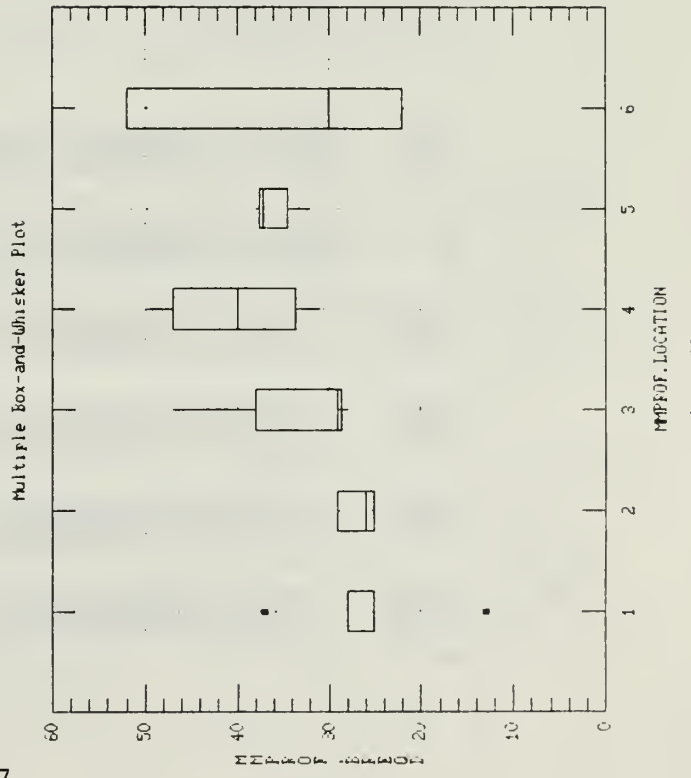


Fig 4b

Figure 5

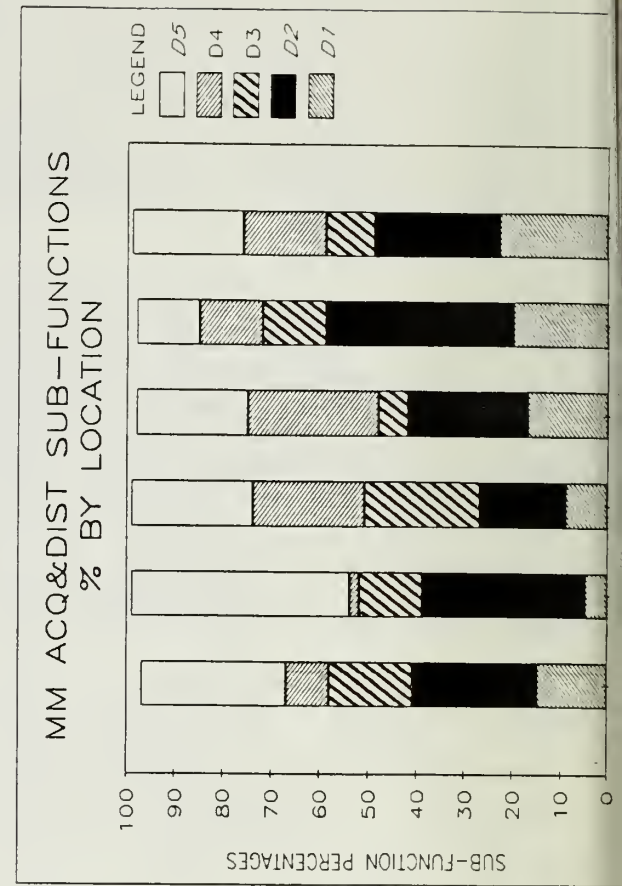
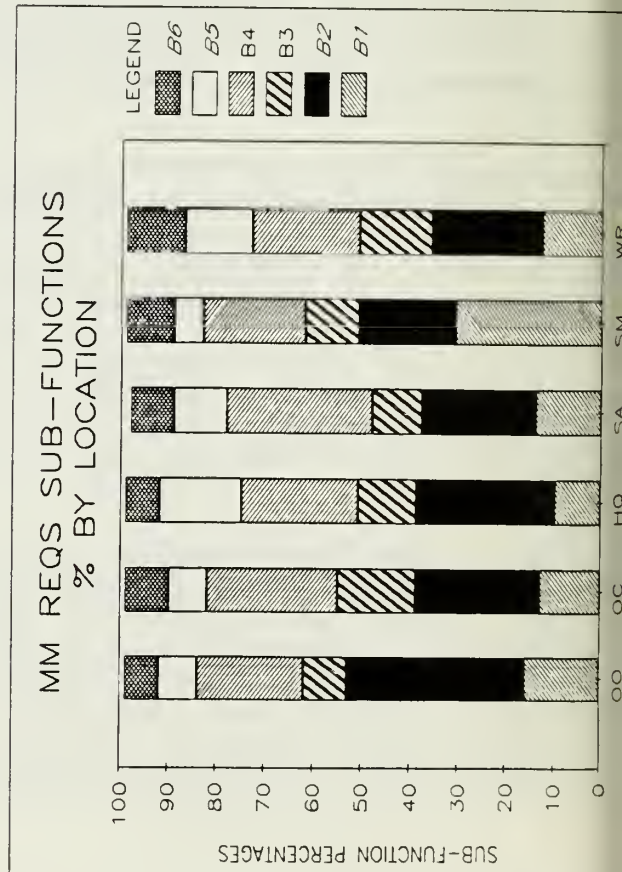
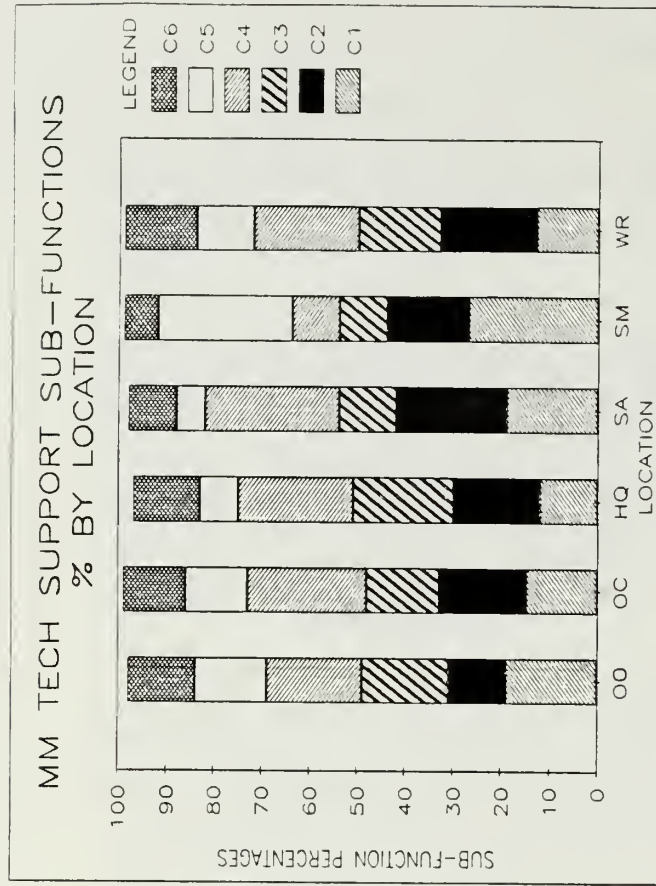
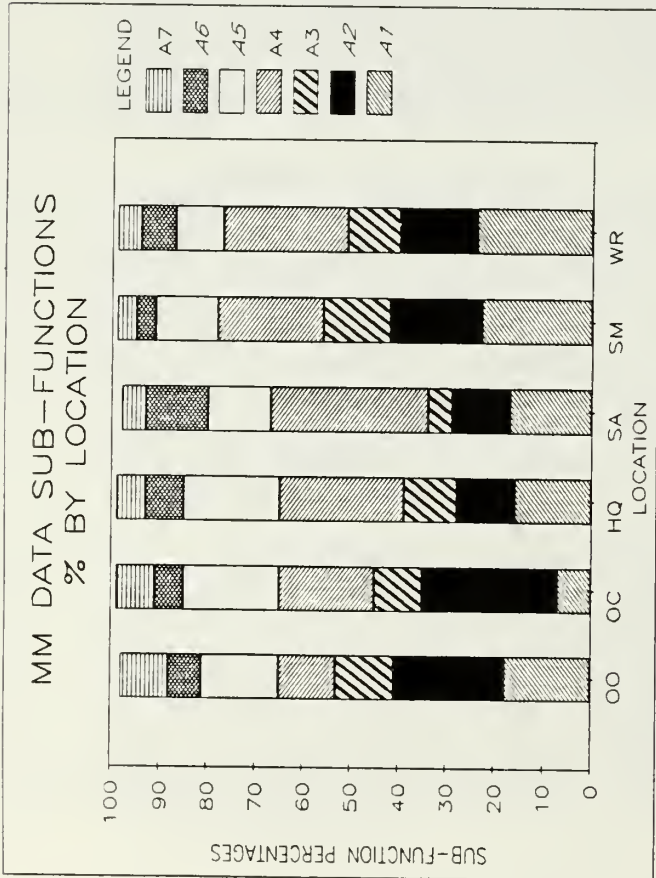


Figure 5

Similar tests were applied to the function weights after grouping them by rank or grade level of the executive. These tests also failed to show significant differences. It is clear that the executives differ in the relative weights given to the various functions, but these appear to be individual differences and preferences and not attributable to the job nor to differences in the assigned missions of the ALCs.

COMPARISON WITH SURVEY RESULTS

How does the relative importance of the sub functions derived from the profiles compare with those from the surveys?

The two sets of information are not directly comparable due to scale differences. We converted the profile percentages to rank order for the D/MM executives' weightings. We also computed the average importance from the preferred D/MM roles section of the survey and converted these to rank orders.

Figure 6 shows the ranks from the executives for the four major functions and for each set of sub-functions. It also shows the ranks for each set of sub-functions as rated by the LGs, HQMM, and the other ALC directorates as a group. The survey did not evaluate the major functions, only the sets of sub-functions.

Although the rankings look similar in some respects, a statistical test is required to evaluate whether these are simply chance variations. The Spearman Rank Correlation is designed for such a test. Basically, it compares the consistency of the rank values with the consistency which would occur due to chance. We used the .05 level of significance (1 chance in 20 of accepting a chance variation as real) and compared the ranks from the executives and three groups of survey respondents for each of the four sets of sub-functions.

For set A (Data Collection/Analysis/Reporting) the ranks are statistically significantly correlated at the .05 level between ALC (user directorates), Executives, and HQMM.

For set B (Requirements Determination and Programing) the correlation of the ranks is significant at the .05 level for HQMM and ALC user directorates.

For set C (Technical/Engineering Support) and set D (Acquisition & Distribution) no correlation reached the .05 level.

The fact that none of the 24 comparisons reached the .05 level of significance for the LGs is worth noting, for it raises the question of how well the customers are being served by the D/MMS. In general there is only minor commonality among the four sets of ranks. Again the problem of lack of common agreement regarding D/MM functions is highlighted.

Figure 6
FUNCTION RANKINGS

FUNCTION	PROFILES EXECUTIVES	LG	SURVEYS HQMM	ALC
A DATA COLLECTION/ANALYSIS/REPORTING	4			
A1 ITEM/EQUIPMENT/TECH DATA SPECIFICATION	2	1	2	1
A2 OPERATIONAL/FAILURE DATA/REQUIREMENTS	2	1	5	4
A3 SYSTEM/CONFIGURATION SUPPORT & RECORDS	5	3	4	3
A4 LOG RESOURCE PLAN/POM/BUDGET DATA	1	5	1	2
A5 INVENTORY/STATUS MANAGEMENT	4	6	3	5
A6 INSPECTION/READINESS/STATUS REPORTING	7	7	7	7
A7 SYSTEM/MNTNCE/EQUIP CONFERENCE/SURVEY	6	4	6	6
B REQUIREMENTS DETERMINATION & PROGRAMMING	1			
B1 SYSTEMS/ILS/PMRT PLANNING & REVIEW	3	4	1	2
B2 PARTS/ITEMS/SUPPLIES PLNG & ALLOCATION	1	1	2	1
B3 TEST/SUPPORT EQUIP PLNG & ALLOCATION	4	2	3	3
B4 BUDGET/RESOURCE PLNG & ALLOCATION	2	5	3	4
B5 WRSK/MOBILIZATION PLNG & REVIEW	5	6	5	6
B6 DISPOSAL/DISPOSITION	6	3	6	5
C TECHNICAL/ENGINEERING SUPPORT	3			
C1 TECHNICAL ORDERS/MANUALS/PROCEDURES	3	1	4	2
C2 MODS/IMPROVEMENTS/PROBLEM SOLUTIONS	2	2	1	1
C3 SOFTWARE DESIGN/DEVELOPMENT	4	6	2	5
C4 SAFETY/MISHAP/DEFECT INVESTIGATION	1	4	5	6
C5 CONFIGURATION/INTEGRATION MANAGEMENT	5	5	3	4
C6 HARDWARE/EQUIP. DESIGN & MANAGEMENT	6	3	6	3
D ACQUISITION & DISTRIBUTION	2			
D1 PRODUCTION PLANNING & SUPPORT	4	4	2	1
D2 PURCHASE INITIATION & MANAGEMENT	1	3	2	3
D3 DISTRIBUTION PLANNING & DIRECTION	5	4	5	5
D4 CONTRACTOR QUAL/EVAL/INTERFACE	3	1	4	4
D5 MAINTENANCE/REPAIR/MOD MANAGEMENT	2	2	2	1

CONCLUSION

We were frequently told that common manpower standards for the D/MMs are unworkable due to the greatly differing missions to be performed at the different ALCs. Comparisons based on the list of functions developed in this study do not support that statement. There were large differences in perception regarding the functions and roles of the D/MM, but no statistically significant correlation between these differences and the ALC to which the respondents were assigned. The data indicate that within each ALC, and within the D/MM of each ALC, there is little agreement as to what the functions and particularly the roles of D/MM are. The general resistance to manpower standards within the D/MMs is therefore more easily explained by this lack of consensus within the D/MM community on the importance and roles of the functions than by the different tasks assigned to the ALCs. Although the work assigned to each ALC does vary, the differences among the D/MMs appear to be of degree rather than of basic functions. One D/MM may perform more engineering services than another and may do more item management than weapon systems management. The critical point however, is that they all perform engineering services, and item and weapon systems management; it is the mix rather than the components -with limited exceptions- which vary.

Because the Systems Analytic Discussions, Profiles and, to a limited extent, the Surveys indicated that functions and roles of D/MM are not clear, it would seem unlikely that normal industrial engineering studies would be successful. It was clear in our discussions that the different management levels within D/MM seldom discuss the goals and management philosophies of their organization as a group. It was also clear however, that the managers are very dedicated and want the D/MM to successfully serve its customers.

It would appear beneficial for the management cadre of the D/MMs to occasionally meet as a group and discuss the functions, roles and measures of effectiveness of the organization. In an organization such as D/MM, these tend to change or get out of focus with time, with new responsibilities and new directors. Once the management of D/MM agrees on these items, then the possibility of developing meaningful standards becomes more realistic.

As a beginning we would recommend that D/MM use the list of primary functions and subfunctions developed in the project as a comprehensive list of the range of functions performed by D/MM. This list was developed from the discussions at all the ALCs and from comments received in the preliminary surveys. Additionally, no one recommended additions or deletions to it even though the surveys and discussions provided frequent opportunity to do so. We recommend the use of this functions hierarchy and EXPERT87 in a re-study of the development of appropriate functional weights,

making certain that ample time is given to avoid the individual substitutions and incompletions which occurred in this study.

The roles that customers and users prefer D/MM to perform for each function are very different from D/MM's view as the "quarterback". Considerable effort and study needs to be given to clarifying D/MM's image as a facilitating and service organization rather than as a "quarterback".

Emphasis should be placed on ensuring that the D/MM is performing the appropriate roles with respect to each function. The customers and users indicated many instances where D/MM is performing a directive type role when they believe it should be more of a supportive role. This causes a duplication of effort and personnel. If D/MM is correct then the other directorates should adjust, if the other directorates are correct then D/MM should adjust.

Once the functions and roles have been agreed to, then attention should be directed toward finding appropriate measures of effectiveness for each function. This frequently requires using a proxy for the true measure. When these have been established there will be a basis to begin the development of manpower standards that are output- and outcome-related. This will also provide the basis for building a set of measures of merit connected through the functions to overall effectiveness. These would replace the reliance on the current proliferation of unconnected management indicators. A more comprehensive systems analysis is needed to lay the groundwork for this effort.

We wish to comment here that clarification must be made regarding the role of D/MM Weapon Systems Managers (PMs or SPMs). Their relationship to the LOC, AFALC and Item Managers should be clearly specified. If it is not, there will always be problems with measures of effectiveness and subsequently in the acceptance of manpower standards.

Agreement on functions and roles and clarifying of responsibility for aircraft and weapon systems, particularly after PMRT, will provide D/MM managers with better understanding and guidance on their roles. Additionally they need to be given the authority to manage the allocation and use of their resources without second guessing by HQ, LOC, AFALC or other organizations. D/MM and the ALC have excellent managers who need and want the opportunity to manage with a clear expectation of the support they will receive from inside and outside their organization. They hold strong opinions and are forceful in presenting their ideas about what ought to be done and about what it is that keeps them from doing the best job possible. They were nearly unanimous in their opinion that Headquarters gets too involved and sends out too many burdensome directives and requests for information that is already available.

W. Edwards Deming has estimated that "15-40% of the cost of

almost any American product you buy today is for waste embedded in it." We do not have an estimate of the waste in D/MM, but it seems clear that the functions are so fractionated and unfocused that waste is bound to occur and the emphasis on quality is being lost. The need is to focus on high quality work in a few key areas and not try to do everything. Examples abound in the survey comments, to illustrate only one -

D/MM could let D/MA plan for needed parts and schedule for a modification kit. Since D/MA will have to plan and schedule anyway, considerable time, effort, and acrimony will be saved by effective delegation and decentralization thus avoiding doing the job twice.

Even small reductions in the number of transactions by D/MM will yield large resource savings due to the large number of times each of the transactions occurs.

Utilization of the study's list of D/MM functions in a pilot study would be useful to estimate the feasibility of this functional approach to developing standards, to evaluate D/MM internal overhead functions, and to provide a rough cut at manpower requirements numbers. A pilot study would examine the amount of time spent in each function by a sample of D/MM personnel. The basic steps would be:

- 1) Construct a set of internal support functions.
- 2) Construct a matrix of time spent in each function for a sample of D/MM personnel. This includes estimating the task complexity and stability for the functions.
- 3) Measure results, direct and indirect, of each position.
- 4) Relate functional activities to outcomes, to provide the beginning of a manpower data base system.

Given the current state of agreement on D/MM functions and their relative importance, it does not seem likely that the present approaches to manpower requirements will be effective. It is possible to derive relations between specific activities and time requirements, as the Management Engineering Teams have shown. The difficulty is that the individual position requirements will not sum to produce overall requirements. The failure to sum stems partially from the fact that positions have different content and responsibility and are only partially transparent with regard to organization. A more important reason is the lack of agreement on the priority of functions, which implies that differing amounts of manpower resources will be applied in each ALC.

It seems to us that a different approach might be tried in justifying manpower requirements. Attack the problem at the level of the proposed functions. Estimate the time required for these functions to provide the desired level of service and response time for each major weapon system or other aggregate. Then compute overall requirements. This could also provide visibility to the real cost of retaining obsolete weapon systems and equipment. This approach might also provide the manpower equivalent of a statistical cost-estimating relationship for

estimating the logistics manpower requirements of proposed new weapon systems.

HQAFLC should eliminate as many restrictions as possible on D/MM and ALC managerial flexibility in resource use. It should also work to reduce resource fences, regulations, policies, and micro-management by other Air Force units, DoD, and the Congress. Proliferation of such limitations severely restricts the ability of D/MM and ALC managers to efficiently and effectively use their resources.

Eliminate or de-emphasize the existing management indicators and develop measures of merit that connect job plans and functions to higher level measures of effectiveness.

D/MMs should be encouraged to establish their own internal teams to make recommendations concerning use of the data and comments provided in the appendices, as that analysis is beyond the scope of this report.

Based on the comments of James Wade and Richard Biedenbende in the recent Defense Management Journal, it appears the time is right to make some bold moves to correct some of the present approaches and take a major step forward in the future provision of logistic support. We hope that this report is a clear step in that direction.

BIBLIOGRAPHY

- Biedenbender, Richard, "A Window of Opportunity for DoD Support Organizations" Defense Management Journal, 4th Quarter 1986, pp 7-13
- "Combat Support Doctrine: An Abbreviated Preview" Air Force Journal of Logistics, Winter 1986, pp 14-18
- DBASE III, version 1.1, Ashton-Tate, Culver City CA, 1984
- EXPERT87, version 3.2, Magic 7 Software, Los Altos, CA, 1986
- LOTUS123, release 2, Lotus Development Corp, Cambridge, MA, 1985
- Miller, Jeffery and Vollman, Thomas, "The Hidden Factory", Harvard Business Review, Sept 1985, pp 142-150
- STATGRAPHICS, version 2, STSC Inc, Rockville, MD 1986
- Wade, James, "Defense Logistics: The Case for Reform" Defense Management Journal, 4th Quarter 1986, pp 2-6

APPENDIX I

CASE DISCUSSION MATERIEL MANAGEMENT

(The following material is presented for discussion purposes and is not to be construed as an official statement of the duties, responsibilities, or activities of materiel management organizations.)

The Directorates of Materiel Management are responsible for the worldwide logistics support management of weapon systems programs, items, and other materiel for the Air Force. They also manage certain materiel items for the joint services and for the federal supply system.

The Deputy Chief of Staff for Materiel Management has directed that manpower standards be developed for materiel management functions. Such standards are necessary for effective management and for projecting and defending manpower requirements. Past efforts to develop and apply manpower standards to the materiel management functions have been only partially successful. This has been due to the complexity of the functions, their intrinsic overhead nature and the major differences in the assigned responsibilities of the individual ALCs. Taking these factors into consideration, HQ/AFMC is employing significant resources to establish manpower standards which may be applied to all the materiel management organizations.

In parallel with the development of those standards, HQ/AFMC wants to develop a common understanding at the ALCs of the nature, goals, functions, and measures of effectiveness of materiel management organizations. Doing this requires taking a few steps away from the immediate problems to gain a better perspective of what MM is doing. In this case study, we ask you to take those few steps and exercise a different perspective.

* * * *

Miller and Vollman, in a recent Harvard Business Review article, "The Hidden Factory", point out that "overhead costs as a percentage of value added in American industry and as a percentage of manufacturing costs have risen steadily for more than 100 years...", rising from about 52% in 1875 to 75% in 1975. This reflects the increasing number and complexity of the transactions or exchanges of material and/or information necessary to modern organizations. In the Air Force this increase in transactions is further pushed by the proliferation and increasing complexity of weapon systems, as well as by the pressures resulting from being the sole buyer in a non-competitive market.

These exchanges of material and information, according to Miller and Vollman, include:

- Logistical transactions - which order, execute, and confirm movements of materials from one location to another.
- Balancing transactions - which ensure that supplies of materials, labor and capacity are equal to demand.
- Quality transactions - which include engineering, specifications, procurement, certification, quality control and developing and recording relevant data.
- Change transactions - which update information systems to accomodate changes in design, schedules, standards, and specifications.

Although MM does not perform them all, the above activities indicate the magnitude of the task MM faces and helps give some perspective on the difficulties involved in establishing manpower standards when these transactions are in constant flux.

As a means of gaining greater common understanding of the roles and activities of Materiel Management, we ask you to be prepared to discuss in some detail your views with regard to the following questions:

1. What are the primary and supporting sub-systems which compose the overall system that is called Materiel Management? (Focus on the functional sub-systems or programs.)
2. What special features distinguish this overall system and its component sub-systems from the other programs or systems related to them?
3. What is the objective of the overall system?
4. What are the objectives of each of the sub-systems identified in your answer to question 1?
5. With respect to the overall system:
 - a. What could be some measures of effectiveness of the system?
 - b. How could the actual data for these measures be collected?
 - c. If actual data on effectiveness were collected, what comparisons might be made?
6. Temporarily disregarding cost and feasibility, what alternatives could be considered for improving the effectiveness of the system?
7. Conceptually, how could the various alternatives be evaluated so as to provide some basis for deciding which ones to actually implement?
8. Do you have any other suggestions for things to be done before the selected alternatives are finally implemented?

APPENDIX II
SURVEY QUESTIONNAIRE

MATERIEL MANAGEMENT FUNCTIONS SURVEY

This survey is designed to identify those functions which are or should be performed by the Directorate of Materiel Management (D/MM) at the Air Logistics Centers (ALCs). It also attempts to assess the impact of those functions on your organization's work performance. Your frank and complete responses are needed for ALC D/MMs to obtain full value from this survey.

All information will be held in strict confidence and released only in aggregate form.

I. General Information

This section requests general information necessary for statistical analysis of the survey responses.

Name _____ Rank/Grade _____ Phone Avn: _____

Base/Organization/Office Symbol _____

Position _____ How long have you held this position? _____ yrs _____ mos

Principal responsibilities of your organization: _____

28 Have you ever worked in a Materiel Management Directorate at an ALC? Yes No (Please circle)

How often do you personally contact an ALC D/MM?
Hardly ever Few times a year Once or twice a month Weekly or more often

How would you rate the support your organization receives from D/MM?
Outstanding Superior Satisfactory Below Requirements

Please rate your knowledge of ALC Materiel Management by circling the appropriate number on the scale.
1 2 3 4 5 6
very little knowledge highly knowledgeable

Approximately what percentage of your dealings with MM are with each of the following ALCs?
Ogden Sacramento Oklahoma City Warner-Robins San Antonio

_____ % _____ % _____ % Total should equal 100%
To what extent is your mission performance dependent on the ALC Directorate of Materiel Management?
Very Great Great Some Little Very Little

To what extent is ALC D/MM's mission performance dependent on your organization?
Very Great Great Some Little Very Little

II. Materiel Management Current Functions

This section asks about the present functional relationship between your own organization and the ALC Directorate of Materiel Management. From the viewpoint of your organization, there are a variety of roles D/MM could actually perform for each materiel management function. Please read the following role definitions carefully as they may differ from the way you commonly use the terms. The symbol preceding each term is used to represent it in the Roles columns below.

Role definitions

- TS - TASKING - D/MM provides workload or directs your organization to carry out this function.
- PL - POLICY - D/MM provides policies and procedures for your organization to carry out this function.
- CD - COORDINATION - D/MM provides coordination of this function for your organization.
- AI - ADVICE/INFORMATION - D/MM provides information or advice to your organization regarding this function.
- SR - SERVICE - D/MM provides service by administering or performing this function for your organization.
- CT - CONTROL - D/MM is responsible for the measurement and evaluation of the function as it is performed by your organization.
- NO - NONE - D/MM has no responsibility or role in this function for your organization.

The following three questions use the list of D/MM functions below. You will probably find it useful to complete column 1 first and then go back to complete columns 2 and 3.

- 1 ROLES. For each function A1 to D5, please circle the symbol or symbols corresponding to the role that ALC D/MM is actually performing with respect to your organization. More than one role symbol may be circled for any function.
- 2 IMPORTANCE. For functions A1 to D5, except those marked NO, please answer the following question using the scale -VG-Very Great, -G-Great, -S-Some, -L-Little, -VL-Very Little.
To what extent is D/MM's role performance in this function important to your organization?
- 3 PERFORMANCE. For functions A1 to D5, except those marked NO, please answer the following question using the scale -VG-Very Great, -G-Great, -S-Some, -L-Little, -VL-Very Little.
To what extent does D/MM maintain an adequate level of performance for this function?

FUNCTION	<u>1</u> <u>D/MM ROLES</u>			<u>2</u> <u>IMPORTANCE</u>			<u>3</u> <u>PERFORMANCE</u>					
	TS	PL	CD	AI	SR	CT	NO	VG	G	S	L	VL
A DATA COLLECTION/ANALYSIS/REPORTING												
A1 ITEM/EQUIPMENT/TECH DATA SPECIFICATION	TS	PL	CD	AI	SR	CT	NO	VG	G	S	L	VL
A2 OPERATIONAL/FAILURE DATA REQUIREMENTS	TS	PL	CD	AI	SR	CT	NO	VG	G	S	L	VL
A3 SYSTEM/CONFIGURATION SUPPORT & RECORDS	TS	PL	CD	AI	SR	CT	NO	VG	G	S	L	VL
A4 LOG RESOURCE PLAN/POM/BUDGET DATA	TS	PL	CD	AI	SR	CT	NO	VG	G	S	L	VL
A5 INVENTORY/STATUS MANAGEMENT	TS	PL	CD	AI	SR	CT	NO	VG	G	S	L	VL
A6 INSPECTION/READINESS/STATUS REPORTING	TS	PL	CD	AI	SR	CT	NO	VG	G	S	L	VL
A7 SYSTEM/MNTNCE/EQUIP CONFERENCE/SURVEY	TS	PL	CD	AI	SR	CT	NO	VG	G	S	L	VL
B REQUIREMENTS DETERMINATION & PROGRAMMING												
B1 SYSTEMS/ILS/PMRT PLANNING & REVIEW	TS	PL	CD	AI	SR	CT	NO	VG	G	S	L	VL
B2 PARTS/ITEMS/SUPPLIES PLNG & ALLOCATION	TS	PL	CD	AI	SR	CT	NO	VG	G	S	L	VL
B3 TEST/SUPPORT EQUIP PLNG & ALLOCATION	TS	PL	CD	AI	SR	CT	NO	VG	G	S	L	VL
B4 BUDGET/RESOURCE PLNG & ALLOCATION	TS	PL	CD	AI	SR	CT	NO	VG	G	S	L	VL
B5 WRSK/MOBILIZATION PLNG & REVIEW	TS	PL	CD	AI	SR	CT	NO	VG	G	S	L	VL
B6 DISPOSAL/DISPOSITION	TS	PL	CD	AI	SR	CT	NO	VG	G	S	L	VL

(CONTINUED)

FUNCTION	1 D/MM ROLES			2 IMPORTANCE			3 PERFORMANCE					
	TS	PL	CD	AI	SR	CT	NO	VG	G	S	L	VL
C TECHNICAL/ENGINEERING SUPPORT												
C1 TECHNICAL ORDERS/MANUALS/PROCEDURES	TS	PL	CD	AI	SR	CT	NO	VG	G	S	L	VL
C2 MODS/IMPROVEMENTS/PROBLEM SOLUTIONS	TS	PL	CD	AI	SR	CT	NO	VG	G	S	L	VL
C3 SOFTWARE DESIGN/DEVELOPMENT	TS	PL	CD	AI	SR	CT	NO	VG	G	S	L	VL
C4 SAFETY/MISHAP/DEFECT INVESTIGATION	TS	PL	CD	AI	SR	CT	NO	VG	G	S	L	VL
C5 CONFIGURATION/INTEGRATION MANAGEMENT	TS	PL	CD	AI	SR	CT	NO	VG	G	S	L	VL
C6 HARDWARE/EQUIP. DESIGN & MANAGEMENT	TS	PL	CD	AI	SR	CT	NO	VG	G	S	L	VL
D ACQUISITION & DISTRIBUTION												
D1 PRODUCTION PLANNING & SUPPORT	TS	PL	CD	AI	SR	CT	NO	VG	G	S	L	VL
D2 PURCHASE INITIATION & MANAGEMENT	TS	PL	CD	AI	SR	CT	NO	VG	G	S	L	VL
D3 DISTRIBUTION PLANNING & DIRECTION	TS	PL	CD	AI	SR	CT	NO	VG	G	S	L	VL
D4 CONTRACTOR QUAL/EVAL/INTERFACE	TS	PL	CD	AI	SR	CT	NO	VG	G	S	L	VL
D5 MAINTENANCE/REPAIR/MOD MANAGEMENT	TS	PL	CD	AI	SR	CT	NO	VG	G	S	L	VL

III. Materiel Management Preferred Functions

This section asks about the functional relationship that you would prefer to have between your organization and the ALC D/MM. Please read the role definitions below.

Role definitions

- TS - TASKING - D/MM SHOULD provide workload or direct your organization to carry out this function.
- PL - POLICY - D/MM SHOULD provide policies and procedures for your organization to carry out this function.
- CD - COORDINATION - D/MM SHOULD provide coordination of this function for your organization.
- AI - ADVICE/INFORMATION - D/MM SHOULD provide information or advice to your organization regarding this function.
- SR - SERVICE - D/MM SHOULD provide service by administering or performing this function for your organization.
- CT - CONTROL - D/MM SHOULD be responsible for the measurement and evaluation of the function as it is performed by your organization.
- NO - NONE - indicates that D/MM SHOULD have no responsibility or role in this function for your organization.

The following questions use the functions list on the next page. You will probably find it useful to complete question 1 and then go back to complete question 2.

- 1 ROLES. For each function A1 to D5 below, please circle the symbol or symbols corresponding to the role you believe D/MM SHOULD perform with respect to your organization. More than one role may be marked for any function.
- 2 IMPORTANCE. For functions A1 to D5, except those marked NO, please answer the following question using the scale -VG-Very Great, -G-Great, -L-Little, -S-Some, -VL-Very Little.
If D/MM were performing the roles and activities as you indicated, to what extent would D/MM's performance in that function be important to your organization?

FUNCTION

1
PREFERRED D/MM ROLES

2
IMPORTANCE

A DATA COLLECTION/ANALYSIS/REPORTING
 A1 ITEM/EQUIPMENT/TECH DATA SPECIFICATION VG G S L VL
 A2 OPERATIONAL/FAILURE DATA/REQUIREMENTS VG G S L VL
 A3 SYSTEM/CONFIGURATION SUPPORT & RECORDS VG G S L VL
 A4 LOG RESOURCE PLAN/POM/BUDGET DATA VG G S L VL
 A5 INVENTORY/STATUS MANAGEMENT VG G S L VL
 A6 INSPECTION/READINESS/STATUS REPORTING VG G S L VL
 A7 SYSTEM/MNTNCE/EQUIP CONFERENCE/SURVEY VG G S L VL
 Other? _____

B REQUIREMENTS DETERMINATION & PROGRAMMING
 B1 SYSTEMS/ILS/PMRT PLANNING & REVIEW VG G S L VL
 B2 PARTS/ITEMS/SUPPLIES PLNG & ALLOCATION VG G S L VL
 B3 TEST/SUPPORT EQUIP PLNG & ALLOCATION VG G S L VL
 B4 BUDGET/RESOURCE PLNG & ALLOCATION VG G S L VL
 B5 WRSK/MOBILIZATION PLNG & REVIEW VG G S L VL
 B6 DISPOSAL/DISPOSITION VG G S L VL
 Other? _____

C TECHNICAL/ENGINEERING SUPPORT
 C1 TECHNICAL ORDERS/MANUALS/PROCEDURES VG G S L VL
 C2 MODS/IMPROVEMENTS/PROBLEM SOLUTIONS VG G S L VL
 C3 SOFTWARE DESIGN/DEVELOPMENT VG G S L VL
 C4 SAFETY/MISHAP/DEFECT INVESTIGATION VG G S L VL
 C5 CONFIGURATION/INTEGRATION MANAGEMENT VG G S L VL
 C6 HARDWARE/EQUIP. DESIGN & MANAGEMENT VG G S L VL
 Other? _____

D ACQUISITION & DISTRIBUTION
 D1 PRODUCTION PLANNING & SUPPORT VG G S L VL
 D2 PURCHASE INITIATION & MANAGEMENT VG G S L VL
 D3 DISTRIBUTION PLANNING & DIRECTION VG G S L VL
 D4 CONTRACTOR QUAL/EVAL/INTERFACE VG G S L VL
 D5 MAINTENANCE/REPAIR/MOD MANAGEMENT VG G S L VL
 Other? _____

TS PL CD AI SR CT NO
 TS PL CD AI SR CT NO
 TS PL CD AI SR CT NO
 TS PL CD AI SR CT NO
 TS PL CD AI SR CT NO
 TS PL CD AI SR CT NO
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 TS PL CD AI SR CT NO

IV. Evaluation

On what basis do you think the ALC Directorate of Materiel Management should be evaluated?
List as many criteria as you believe appropriate.

V. Improvements

Please list specific things that could be done to improve the efficiency or effectiveness of ALC D/MM.

VI. Comments

Please use this space for comments you wish to make or to address other questions you believe should have been included in this survey.

VIEWS OF CURRENT AND PREFERRED D/MM ROLES

LG RESPONDENTS (N=20)

FUNCTION	1 CURRENT D/MM ROLES							2 PREFERRED D/MM ROLES						
	TS	PL	CD	AI	SR	CT	NO	TS	PL	CD	AI	SR	CT	NO
A DATA COLLECTION/ANALYSIS/REPORTING														
A1 ITEM/EQUIPMENT/TECH DATA SPECIFICATION	5	8	6	8	11									
A2 OPERATIONAL/FAILURE DATA/REQUIREMENTS	2	6	7	6	7	2	1							
A3 SYSTEM/CONFIGURATION SUPPORT & RECORDS		2	7	8	9	2	4							
A4 LOG RESOURCE PLAN/POM/BUDGET DATA	1	1	10	8	8	1	2	1	1	6	10	8	1	3
A5 INVENTORY/STATUS MANAGEMENT	2	3	6	10	9	1	2	1	2	5	9	12	3	5
A6 INSPECTION/READINESS/STATUS REPORTING	1		4	6	2	1	12	2	2	1	5	5		11
A7 SYSTEM/MNTNCE/EQUIP CONFERENCE/SURVEY	2	3	10	5	11	1	4	1	1	9	7	12		2
B REQUIREMENTS DETERMINATION & PROGRAMMING														
B1 SYSTEMS/ILS/PMRT PLANNING & REVIEW	1	5	8	4	8	3	4	1	3	8	5	10	3	3
B2 PARTS/ITEMS/SUPPLIES PLNG & ALLOCATION	3	4	7	7	16	3	1	1	2	8	5	17	3	1
B3 TEST/SUPPORT EQUIP PLNG & ALLOCATION	3	3	7	5	10	2	3	1	3	7	9	9	2	3
B4 BUDGET/RESOURCE PLNG & ALLOCATION	1	2	5	9	9	2	4	2	2	4	8	7	1	4
B5 WRSK/MOBILIZATION PLNG & REVIEW	2	4	5	7	8	3	6	2	2	5	10	8	3	5
B6 DISPOSAL/DISPOSITION	1	5	6	8	10	1	2	1	3	4	5	12	3	1
C TECHNICAL/ENGINEERING SUPPORT														
C1 TECHNICAL ORDERS/MANUALS/PROCEDURES	2	3	4	6	11	3	2	1	3	5	5	17	5	
C2 MODS/IMPROVEMENTS/PROBLEM SOLUTIONS	1	3	8	8	10	3	2	2	4	6	7	15	5	1
C3 SOFTWARE DESIGN/DEVELOPMENT	1	3	4	6	8	3	8	1	3	3	6	11	4	5
C4 SAFETY/MISHAP/DEFECT INVESTIGATION	2	2	4	9	10	3	4	2	3	5	8	12	4	3
C5 CONFIGURATION/INTEGRATION MANAGEMENT	1	4	3	5	10	2	5	2	4	5	11	9	4	3
C6 HARDWARE/EQUIP. DESIGN & MANAGEMENT		3	9	8	10	3	3	2	2	4	8	11	4	2
D ACQUISITION & DISTRIBUTION														
D1 PRODUCTION PLANNING & SUPPORT	2		3	5	11	2	4	2	2	6	11	13	2	1
D2 PURCHASE INITIATION & MANAGEMENT	1	2	5	5	12	1	3	1	2	5	7	17	2	1
D3 DISTRIBUTION PLANNING & DIRECTION	1	2	4	5	12	2	4	2	2	7	9	13	2	2
D4 CONTRACTOR QUAL/EVAL/INTERFACE	1		2	5	13	1	5	2	2	7	4	11	5	1
D5 MAINTENANCE/REPAIR/MOD MANAGEMENT	2	4	5	5	16	3	1	1	2	6	8	15	3	1

APPENDIX III

MA RESPONDENTS (N=18)

MA RESPONDENTS (N=18)

1
CURRENT D/MM ROLES

2
PREFERRED D/MM ROLES

FUNCTION

FUNCTION	CURRENT D/MM ROLES						PREFERRED D/MM ROLES							
	TS	PL	CD	AI	SR	CT	NO	TS	PL	CD	AI	SR	CT	NO
A DATA COLLECTION/ANALYSIS/REPORTING														
A1 ITEM/EQUIPMENT/TECH DATA SPECIFICATION	5	4	3	9	7	2	2	2	2	9	9	9	1	1
A2 OPERATIONAL/FAILURE DATA/REQUIREMENTS	6	6	1	6	6	1	1	5	4	1	5	7	1	2
A3 SYSTEM/CONFIGURATION SUPPORT & RECORDS	6	5	2	5	5	2	2	3	5	1	6	5	2	3
A4 LOG RESOURCE PLAN/POM/BUDGET DATA	6	4	5	8	4	1	4	5	3	2	7	4	3	3
A5 INVENTORY/STATUS MANAGEMENT	5	2	1	7	3	1	5	4	4	3	7	4	2	5
A6 INSPECTION/READINESS/STATUS REPORTING	5	4	3	5	2	1	5	3	3	1	7	3	2	5
A7 SYSTEM/MNTNCE/EQUIP CONFERENCE/SURVEY	4	2	6	6	3	3	4	4	2	5	7	6	2	2

FUNCTION	CURRENT D/MM ROLES						PREFERRED D/MM ROLES							
	TS	PL	CD	AI	SR	CT	NO	TS	PL	CD	AI	SR	CT	NO
B REQUIREMENTS DETERMINATION & PROGRAMMING														
B1 SYSTEMS/ILS/PMRT PLANNING & REVIEW	5	5	4	6	2	1	7	5	3	4	5	5	6	6
B2 PARTS/ITEMS/SUPPLIES PLNG & ALLOCATION	7	2	5	5	6	1	2	4	1	5	5	7	2	2
B3 TEST/SUPPORT EQUIP PLNG & ALLOCATION	5	5	6	5	4	1	1	7	4	5	4	6	2	1
B4 BUDGET/RESOURCE PLNG & ALLOCATION	4	3	2	7	2	5	2	1	3	3	7	1	2	7
B5 WRSK/MOBILIZATION PLNG & REVIEW	1	1	2	3	1	10	10	2	2	3	3	1	1	10
B6 DISPOSAL/DISPOSITION	3	5	4	3	1	1	3	1	5	3	5	5	1	2

FUNCTION	CURRENT D/MM ROLES						PREFERRED D/MM ROLES							
	TS	PL	CD	AI	SR	CT	NO	TS	PL	CD	AI	SR	CT	NO
C TECHNICAL/ENGINEERING SUPPORT														
C1 TECHNICAL ORDERS/MANUALS/PROCEDURES	5	3	2	7	12	2	2	5	3	3	7	14	1	1
C2 MODS/IMPROVEMENTS/PROBLEM SOLUTIONS	7	6	5	8	9	4	4	7	5	3	9	12	3	3
C3 SOFTWARE DESIGN/DEVELOPMENT	7	4	2	4	4	1	6	5	4	1	6	3	8	8
C4 SAFETY/MISHAP/DEFECT INVESTIGATION	7	5	4	6	1	4	4	3	2	3	7	3	1	4
C5 CONFIGURATION/INTEGRATION MANAGEMENT	4	4	2	2	6	1	4	2	2	1	7	7	1	3
C6 HARDWARE/EQUIP. DESIGN & MANAGEMENT	6	3	3	4	6	4	4	5	2	1	4	7	1	3

FUNCTION	CURRENT D/MM ROLES						PREFERRED D/MM ROLES							
	TS	PL	CD	AI	SR	CT	NO	TS	PL	CD	AI	SR	CT	NO
D ACQUISITION & DISTRIBUTION														
D1 PRODUCTION PLANNING & SUPPORT	9	3	5	7	3	1	3	7	3	2	7	4	1	5
D2 PURCHASE INITIATION & MANAGEMENT	3	1	2	6	6	8	8	1	1	1	2	6	1	8
D3 DISTRIBUTION PLANNING & DIRECTION	2	2	1	1	4	8	8	1	2	5	4	1	9	9
D4 CONTRACTOR QUAL/EVAL/INTERFACE	3	2	2	3	4	1	9	1	1	3	6	6	9	9
D5 MAINTENANCE/REPAIR/MOD MANAGEMENT	10	3	4	7	4	2	2	6	3	4	6	9	2	3

VIEWS OF CURRENT AND PREFERRED D/MM ROLES

DS RESPONDENTS (N=15)

FUNCTION	<u>1</u> CURRENT D/MM ROLES							<u>2</u> PREFERRED D/MM ROLES						
	TS	PL	CD	AI	SR	CT	NO	TS	PL	CD	AI	SR	CT	NO
A DATA COLLECTION/ANALYSIS/REPORTING														
A1 ITEM/EQUIPMENT/TECH DATA SPECIFICATION	3	1		10			4	3	1		8			5
A2 OPERATIONAL/FAILURE DATA/REQUIREMENTS	1		3	6	2		6	2		2	7			6
A3 SYSTEM/CONFIGURATION SUPPORT & RECORDS	4	1	1	7	1		6	3		2	6			7
A4 LOG RESOURCE PLAN/POM/BUDGET DATA	1	1	3	7	2		5	1		4	8	1		4
A5 INVENTORY/STATUS MANAGEMENT	5	2	2	7	1	1	5	4	4		6			4
A6 INSPECTION/READINESS/STATUS REPORTING	3		4	4	1		7	5	2	2	5			4
A7 SYSTEM/MNTNCE/EQUIP CONFERENCE/SURVEY	2	3	4	4		2	9	2	2	2	4			9
B REQUIREMENTS DETERMINATION & PROGRAMMING														
B1 SYSTEMS/ILS/PMRT PLANNING & REVIEW	2	1	2	5			7	2	1	4	6			5
B2 PARTS/ITEMS/SUPPLIES PLNG & ALLOCATION	3	2	3	5	1	1	6	3	2	4	5		1	4
B3 TEST/SUPPORT EQUIP PLNG & ALLOCATION	3	1	2	4	1		8	3	1	4	4			6
B4 BUDGET/RESOURCE PLNG & ALLOCATION	1	1	2	6	1	1	7	1	1	4	5	1		5
B5 WRSK/MOBILIZATION PLNG & REVIEW	2	2	3	5		1	6	1	2	3	5			6
B6 DISPOSAL/DISPOSITION	6		5	8		3	1	5	3	3	6			2
C TECHNICAL/ENGINEERING SUPPORT														
C1 TECHNICAL ORDERS/MANUALS/PROCEDURES	2	2	2	7		1	5	2	3	4	6			5
C2 MODS/IMPROVEMENTS/PROBLEM SOLUTIONS	3	1		9		1	4	3	2	2	8			4
C3 SOFTWARE DESIGN/DEVELOPMENT	1		2	2		1	12			3	2			10
C4 SAFETY/MISHAP/DEFECT INVESTIGATION	2	2	2	3		1	9	1	1	3	2			9
C5 CONFIGURATION/INTEGRATION MANAGEMENT	1	1		4			10	1	1	2	5			7
C6 HARDWARE/EQUIP. DESIGN & MANAGEMENT	2	1		4		1	10	2	1	2	4			8
D ACQUISITION & DISTRIBUTION														
D1 PRODUCTION PLANNING & SUPPORT	5	1	1	7		1	5	6	2	2	8			1
D2 PURCHASE INITIATION & MANAGEMENT	4	2	1	4		1	8	4	2	2	6			5
D3 DISTRIBUTION PLANNING & DIRECTION	5	1	1	9		2	2	4	2	2	8			1
D4 CONTRACTOR QUAL/EVAL/INTERFACE	3	1	1	4		1	9	3	2	1	6			7
D5 MAINTENANCE/REPAIR/MOD MANAGEMENT	5	2		6		1	5	5	2		6			5

1
CURRENT D/MM ROLES

2
PREFERRED D/MM ROLES

FUNCTION

FUNCTION	CURRENT D/MM ROLES							PREFERRED D/MM ROLES						
	TS	PL	CD	AI	SR	CT	NO	TS	PL	CD	AI	SR	CT	NO
A DATA COLLECTION/ANALYSIS/REPORTING														
A1 ITEM/EQUIPMENT/TECH DATA SPECIFICATION	4	2	3	4	3	7	7	4	1	3	4	4	4	6
A2 OPERATIONAL/FAILURE DATA/REQUIREMENTS			1	3	3	10	10	3	1	3	4	4	4	9
A3 SYSTEM/CONFIGURATION SUPPORT & RECORDS		2	1	3	3	8	8	3	1	2	2	4	4	8
A4 LOG RESOURCE PLAN/POM/BUDGET DATA	4	2	2	2		9	9	4	1	1	2	3	8	8
A5 INVENTORY/STATUS MANAGEMENT	4	1	1	1	1	11	11	5	1	1	2	2	11	11
A6 INSPECTION/READINESS/STATUS REPORTING	3		1	3	2	1	11	3	1	2	3	11	11	11
A7 SYSTEM/MNTNCE/EQUIP CONFERENCE/SURVEY	3		2		2	1	11	3	1	2	4	4	9	9

FUNCTION	CURRENT D/MM ROLES							PREFERRED D/MM ROLES						
	TS	PL	CD	AI	SR	CT	NO	TS	PL	CD	AI	SR	CT	NO
B REQUIREMENTS DETERMINATION & PROGRAMMING														
B1 SYSTEMS/ILS/PMRT PLANNING & REVIEW	3	1	2	5	3	7	7	3	2	2	6	2	5	5
B2 PARTS/ITEMS/SUPPLIES PLNG & ALLOCATION	4	1	1		3	11	11	6	1	1	3	3	9	9
B3 TEST/SUPPORT EQUIP PLNG & ALLOCATION	3	1	1		3	11	11	5	1	1	1	4	9	9
B4 BUDGET/RESOURCE PLNG & ALLOCATION	3	2		2	3	9	9	3	1	1	2	4	8	8
B5 WRSK/MOBILIZATION PLNG & REVIEW	4	2	1	1	2	11	11	5	3	1	1	3	9	9
B6 DISPOSAL/DISPOSITION	3	1	1	2	2	11	11	2		2	2	3	1	11

FUNCTION	CURRENT D/MM ROLES							PREFERRED D/MM ROLES						
	TS	PL	CD	AI	SR	CT	NO	TS	PL	CD	AI	SR	CT	NO
C TECHNICAL/ENGINEERING SUPPORT														
C1 TECHNICAL ORDERS/MANUALS/PROCEDURES	4	1	1	3	3	8	8	4	1	1	3	3	8	8
C2 MODS/IMPROVEMENTS/PROBLEM SOLUTIONS	4	2	1	3		8	8	4	1	2	2	4	9	9
C3 SOFTWARE DESIGN/DEVELOPMENT	4	1		3	3	8	8	4	1		3	3	9	9
C4 SAFETY/MISHAP/DEFECT INVESTIGATION	4	1	1	2	2	11	11	4		2	4	3	10	10
C5 CONFIGURATION/INTEGRATION MANAGEMENT	3	2	1	1	2	11	11	3	1	1	3	4	10	10
C6 HARDWARE/EQUIP. DESIGN & MANAGEMENT	3	1	2	2	3	10	10	3	1	2	4	4	10	10

FUNCTION	CURRENT D/MM ROLES							PREFERRED D/MM ROLES						
	TS	PL	CD	AI	SR	CT	NO	TS	PL	CD	AI	SR	CT	NO
D ACQUISITION & DISTRIBUTION														
D1 PRODUCTION PLANNING & SUPPORT	2	1	2	7	3	5	5	3	2	3	3	3	6	6
D2 PURCHASE INITIATION & MANAGEMENT	10	2	1	4	4	2	2	11	2	1	1	2	2	2
D3 DISTRIBUTION PLANNING & DIRECTION	2	1	3	3	2	9	9	1		4	1	2	11	11
D4 CONTRACTOR QUAL/EVAL/INTERFACE	3	1	2	10	2	3	3	1	2	5	8	4	2	2
D5 MAINTENANCE/REPAIR/MOD MANAGEMENT	5	2	1	6	5	2	2	3	3	3	4	5	4	4

IEWS OF CURRENT AND PREFERRED D/MM ROLES

SI RESPONDENTS (N=12)

FUNCTION	CURRENT D/MM ROLES						PREFERRED D/MM ROLES							
	TS	PL	CD	AI	SR	CT	NO	TS	PL	CD	AI	SR	CT	NO
A DATA COLLECTION/ANALYSIS/REPORTING														
A1	2			2			8	3			1			8
A2	3			1	1		7	4			1	1		7
A3	3						9	4			1			8
A4	3	2		1			6	3			1			8
A5	3	1		1			7	4						8
A6	4			1			8	4						8
A7	4	1		1			8	3						9
B REQUIREMENTS DETERMINATION & PROGRAMMING														
B1	4	1		2			6	4			1		2	7
B2	3	1					8	4	1		1		1	7
B3	2						10	3			1			9
B4	2	2		1			8	3	1	2			1	8
B5	3	1					8	4	1		1		1	7
B6	2						10	3			1		1	9
C TECHNICAL/ENGINEERING SUPPORT														
C1	5	1		1			6	4	1				2	7
C2	4	1		2			7	4	1		1		1	7
C3	7	1		1			5	7			1			5
C4	4	1		1			8	3			1			8
C5	4	1		1			8	4						8
C6	5	1		1			7	4						8
D ACQUISITION & DISTRIBUTION														
D1	4	1		1			7	3			1		2	7
D2	4	1		2			7	3						9
D3	4	1		1			8	3						9
D4	4	1		2			7	4	1	1	2		1	7
D5	4	1		1			8	3						9

VIEWS OF CURRENT AND PREFERRED D/MM ROLES

XR RESPONDENTS (N=4)

FUNCTION	CURRENT D/MM ROLES							PREFERRED D/MM ROLES						
	TS	PL	CD	AI	SR	CT	NO	TS	PL	CD	AI	SR	CT	NO
A DATA COLLECTION/ANALYSIS/REPORTING														
A1 ITEM/EQUIPMENT/TECH DATA SPECIFICATION				3			1				2			2
A2 OPERATIONAL/FAILURE DATA/REQUIREMENTS				3			1				2			2
A3 SYSTEM/CONFIGURATION SUPPORT & RECORDS				3			1				2			2
A4 LOG RESOURCE PLAN/POM/BUDGET DATA		2		1			1		2		2			2
A5 INVENTORY/STATUS MANAGEMENT				1			3				2			2
A6 INSPECTION/READINESS/STATUS REPORTING				1			3				1			3
A7 SYSTEM/MNTNCE/EQUIP CONFERENCE/SURVEY		1	1	3			1				3			1
B REQUIREMENTS DETERMINATION & PROGRAMMING														
B1 SYSTEMS/ILS/PMRT PLANNING & REVIEW		1		3			3		2		3			3
B2 PARTS/ITEMS/SUPPLIES PLNG & ALLOCATION				3			1				1			1
B3 TEST/SUPPORT EQUIP PLNG & ALLOCATION				3			1		1		3			1
B4 BUDGET/RESOURCE PLNG & ALLOCATION				3			1				3			1
B5 WRSK/MOBILIZATION PLNG & REVIEW		1	3	3			3		2		3			3
B6 DISPOSAL/DISPOSITION				1			3				1			3
C TECHNICAL/ENGINEERING SUPPORT														
C1 TECHNICAL ORDERS/MANUALS/PROCEDURES				1			3				1			3
C2 MODS/IMPROVEMENTS/PROBLEM SOLUTIONS				1			3				3			1
C3 SOFTWARE DESIGN/DEVELOPMENT				3			1		1		3			1
C4 SAFETY/MISHAP/DEFECT INVESTIGATION				1			3				1			3
C5 CONFIGURATION/INTEGRATION MANAGEMENT				3			1		1		3			1
C6 HARDWARE/EQUIP. DESIGN & MANAGEMENT				3			1				3			1
D ACQUISITION & DISTRIBUTION														
D1 PRODUCTION PLANNING & SUPPORT		1		3			3				3			1
D2 PURCHASE INITIATION & MANAGEMENT				1			3				1			3
D3 DISTRIBUTION PLANNING & DIRECTION				1			3				2			2
D4 CONTRACTOR QUAL/EVAL/INTERFACE				1			3				1			3
D5 MAINTENANCE/REPAIR/MOD MANAGEMENT		1	2	3			1		1		3			1

IEWS OF CURRENT AND PREFERRED D/MM ROLES

CR RESPONDENTS (N=11)

FUNCTION	CURRENT D/MM ROLES							PREFERRED D/MM ROLES						
	TS	PL	CD	AI	SR	CT	NO	TS	PL	CD	AI	SR	CT	NO
A DATA COLLECTION/ANALYSIS/REPORTING														
A1 ITEM/EQUIPMENT/TECH DATA SPECIFICATION	1	1	2	3	5		1	1	1	2	4	4		1
A2 OPERATIONAL/FAILURE DATA/REQUIREMENTS			1	5	2		5			3	5	3		4
A3 SYSTEM/CONFIGURATION SUPPORT & RECORDS	1		1	5	2		3	1		2	5	2		3
A4 LOG RESOURCE PLAN/POM/BUDGET DATA			1	2	1		8			2	4	1		6
A5 INVENTORY/STATUS MANAGEMENT			4	2	2		6			1	5	2		5
A6 INSPECTION/READINESS/STATUS REPORTING			1	1	1		9			2	1	1		8
A7 SYSTEM/MNTNCE/EQUIP CONFERENCE/SURVEY			2	1	1		8			2	3	1		7
B REQUIREMENTS DETERMINATION & PROGRAMMING														
B1 SYSTEMS/ILS/PMRT PLANNING & REVIEW	1		2	8	1		1	1		3	7	1		2
B2 PARTS/ITEMS/SUPPLIES PLNG & ALLOCATION	1		2	7	1		3	1		3	7	1		3
B3 TEST/SUPPORT EQUIP PLNG & ALLOCATION	1		2	7	1		3	1		3	6	1		4
B4 BUDGET/RESOURCE PLNG & ALLOCATION			2	4	1		7			2	5	1		6
B5 WRSK/MOBILIZATION PLNG & REVIEW		1		4			7			1	4			7
B6 DISPOSAL/DISPOSITION				2	1		9				3	1		8
C TECHNICAL/ENGINEERING SUPPORT														
C1 TECHNICAL ORDERS/MANUALS/PROCEDURES			1	7	2		2			2	7	2		2
C2 MODS/IMPROVEMENTS/PROBLEM SOLUTIONS	1		3	6	2		2	1		4	6	1		2
C3 SOFTWARE DESIGN/DEVELOPMENT				3	1		7			1	3	1		7
C4 SAFETY/MISHAP/DEFECT INVESTIGATION				1	1		9				1	1		9
C5 CONFIGURATION/INTEGRATION MANAGEMENT	1		1	6	1		4	1		2	6	1		4
C6 HARDWARE/EQUIP. DESIGN & MANAGEMENT			1	5	2		5			1	5	1		5
D ACQUISITION & DISTRIBUTION														
D1 PRODUCTION PLANNING & SUPPORT				5	1		5			2	4	1		6
D2 PURCHASE INITIATION & MANAGEMENT	1			5	1		4	1		2	5	1		4
D3 DISTRIBUTION PLANNING & DIRECTION				1	1		9			2	4	1		6
D4 CONTRACTOR QUAL/EVAL/INTERFACE				5	1		5	1		1	5	1		5
D5 MAINTENANCE/REPAIR/MOD MANAGEMENT				6	1		4			1	6	1		5

IEWS OF CURRENT AND PREFERRED D/MM ROLES

QA RESPONDENTS (N=6)

FUNCTION	CURRENT D/MM ROLES							PREFERRED D/MM ROLES						
	TS	PL	CD	AI	SR	CT	NO	TS	PL	CD	AI	SR	CT	NO
A DATA COLLECTION/ANALYSIS/REPORTING														
A1 ITEM/EQUIPMENT/TECH DATA SPECIFICATION			1	6	1					1	3	1		3
A2 OPERATIONAL/FAILURE DATA/REQUIREMENTS			2	5	1					1	3	1		3
A3 SYSTEM/CONFIGURATION SUPPORT & RECORDS				5		1					2			4
A4 LOG RESOURCE PLAN/POM/BUDGET DATA				3		3					3			3
A5 INVENTORY/STATUS MANAGEMENT				6	1					1	3	1		3
A6 INSPECTION/READINESS/STATUS REPORTING	1			3		2					2			4
A7 SYSTEM/MNTNCE/EQUIP CONFERENCE/SURVEY	1			3		2					2			4
B REQUIREMENTS DETERMINATION & PROGRAMMING														
B1 SYSTEMS/ILS/PMRT PLANNING & REVIEW	1			3	1		2			1	2	1		4
B2 PARTS/ITEMS/SUPPLIES PLNG & ALLOCATION				3		3				1	2			4
B3 TEST/SUPPORT EQUIP PLNG & ALLOCATION				3		3					2			4
B4 BUDGET/RESOURCE PLNG & ALLOCATION				2		4					2			4
B5 WRSK/MOBILIZATION PLNG & REVIEW				2		4					2			4
B6 DISPOSAL/DISPOSITION				4	1	2					2			4
C TECHNICAL/ENGINEERING SUPPORT														
C1 TECHNICAL ORDERS/MANUALS/PROCEDURES			1	6	1					1	3	1		3
C2 MODS/IMPROVEMENTS/PROBLEM SOLUTIONS			1	5	1		1			1	2	1		4
C3 SOFTWARE DESIGN/DEVELOPMENT				5		1				1	2			4
C4 SAFETY/MISHAP/DEFECT INVESTIGATION			1	5		1				1	3			3
C5 CONFIGURATION/INTEGRATION MANAGEMENT			1	5	1		1			1	2			4
C6 HARDWARE/EQUIP. DESIGN & MANAGEMENT			1	6						1	3	1		3
D ACQUISITION & DISTRIBUTION														
D1 PRODUCTION PLANNING & SUPPORT				5		1				1	2			4
D2 PURCHASE INITIATION & MANAGEMENT			1	2	4		3			2	2	1		3
D3 DISTRIBUTION PLANNING & DIRECTION										1	2			4
D4 CONTRACTOR QUAL/EVAL/INTERFACE	3	1	1	3		1				1	3			3
D5 MAINTENANCE/REPAIR/MOD MANAGEMENT			1	5		1				1	2	1		4

VIEWS OF CURRENT AND PREFERRED D/MM ROLES

SW AND SF RESPONDENTS (N=6)

FUNCTION	<u>1</u> CURRENT D/MM ROLES						<u>2</u> PREFERRED D/MM ROLES								
	TS	PL	CD	AI	SR	CT	NO	TS	PL	CD	AI	SR	CT	NO	
A DATA COLLECTION/ANALYSIS/REPORTING															
A1 ITEM/EQUIPMENT/TECH DATA SPECIFICATION	1				1	4								1	4
A2 OPERATIONAL/FAILURE DATA/REQUIREMENTS				2		4								1	5
A3 SYSTEM/CONFIGURATION SUPPORT & RECORDS	1				1	4								1	5
A4 LOG RESOURCE PLAN/POM/BUDGET DATA	1				1	4						1		1	4
A5 INVENTORY/STATUS MANAGEMENT					1	5						1		1	5
A6 INSPECTION/READINESS/STATUS REPORTING	1					5								1	5
A7 SYSTEM/MNTNCE/EQUIP CONFERENCE/SURVEY	1					5								1	5
B REQUIREMENTS DETERMINATION & PROGRAMMING															
B1 SYSTEMS/ILS/PMRT PLANNING & REVIEW	1					5								1	5
B2 PARTS/ITEMS/SUPPLIES PLNG & ALLOCATION	1					5								1	5
B3 TEST/SUPPORT EQUIP PLNG & ALLOCATION	1					5								1	5
B4 BUDGET/RESOURCE PLNG & ALLOCATION	1					5								1	5
B5 WRSK/MOBILIZATION PLNG & REVIEW	1					5								1	5
B6 DISPOSAL/DISPOSITION	1					5								1	5
C TECHNICAL/ENGINEERING SUPPORT															
C1 TECHNICAL ORDERS/MANUALS/PROCEDURES	3	2	2	2	3	2								1	4
C2 MODS/IMPROVEMENTS/PROBLEM SOLUTIONS	3	2	2	2	5									1	4
C3 SOFTWARE DESIGN/DEVELOPMENT	1				2	3								1	4
C4 SAFETY/MISHAP/DEFECT INVESTIGATION	1				2	3								1	4
C5 CONFIGURATION/INTEGRATION MANAGEMENT	1				2	3								1	4
C6 HARDWARE/EQUIP. DESIGN & MANAGEMENT	1				2	3								1	4
D ACQUISITION & DISTRIBUTION															
D1 PRODUCTION PLANNING & SUPPORT	1					5								1	5
D2 PURCHASE INITIATION & MANAGEMENT	1					5								1	5
D3 DISTRIBUTION PLANNING & DIRECTION	1					5								1	5
D4 CONTRACTOR QUAL/EVAL/INTERFACE	1				2	3								1	5
D5 MAINTENANCE/REPAIR/MOD MANAGEMENT	1					5								1	5

IEWS OF CURRENT AND PREFERRED D/MM ROLES

HQ MM RESPONDENTS (N=11)

FUNCTION	CURRENT D/MM ROLES						PREFERRED D/MM ROLES							
	TS	PL	CD	AI	SR	CT	NO	TS	PL	CD	AI	SR	CT	NO
A DATA COLLECTION/ANALYSIS/REPORTING														
A1 ITEM/EQUIPMENT/TECH DATA SPECIFICATION	1	1		4	4	1	4	1	1	1	4	4	1	3
A2 OPERATIONAL/FAILURE DATA/REQUIREMENTS	1	1		5	2	1	5	1	1		4	4	2	4
A3 SYSTEM/CONFIGURATION SUPPORT & RECORDS	1	1		3	4	2	4	1	1		4	5	2	3
A4 LOG RESOURCE PLAN/POM/BUDGET DATA	1	1	1	5	2	1	4	1	1		5	4	1	3
A5 INVENTORY/STATUS MANAGEMENT	1	1		4	4	2	3	1	1		4	4	1	4
A6 INSPECTION/READINESS/STATUS REPORTING	1	1		4	1	2	5	1	1		5	2	1	5
A7 SYSTEM/MNTNCE/EQUIP CONFERENCE/SURVEY	1	1		5	2	1	4	1	1		5	2	1	5
B REQUIREMENTS DETERMINATION & PROGRAMMING														
B1 SYSTEMS/ILS/PMRT PLANNING & REVIEW	1	1		8	4	1	1	1	1		6	5	1	1
B2 PARTS/ITEMS/SUPPLIES PLNG & ALLOCATION	1	1		4	3	2	4	1	1		4	4	1	4
B3 TEST/SUPPORT EQUIP PLNG & ALLOCATION	1	1		4	3	1	5	1	1		4	4	1	4
B4 BUDGET/RESOURCE PLNG & ALLOCATION	1	1		4	1	1	6	1	1		3	3	1	5
B5 WRSK/MOBILIZATION PLNG & REVIEW	1	1		4	3	1	5	1	1		3	4	1	5
B6 DISPOSAL/DISPOSITION	1	1		3	2	1	6	1	1		2	3	1	6
C TECHNICAL/ENGINEERING SUPPORT														
C1 TECHNICAL ORDERS/MANUALS/PROCEDURES	1	1		4	4	1	4	1	1		3	3	2	5
C2 MODS/IMPROVEMENTS/PROBLEM SOLUTIONS	1	1		4	3	1	4	1	1		6	3	1	3
C3 SOFTWARE DESIGN/DEVELOPMENT	1	1		4	3	1	4	1	1		4	4	1	3
C4 SAFETY/MISHAP/DEFECT INVESTIGATION	1	1		4	2	1	5	1	1		4	2	1	5
C5 CONFIGURATION/INTEGRATION MANAGEMENT	1	1		4	4	1	4	1	1		3	4	1	4
C6 HARDWARE/EQUIP. DESIGN & MANAGEMENT	1	1		4	2	1	5	1	1		3	2	1	6
D ACQUISITION & DISTRIBUTION														
D1 PRODUCTION PLANNING & SUPPORT	1	1		4	3	2	4	1	1		4	3	2	4
D2 PURCHASE INITIATION & MANAGEMENT	1	1		4	3	2	4	1	1		4	4	1	4
D3 DISTRIBUTION PLANNING & DIRECTION	1	1		2	2	2	6	1	1		3	3	1	6
D4 CONTRACTOR QUAL/EVAL/INTERFACE	1	1		3	3	1	5	1	1		3	2	2	5
D5 MAINTENANCE/REPAIR/MOD MANAGEMENT	1	1		6	4	1	3	1	1		4	4	1	4

APPENDIX IV
SURVEY SUMMARY - D/MM PERFORMANCE

ORGANIZATION CODE

FUNCTION	CR	DS	LG	MA	MM	PM	QA	SF	SI	SW	XR
A DATA COLLECTION/ANALYSIS/REPORTING											
A1 ITEM/EQUIPMENT/TECH DATA SPECIFICATION	3.9	3.6	3.9	3.2	3.7	3.4	3.3		2.5		3.3
A2 OPERATIONAL/FAILURE DATA/REQUIREMENTS	3.6	3.3	3.7	3.1	4.2	3.2	2.8	2.3	2.5		3.0
A3 SYSTEM/CONFIGURATION SUPPORT & RECORDS	3.7	3.3	3.9	3.3	4.0	3.2	2.8		2.2		3.3
A4 LOG RESOURCE PLAN/POM/BUDGET DATA	4.0	3.4	3.6	3.3	4.1	3.1	2.7		2.5		3.7
A5 INVENTORY/STATUS MANAGEMENT	3.8	3.6	3.5	3.2	4.0	3.3	3.2		2.5		
A6 INSPECTION/READINESS/STATUS REPORTING	3.3	3.6	3.2	3.2	3.8	3.4	2.8		2.5		
A7 SYSTEM/MNTNCE/EQUIP CONFERENCE/SURVEY	3.7	3.8	3.1	4.0	3.1	2.5			2.5		3.3
B REQUIREMENTS DETERMINATION & PROGRAMMING											
B1 SYSTEMS/ILS/PMRT PLANNING & REVIEW	3.8	3.5	3.9	3.4	3.7	3.2	2.5		3.0		3.3
B2 PARTS/ITEMS/SUPPLIES PLNG & ALLOCATION	4.0	3.6	3.7	3.1	4.3	3.5	2.7		2.4		
B3 TEST/SUPPORT EQUIP PLNG & ALLOCATION	3.6	3.4	3.6	3.1	4.2	3.1	2.7		2.3		3.3
B4 BUDGET/RESOURCE PLNG & ALLOCATION	3.5	3.8	3.6	3.4	4.2	3.5			2.4		3.3
B5 WRSK/MOBILIZATION PLNG & REVIEW	3.5	3.6	3.8	3.3	4.5	3.1	2.5		2.5		3.8
B6 DISPOSAL/DISPOSITION	3.2	3.8	3.2	3.8	3.8	3.3	2.8		2.0		
C TECHNICAL/ENGINEERING SUPPORT											
C1 TECHNICAL ORDERS/MANUALS/PROCEDURES	3.9	3.3	3.9	3.3	4.3	3.2	3.2	4.0	2.7		
C2 MODS/IMPROVEMENTS/PROBLEM SOLUTIONS	3.7	3.3	3.4	3.1	3.9	3.2	3.2		2.2	3.3	
C3 SOFTWARE DESIGN/DEVELOPMENT	3.3	2.7	3.2	3.6	4.2	3.1	3.2		2.8		4.0
C4 SAFETY/MISHAP/DEFECT INVESTIGATION	3.3	3.8	3.3	3.3	4.5	3.4	3.4		2.0		
C5 CONFIGURATION/INTEGRATION MANAGEMENT	4.0	2.6	3.8	2.9	4.1	2.9	3.2		2.0		4.0
C6 HARDWARE/EQUIP. DESIGN & MANAGEMENT	3.8	3.0	3.8	3.2	4.0	3.0	3.2		2.3		3.7
D ACQUISITION & DISTRIBUTION											
D1 PRODUCTION PLANNING & SUPPORT	3.2	3.0	3.5	3.2	4.0	3.2	3.0		2.0		3.3
D2 PURCHASE INITIATION & MANAGEMENT	3.3	3.4	3.2	2.9	4.0	3.1	3.2		1.6		
D3 DISTRIBUTION PLANNING & DIRECTION	3.5	3.7	2.7	4.4	3.4	3.4	2.7		1.8		
D4 CONTRACTOR QUAL/EVAL/INTERFACE	2.8	2.8	3.4	3.0	4.0	3.3	3.0		2.2		
D5 MAINTENANCE/REPAIR/MOD MANAGEMENT	3.3	3.6	3.5	3.1	4.3	3.1	3.0		1.8		3.7

This table lists the arithmetic averages of the responses given for: "To what extent does D/MM maintain an adequate level of performance for this function?". Respondents rated D/MM performance on a scale from Very Little, coded as 1 to Very Great, coded as 5. Cells with less than three respondents are left blank.

APPENDIX V
SURVEY COMMENTS

ALC-D/MM EVALUATION CRITERIA

The following comments are open-ended responses to the Survey Questionnaire - Part IV - Evaluation: "On what basis do you think the ALC Directorate of Materiel Management should be evaluated? List as many criteria as you believe appropriate."

LG EVALUATION SUGGESTIONS:

1. Ability to provide parts when needed.
2. Spares support. Spares forecasting. Depot cannibalizations (response). Support of MICAP requirements.
3. Accuracy of supply/eqp req forecasts; responsiveness to HQ directed changes; supply/eqp fill action timeliness; procurement completion timeliness; budget execution; ALC repair flow times; qc of ALC repair/overhaul; status tracking of requirements; issue from WRSK vs PDS; base level stockage effectiveness; response to over-priced, FWA allegations; recovery actions in over-price/FWA cases; resolve disputes between WRSK and WPARR on a "user friendly" basis; improve ADP, data systems available to inventory manager/system manager.
4. FMC rates (broken down to NMC rates). WRSK fills.
5. Ability to deliver spare parts in a timely manner. Ability to procure spare equipment in a timely manner.
6. Costing of repair work on aircraft.
7. Responsiveness and timeliness. Field level (base level) stockage effectiveness.
8. On time delivery based on MAJCOM forecast (D039), this is bottomline. Timely turn of reparable (10-20% delinquent); 90% stockage effectiveness (spares).
9. As far as equipment is concerned - what is authorized vs what is on hand or length of time to acquisition support equipment.
10. Customer support - accomplished via annual surveys to MAJCOMS; response time to major problems (such as safety TCTO, modification proposals, etc.); Timeliness of contracting efforts; new equipment purchases; depot remanufacture efforts.
11. Effectiveness of support for weapon systems i.e., NMCS, NMCM rates. Effectiveness of depot maintenance support for each weapon i.e., PDM schedule effectiveness. Response to T.O.00-25-107 request. Management of modification program.

12. Quality of products users require to perform mission; timeliness of response to demands on system.

13. Timeliness of POM coordination and submissions. Processing time for mod proposals. Responsiveness to demands for depot-level assistance: field user identified problem; spares levels; Cat I MDRs NMCS rate. Flow time of aircraft in PDM. Technical assistance accuracy. Timeliness in issuance of TCTOS and other essential technical instructions. Field repair and recovery of aircraft. Number of PIRG items successfully completed each year. Number of mods started each year (actual hardware on the aircraft).

14. Ability to provide material, technical and managerial support to aircraft/equipment users.

15.

Providing of support to customers i.e., using commands.

16.

Compilation, coordination and satisfying user requirements.

17. Timeliness and quality of product support to customers. Average delivery days of priority/routine requisition plus age of backorders. Cause code H MICAP rate.

18. Service to customers: - quality of depot repaired items; time required to fill requisitions; timeliness of spares and test equipment support to new systems acquisition.

MA EVALUATION SUGGESTIONS:

19. Budget execution. Percent of competitive bids. FMC rates on assigned A/C. C rating elements of systems supported. Fill rates/back orders.

20. Accuracy of req (consumption and maint) projection; timeliness of mod processing; tech data maint, etc; quality and timeliness of engineering support; quality of end item support thru component buys, stockage, distribution; timeliness of responsiveness to user requirements - both consumption and mission/need changes; fiscal responsibility & program execution; product improvement efforts; quality of provisioning efforts; ILS planning adequacy.

21. Support to the fleet. Support to the depot repair effort. Timely procurement of parts.

22. The accuracy of their workload projections vs actual supportable requirement. Management of funds (requirements vs dollars not used.)

23. Support activities to maintain aircraft production. Amount of work-around for parts. How long it takes an engineer to give us a decision on a fix or update on T.O.

24. Timeliness and accuracy of workload requirements projection/data. Adequacy and accuracy of the data provided for workloads negotiated with us. Spare parts and asset posture for workloads negotiated with us.

25. Requirements determination, validity. Support of assigned weapon systems. Management of modification/configuration program.

MICAPS. Fill rate. Dollar obligation goals. Validity of requirements computation. Repeat buy notices. PR processing.

27. Support to the customer.

28. Support to operational commands.

29. Service to operational commands; aircraft readiness-peace-time/war-time. All evaluation criteria should be subdivisions of service; -parts support; -technical; -aircraft in depot status; -modification requirements.

30. Weapon system support. For MISTR items, beginning negotiations vs ending negotiations.

31. Complete supportability of negotiated requirements. Adequacy of engineering and technical data support. System program management involvement in repair processes.

32. How well does he meet the customer's requirements. Operational readiness rates; operational availability; fill rates for POS/WRSK/BLSS; MICAP/critical item rates; timeliness in meeting IOCs/FOCs/acquisition plans/integrated log plans/PMRTs.

33. Workload negotiations. Parts support. Management of systems. AWP-G-code support (this could be temporary if intensified management action was applied).

34. Weapon system support/combat readiness of weapon system. Inter availability. Exchangeables reliability.

35. Weapon system support/operational readiness/safety. Item availability. Reliability and maintainability improvements. Technical Data availability/usefulness. Problem resolution support. Software configuration management.

DS EVALUATION SUGGESTIONS:

36. Customer support effectiveness. Active items managed.
37. Support effectiveness.
38. Frequency that customers receive material when it is required. Volume and age of backorders. System NMCS rate.
39. Timely: mod processing & installation; purchase request preparation and planning; technical order changes; filling of requisitions; technical field assistance support.
40. Fill rate. Backorder rate. Backorder time. Number of suspended assets.
41. Support on fills to depot maintenance.
42. Item management. Asset availability. Acquisition timeliness. Adequacy of provisioning.
43. Daily working relationship with the D/MM is adequate to support our needs and requirements.
44. Accuracy of requirements projection within 90-98% range. Initiation and mgmt of funds to acquire spares, modifications, and repair of items. Inventory mgmt; assets on hand vs. requirements, disposal, utilization, location (depot vs base), customer support.
45. Management of items. Timeliness and accuracy in response to inquiries.
46. Management of critical items; management of resources (manpower/equip); mission support (right item, right quantity, right destination, right time frame); management of suspended assets.
47. Fill rate on requisitions. Least number of manager review items. Highest number of preposition/redistribution orders P/RDOs. Least number of post-post transactions.
48. a. Timeliness, b. Accuracy, c. Consistency and thorough coordination of all directorates.
49. Mission capability of weapons systems they are assigned to manage.

PM EVALUATION SUGGESTIONS:

50. Support to customer units. Cost performance.
51. Initiation of purchase requests. Lead time (administrative and production) away from need date.
52. Track time acrf, in depot status are at work stop for parts or tech assist (takes 2-3 days to get engine from bldg 300 to 125 during the MMRB process eval not only man hr reductions, but workday reductions. Amrep extensions should be deleted altogether. However, if an acrf is placed in an amrep extension, the time should be accounted to MM for accepting the workload and not averting the delay.
53. Fill rates; item management (acquisition, distribution, right item- right quantity); acquisition lead time; quality of specifications, statement of work, purchase requests etc; number of urgent purchase requests; competitive vs sole source acquisitions.
54. Priority #1- good up front requirements planning - "getting most bang for the buck" this includes reduction in turmoil (reduced PR amendments, cancellations, PR surges, etc). D/MM should analyze budget, determine requirements and initiate PRs in timely/quality fashion.
55. All of the functions identified as areas a,b,c & d above in regard to processing of individual documentation which evidences completion of tasks in established standard time periods.
56. Timely PR initiation. Minimum PR amendments.
57. Ability to initiate budget programs early and wisely. Provide efficient quantities to buy. Use of multi-year requirements. Reduce number of amendments to PRs and cancellations. Reduce number of ADRs.
58. Weapons system support; accuracy in forecasting requirements number of purchase requests initiated; number of purchase request amended, cancelled or returned; number of termination notices issued, number of ASI/ADRs issued.
59. Fill rates; or rates of systems supported; percentage of urg/emerg orders initiated; program execution; timely initiation of PR; quality of PRs init. (PR return rate as measure); number of priority orders; time required to process modification packages through CCB process.
60. MICAP rates, fill rates, effectiveness of configuration management, quality of tech data packages, provide with purchase requests, timeliness of requirements and initiation of PRs.
61. Weapon system support.

62. Timely initiation of requirements. Results i.e., meeting the FMS customer's needs.
63. Plan ahead and consolidate requirements. Expedite PRs to prevent aging.
64. Planning, budgeting-inventory management; weapons systems support; quality of all functions.
65. Customer support. Quality of purchase requests including work specifications and data. Timeliness of purchase requests. Responsiveness to identified problems. Program execution.
66. Based on timely and accurate response to technical questions that impact acquisitions; based on capability to provide good procurable packages for procurement action; based on need to buy an item no more frequently than annually.
67. Are purchase request imitated and processed timely w/realistic delivery schedule? Are req data pkgs adequate and provided on a timely basis? Are first article req realistic w/realistic sch? Does gov't have necessary equipment and is it available to support reqs? Are protected data purchases realistic and necessary? Are requirements packages clear and complete when initiated?

SI EVALUATION SUGGESTIONS:

68. MICAP; delivery time.
69. Weapon system reliability, sustainability, availability.
70. As I reviewed the questionnaire I questioned the value of information systems input (SI). We (SI) are a service organization. Our major role is to provide ADP support to the dir e.g., D/MM. Realize D/MM is the hub, but I feel the survey deals more with DS, MA, etc.
71. Acquisition of spare and end item parts.
72. Customer support; pipeline time; fill rate; number of backorders and age; number of denials; number of followups from customer.
73. Support given to other Air Force organizations; how well they execute their budget.

XR EVALUATION SUGGESTIONS:

- 74. Program execution; MICAP trends; some method should be created to measure how well MM prevents tomorrow's problems.
- 75. Mission capability in field. Reliability of requirements forecasting.
- 76. Weapon system support; modification planning and execution; technical support user; execution of spares procurement; funds management.

CR EVALUATION SUGGESTIONS:

- 77. Ability to provide effective, timely support to customers in areas of spares, repairs, modifications and sustaining engineering.
- 78. Effectiveness in supporting mission requirements. Attitude in complying with public law. Effectiveness in competing purchases.

APPENDIX V (CONTINUED)

IMPROVEMENTS IN EFFICIENCY OR EFFECTIVENESS OF D/MM

The following are open-ended comments from the Survey Questionnaire, Part V -Improvements- "Please list specific things that could be done to improve the efficiency or effectiveness of ALC D/MM."

LG COMMENTS:

1. Increase amount of spares at field level. Many items cannot even support MICAP rqmts due to very few spares/reps available. Depot tends to hold on to some assets rather than support field rqmt. Attempt to weed out contractors who cannot perform. Improve support from IMS concerning MAC MICAP rqmts. Insure items are not "high demand" before cutting funds for repair.
2. Educate IMS on the items they support, SMS on the systems they support; get IMS/SMS out into the field; get customers into the ALCs; develop a coherent non-aircraft WRSK system; make forecast comp data systems credible or scrap them; insure that AFLC, ALC and customers know when, how to input requirements; develop feedback system to customers on requirements, asset buys vs funds allotted. Fix CSMS. Fix WCDO. Fix WPARR. Fix WRSK.
3. More power/control to the SPM.
4. Estimating maintenance work more accurately.
5. Eliminate manual intervention by inventory managers in the dist process, where capable. Enforce and/or educate inventory mgrs on parity of supply priorities within priority grp. Revise apparent mistrust and/or disregard of equip forecasting system. Improve repair system to be proactive rather than reactive.
6. Amount of time to contract out an item. Cut down on red tape to procure or repair an item; ease contractual process.
7. Reduce the time it takes to procure support equipment. AFEMS modernization is a must. Why do we forecast equipment 5-7 years in advance when acquisition seems to start about 3 years before need date?
8. Better repair capability of recoverable items. Educate people on mission avg units/AF units, why spares support is important.
9. Eliminate the cumbersome D039 system, replace with a simplified user friendly, accurate comp. Get state of the art computers for monitoring equipment purchases, allocating, etc (get

out of stubby pencil mode) reorganize--this is essential if ALCs are ever going to be customer oriented. They must have functionally oriented focal points - not like MMV that cuts across functional lines.

10. Continue with a check and balance system but cut the time to get on contract for services to support mission essential requirements. Too many people in coordination cycles.

11. The D/MM and his system program managers must have greater control of the supporting ALCs (IMs and TRCs) operation. He needs more clout. The TRCs are in a different world and appear to care less about the needs of the user. They are not in tune with the degree of urgency that exists in the MAJCOMs. Eliminate the bureaucratic need for meetings--meetings--meetings, the MMs and PMs have little or no time for predicting and planning. Add dedicated staff of engineers to each PM.

12. Indoctrinate ALC personnel to mission of supported commands. Establish common frame of reference as to mission importance. More efficient use of technical and service personnel thru streamlining/enhancement of data systems.

13. Streamline mgt so that problems can surface to necessary level for solution; create can-do attitude instead of continual resistance to change; rotate more CAPT level blue suiters thru D/MM functional offices; reduce time required to process PRs through CR; change process for acquisition of common test eqpt (cannot be accomplished in time through SERD process).

14. Increase productivity thru better supv at organic facilities.

MA COMMENTS:

15. Reintegrate end item/weapon system support. Fractionalized responsibility between SM, IM, DLA etc., Dilutes mission "focus" and thus responsiveness to on-going problems.

16. Let each D/MM control the weapon system support parts, tech data, etc required to maintain and repair assigned systems. GSA and DLA should not be handling, buying, or responsible for aircraft hardware.

17. One central control point to deal with instead of each division being a separate group by itself with a goal of getting their requirements completed at the expense of other divisions. Money should be managed by MMM instead of each division.

18. Update on technical orders need improvement. Update on blueprints and drawings in a quicker response.

19. Attach some responsibility to the authority vested in D/MM to manage assigned weapon system. Get rid of people who can't or won't accurately compute requirements and posture to consistently meet both peace and wartime operational needs.
20. Better management.
21. Improvement in requirements computation; improvement in parts support area.
22. Make the system manager totally responsible for his system and then organize so all functions fall under the system manager.
23. Enhance role of system manager; resources compatible with responsibilities; total authority to control all aspects of weapons system support.
24. More engineering support. Closer coordination with repair activity.
25. Increase number of engineers. Improve geographic location between the TRC and supporting materiel management.
26. Requirements computations methodology must be improved in accuracy, speed and timeliness; the key to a healthy support posture is tied to it. Procurement lead times, competition advocacy, eqp obsolescence, vanishing vendors, budgeting, manpower planning, facilities updates, and technology advancement all are tied to a credible requirements computation. Improvement in this area would significantly enhance the cmd's ability to support the operation commands' fighting forces.
27. Provide adequate tech data for organic or potential organic systems. Improve provisioning of equipment support and spares. More intensified management of end items as they become older and are more difficult to support. Be more responsive to production repair divisions efforts prior to organic capability.
28. Provide training relative to use of proper addresses on messages sent from MM organizations. Numerous messages are received from OC/00/SM MM organization addressed to Robins AFB LGM or LGS which require some type of action. Requires time consuming research to determine who should receive message. Numerous messages from OC addressed to organizations eliminated eight years ago.

DS COMMENTS:

29. More coordination with other ALC components. Increase ALC awareness of MM's role and responsibilities.
30. Improve coordination on all related functions. Assistance in resolving common areas of concern. Fostering intense working relationships.
31. Better automation. Streamlined work processes. New blood in management.
32. Use only one comp cycle (a year) on a buy point, and move that buy point far enough to the left of 30 Sep to allow for all CR and PM actions, that would assure obligation prior to 30 Sep.
33. Training in suspended assets processing.
34. Closer coordination w/depot supply in regards to maint support.
35. Formal and in-house training on systems and interfacing systems. Update computer technology.
36. Faster response to system inquiries would be advantageous, if personnel resources were available.
37. Item mgmt training for all personnel working in this area; quarterly, semi-annual. Reduce redundant functions i.e., organizational overlapping. Modernize D/MM ADPE. Mid-level and upper level mgt crosstrain them in other directorates. Engineer training: quarterly, semi-annual; keep abreast of the changes in technology.
38. Training of D/MM personnel to provide an overview of the work their counterparts do in other directorates.
39. Communicate problems/causes freely between MA/MM/DS impacting on fraud, waste and abuse.
40. Provide more up-to-date and on demand disposal information. Better trained MM personnel on the way the Directorate of Distribution conducts business.
41. a. Improve communication; b. Improve quality of procurement documentation; c. maintain and provide improved item identification/description data.
42. Separate wholesale management of assets from retail assets.

PM COMMENTS:

43. Reduce repetitive buys, buy same item once a year not multiple times.

44. Problems at this depot:

MMS and MMF issues TCTOs to the acraft div with inadequate kit verification. When it is discovered supply does not have enough parts for the RTO. MM blames MAB when it was MM's responsibility to ensure the parts were available. Item managers frequently allow levels to run too low and there is not enough lead time to avoid impact on aircraft production. IMs are usually ignorant of the technical applications of the items they manage & therefore the impact of their decisions. The military officers in the SPM offices are sometimes logistics plans officers (AFSC 6624) and have no firsthand experience in maintenance, supply, or transportation. More often they are pilots with no log experience.

Solutions:

MMS and MMF should not issue TCTO for C-130, C-141 or F-15 until they are sure it is not only technically supportable, but that it is supported with the required material (especially hardware, special fasteners, rivets, etc). Item mangers should handle fewer items, giving them more time to evaluate problems; probably need to update the automation system that provides the data. (I was personally involved in a situation where the IM said the system was out of C-141 bell cranks, but our phone calls to a few bases found 6 in base supplies). Item managers should have some sort of knowledge about the items they control; it would be ideal if the IM had worked in D/MA before moving to D/MM; this would cut down on the adversary relation between MA and MM (the us and them syndrome). The Air Force should change the entry reqs for the 6624 (Log Plans) career field. Only people who are fully qualified maintenance, supply, transp officers should be allowed to cross-train into this field. (Right now there is a major who has been a weapon system controller working as a log planner in the SPM office.) Traditionally the SPM jobs are given only to rated officers (pilots, navigators) with little regard for their log experience; should only use rated officers with extensive maintenance experience for SPMs. (The attitude I most often perceive is operations being sent in to "fix" maintenance.)

45. More flexibility in buy guidelines; more flexibility in funds management; better advance acquisition planning.

46. Better quality control in purchase request (PR) preparation. D/MM needs operational check and balance system to assure PR package contains all required information/attachments. PR amendments, returns due to PR errors causes loss of time, money in executing AFLC budget programs.

47. Establish management reporting for factors cited in IV above.
48. More training in purchase request preparation
49. Provide a manpower system that does not reward the D/MM for initiating PRs. Present system is based on PRs generated and rewards inefficiency.
50. Improved communication with directorate, contracting and manufacturing; increased D/MM management awareness of critical need for better PR quality; stability of D041 and D062 to eliminate quantitative changes from one comp cycle to the next.
51. Mgt of the outgoing PR/MIPR function now located in PM/DM could be handled more effectively if this function were moved to D/MM. D/MM should establish a highly effective internal quality function for the purpose of improving the quality of PRs and accompanying tech data packages. D/MM should make a concerted effort to improve the timeliness of req computation so PR could be initiated with sufficient lead time for PM to better perform buying functions.
52. Be more responsive to contract requirements.
53. Place more responsibility for accomplishing the job in the ALC at the same time providing less detailed guidance to them in other words, give them more latitude in how they accomplish their job.
54. Plan and program to eliminate small dollar procurements, under 25,000. Take positive action to reduce the number of PRs.
55. Develop a system of quality control over all functions such as specifications, purchase request preparation, etc. These functions are now well below an acceptable level.
56. Streamline process such as configuration management, manufacturing data storage/availability; improve technical input.
57. Assure that realistic delivery schedules are established for first article requirements. Require high level approval before submitting first article req. Assure that req for continuing programs are generated in a timely manner. Assure that data packages are complete and adequate before submission of PR.

SI COMMENTS:

58. Assign computer(s) to SI.
59. Fewer, better skilled personnel with automated information systems. Electronic communications between all levels of personnel.
60. D/MM and all directorates in general, should become more involved in the concepts of defense resource management which you have presented at the Naval Postgraduate School, i.e., in the area of ADPE we need to start building business cases and measure the ROI of decentralized (D/MM) vs centralized(SI) when purchasing ADP for weapon/general purpose support.
61. On- going and upgraded training; reorganize to private corporation structures (i.e., profit making, etc); artificial intelligence; cross training from the IM to equip specialist to DS, etc; new and innovated ideas and techniques such as Chrysler Corp uses; improve employee morale by instituting proper incentives.

XR COMMENTS:

62. Stop reorganizing so often. Problems are being moved instead of solved.
63. Our D/MM needs more stability.
64. ADP upgrade; reorganization along weapon systems lines (effectiveness); reduction of MMI organizational layering.

CR COMMENTS:

65. Stabilize item manager assignments. No one stays with the same items for any length of time. As a result nobody ever becomes familiar with their items and they continue to make the same mistakes. Require PR quantities to cover 2 years requirements. This will significantly reduce PM and MM workload. Increased warehouse and interest costs would be offset by lower prices due to more economical order quantities.
66. Stress advanced planning to allow adequate time for routine buys and maximum competition.
67. Become conversant with requirements dictated by recent public laws. Learn the true mission of competition advocate and strive to integrate achievements between MM, CR, PM.

68. EDCARS will accomplish.

69. Develop specific long range plans dealing with the need and support of specific weapon systems.

QA COMMENTS:

70. Consolidation of various management functions, such as technicians and item managers working for same supervisor.

71. Set goals on reliability and maintainability for each weapon system/sub system. Get the user involved in providing ideas on how equipment can be improved. Make everyone involved in MM, PM, QA and MA aware of the reliability requirements of specific equipment and how well it is performing.

HQMM COMMENTS:

72. Enhance acq pgm mgt capability (policy, procedures, organization, skills).

73. Provide more manning to support acq pgm; more manning to software support; automate manpower intensive processes.

74. Greater technical cooperation with D/MA.

75. Establish career rotation pgm for all GM13-15 with one year terms at HQUSAF and HQAFLC and 2 ALCs before next promotion.

76. Give civilian managers more feel for real-world support situations by trips to the field. Automate more item management functions.

SW and SF COMMENTS:

77. Increase middle management effectiveness.

78. For our objective answer, an in depth analysis of the D/MM would be required.

79. Reduce size. Computerize/mechanize.

80. The D169 system supply support requests need to be programmed to accept supply support requests generated by AF. This will improve supply support for other af users needs besides D/MM.

81. The D/MM needs to be cleansed of its concept of preeminence. It is one directorate among several which must exercise a balanced interface for the ALC to be successful. Too often the D/MM will strive for its own success at the cost of another directorate's performance, forgetting the ALC mission.

APPENDIX V (CONTINUED)

ADDITIONAL COMMENTS

This section lists the open-ended comments made by respondents in the survey questionnaire, PART VI - COMMENTS - "Please use this space for comments you wish to make or to address other questions you believe should have been included in this survey."

LG COMMENTS:

1. We need parts!
2. Biggest ALC problems are: antique, inaccurate, unintelligible, unresponsive data systems which are either used or disregarded on a nearly random basis. Failure of management systems to reflect anything close to reality (e.g., non-aircraft WRSK; use of WRSK equipment procedures on non-EAID or mixed WRM assets such as HARVEST EAGLE -BANE -FALCON). Lack of knowledge by IMs of the items they manage or their customers. Lack of customer visibility on requirements determination, tracking, progress toward satisfaction.
3. Increase substantially inventory mgr orientation trips to bases. Most inventory mgrs have little or no concept of supply maintenance operations and pressures for sortie generation at base level. Similarly, supply/maint personnel at base level are unaware of ALC processes. Peculiar to the reserve component is the apparent bias to support active before reserve. Education on reserve/active duty mission essential.
4. A bit over most logistics peoples head unless they have worked at ALC.
5. Survey difficult to apply to just this job. Many of the questions reach across several boundaries of LGX, LGS, and LGM responsibilities. Would like to see it more streamlined to each functional area.
6. The survey (SECTIONS II and III) is much too complex, with instructions which make it very time consuming.
7. The flow time for PDM and major repair is extremely long. Commercial carriers would go bankrupt if they lost an aircraft to heavy maintenance for period of 90 to 180 days. A solution to reduce this ridiculously high flow time is to motivate the people involved to the user's mission and the importance of airframe availability. We have built-in roadblocks under the current concept. An alternative is to place PDM work requirements under the control of the using commands. No way would the TRCS or repair of equipment be transferred -- only the inspection and

repair of aircraft. The MAJCOMS could develop a higher esprit de corps and mission oriented operation whether they use a civilian or military work force. The SPMs must limit scope of his activity to a prioritized list of problems/projects. Use PIWG as his baseline for those time phased requirements of the weapon system master plan. Align IMs functionally to a single ALC, i.e., all hydraulic systems/components assigned OC-ALC--all environmental systems WR-ALC, etc.

8. I have marked a fairly low performance level in SECT II, but, want to clarify that most of it stems from the structure that literally ties the hands of mgmt in getting the job done. A lot of super people trying very hard to give support. When support is good we see very little, when support is bad flags go up everywhere.

MA COMMENTS:

9. D/MM manpower standards are a joke. Do not fence engineering resources. Let eng compete with IMs, PMs, and ES.

10. From the maintenance work load/posture plan a means of prioritizing work load within the command should be developed. The maintenance directorate at all ALCs must deal with five D/MMs who think they are the only ones in the world.

11. Questions should be tailored more toward all organizations, i.e., too general, should be related to using commands, other commands, other organizations within an ALC, etc.

12. Poorly designed survey, could have been designed to be much easier to do a good job.

13. Believe there is a need for much more coordination/team play. The technical expertise and wisdom of the ALC maintenance community is not used to the fullest extent in the acq process. The AF experts in support eqp, testability, test software, etc, are for the most part, not brought to bear during the SE definition phase. The Air Force has the expertise, it is not used anywhere close to the degree it could and should be.

14. Part IV is a bit much too ask in this kind of survey. Obviously mission support and customer support are the broad "buzz words" but criteria for evaluation gets very complex. My main problem as a senior maintenance manager dealing with IM/SPM functions re the D/MM here is attitudinal. There is not a sense of team effort. There is an attitude that all other activities are subordinate to the SPM/IM and while it is true that the SPM/IM is the "quarterback", they seem to forget there is a team here.

DS COMMENTS:

No comments.

PM COMMENTS:

15. Survey does not adequately address D/MM - D/PM relationship.

16. The function of my current position really disqualifies me from this survey. Plant mgmt within a directorate of maint merely installs and maintains equip and facilities for the product div. As such we are not considered for the acft mgmt function. The product divs (MAB, MAI, MAN) are the ones working with and responding to D/MM.

17. To improve the timeliness of requirements computations so that purchase request could be initiated soon enough to allow sufficient lead time for PM to better perform the buying function to satisfy their requirement.

18. Improve technical and eng support.

19. The functions in II and III are generally not applicable to the support we provide to D/MM.

Working relationships with other directorates should be evaluated.

20.

SI COMMENTS:

21. D/MM has too much overhead.

22. Parts II and III, D/MM provides input data for IPC to process.

23. This directorate (SI) is not functionally svc by any D/MM component, rather this organization provides D/MM information systems support to assist D/MM to support other ALC organizations such as MA, PM, DS, as well as all AF Major Cmds, including other services.

XR COMMENTS:

24. The survey doesn't adequately evaluate MM's role in

acquisition support for systems which haven't transferred from AFSC for management.

25. For all the critique, this D/MM is far ahead of all others.

CR COMMENTS:

26. The categories; a1-d5 are not clear as to whether they apply to the individual organization's operation or to the ALC or directorate operation, i.e., budget planning - for my organization or for ALC? Believe all participants answers will not be on the same basis.

27. Emphasis should be on new or innovative techniques that will accurately forecast requirements, shorten administrative lead time on acquisitions, and permit full and open competition.

28. Difficult for an organization interface to be described in terms of role defin. For example, I was forced to use TS to define some of the interface, yet D/MM does not task us direct. We react to actions they take which evolves workload for us, i.e., the buy program for parts and services generated by D/MM drives our data screen operation and competitive actions.

QA COMMENTS:

29. Staff quality function is necessary to carry on unbiased functions to eliminate problems and provide correction of quality workmanship defects instead of covering them up.

30. Section III is moot since AFLC has directed quality function will be performed by MM and PM.

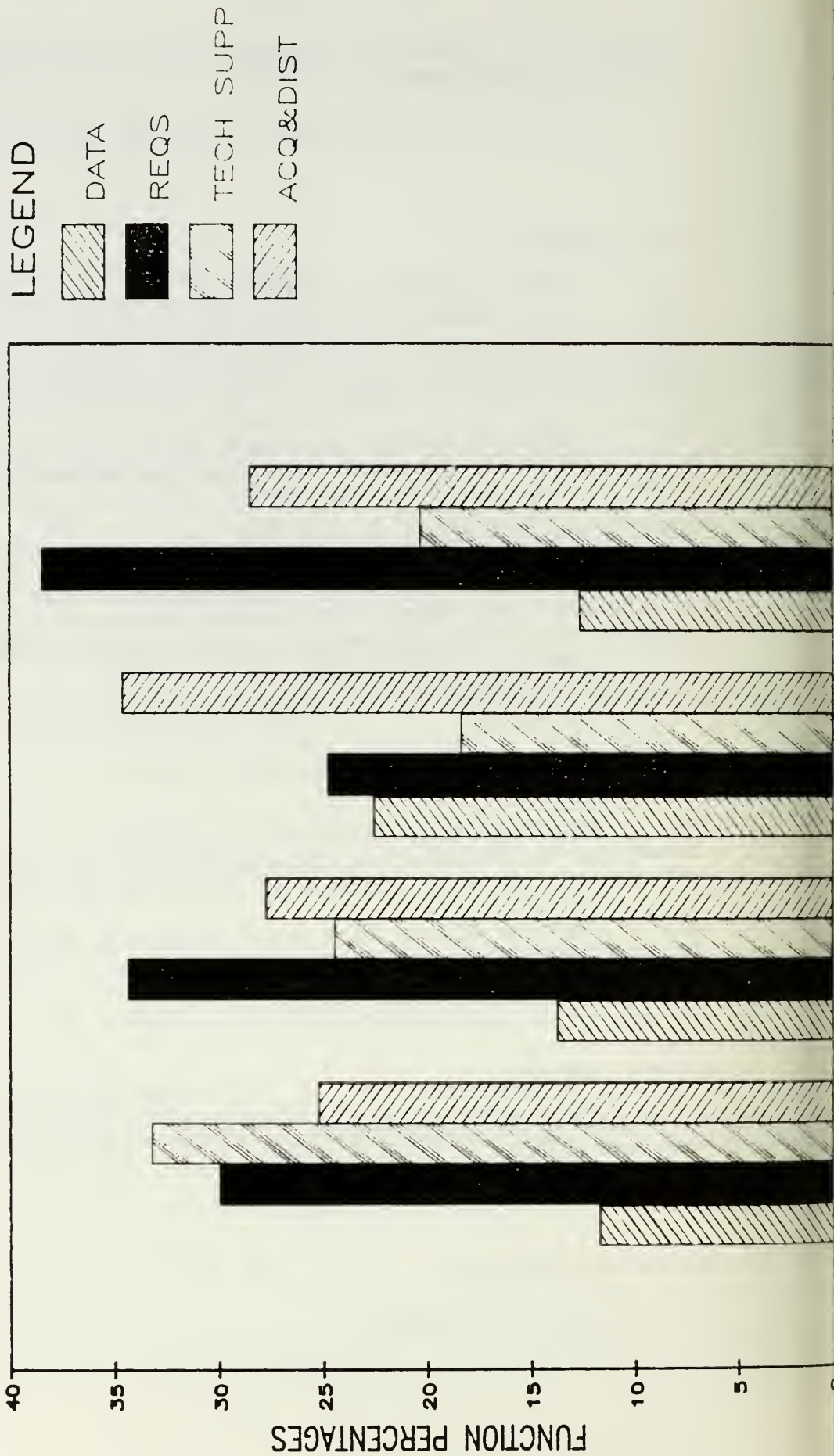
HQ-MM COMMENTS:

31. Survey not achieve it purpose. Only SEC IV relates to evaluating MM.

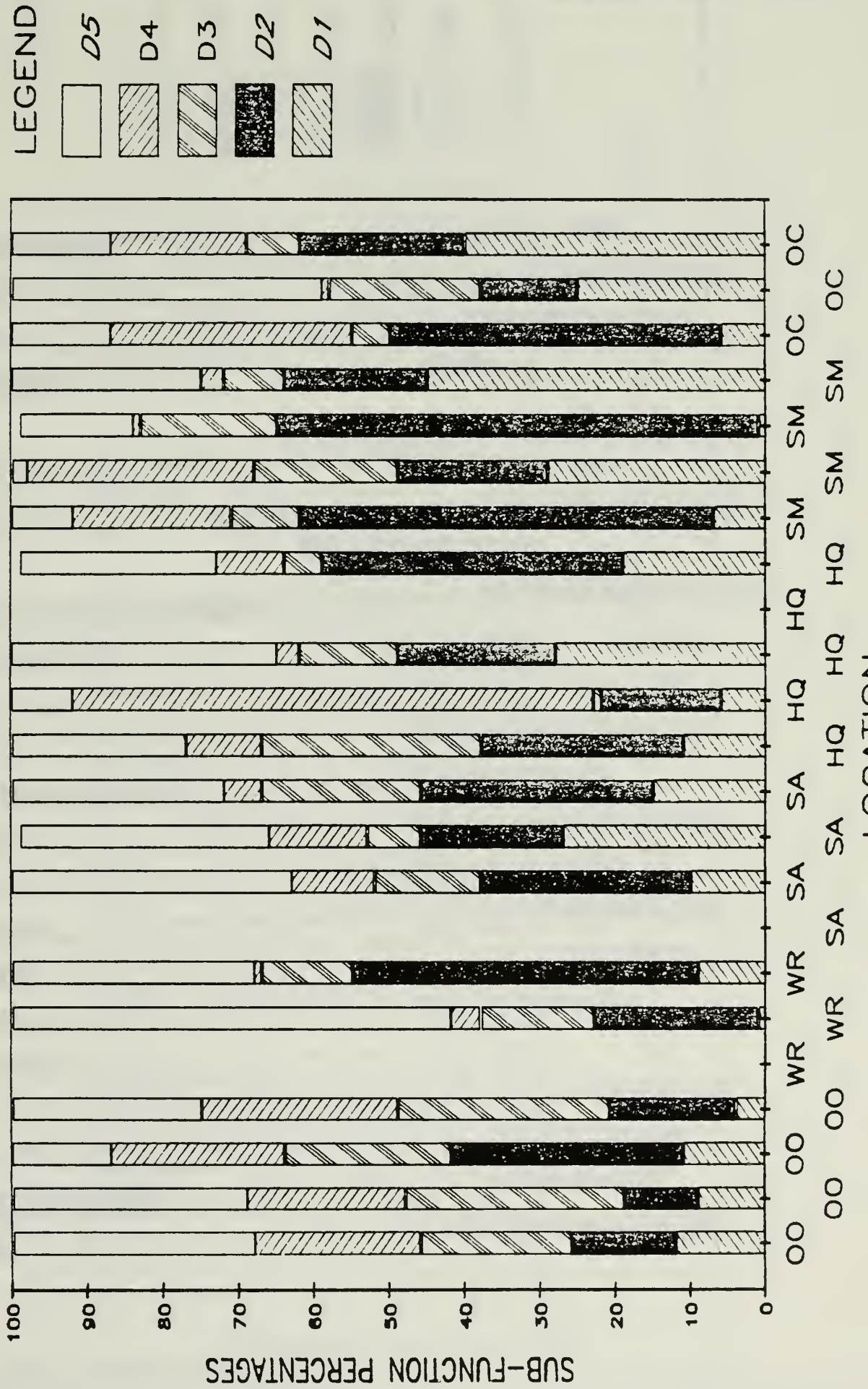
SW and SF COMMENTS:

32. Confusing format.

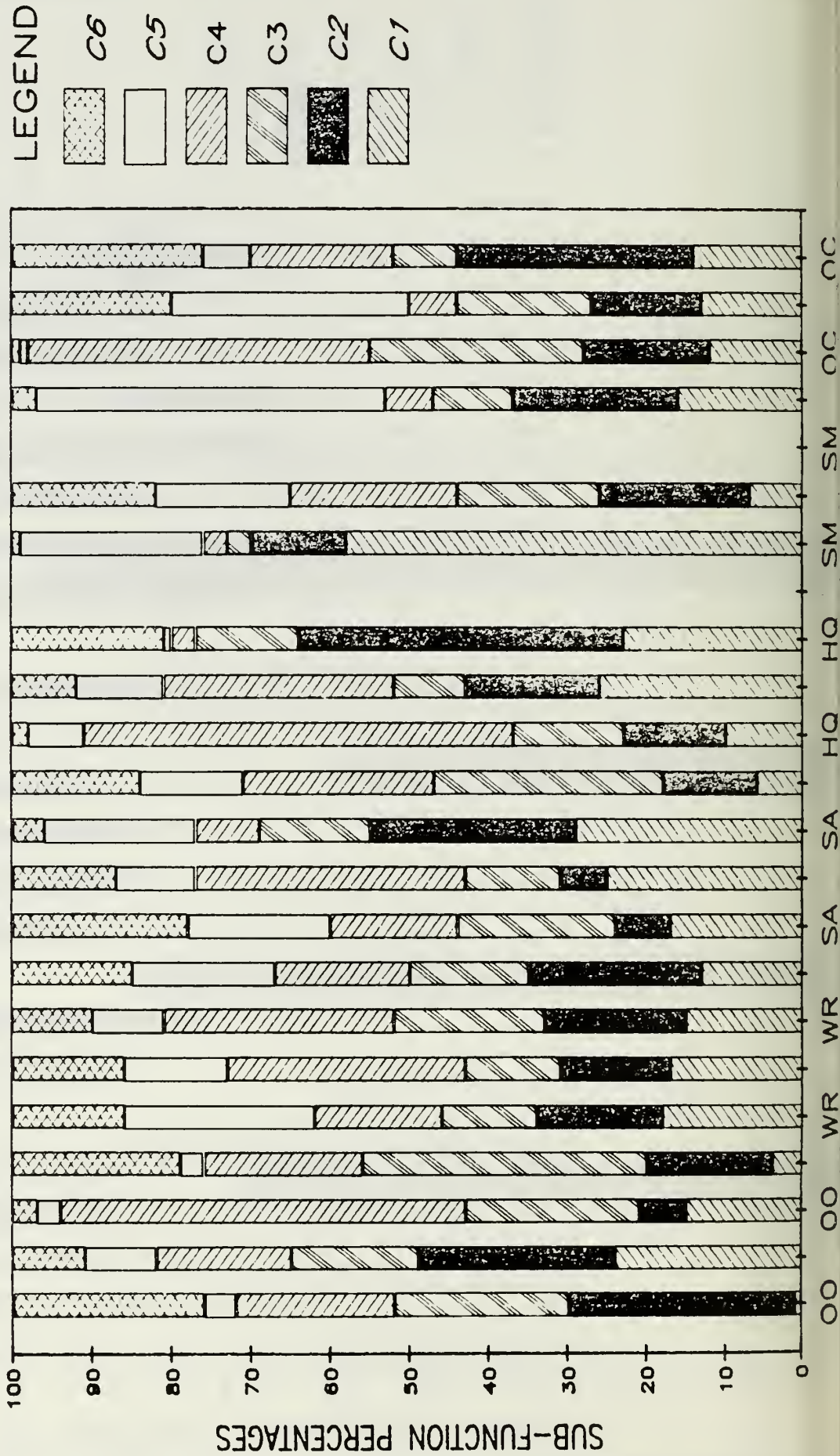
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% BY RANK/GRADE



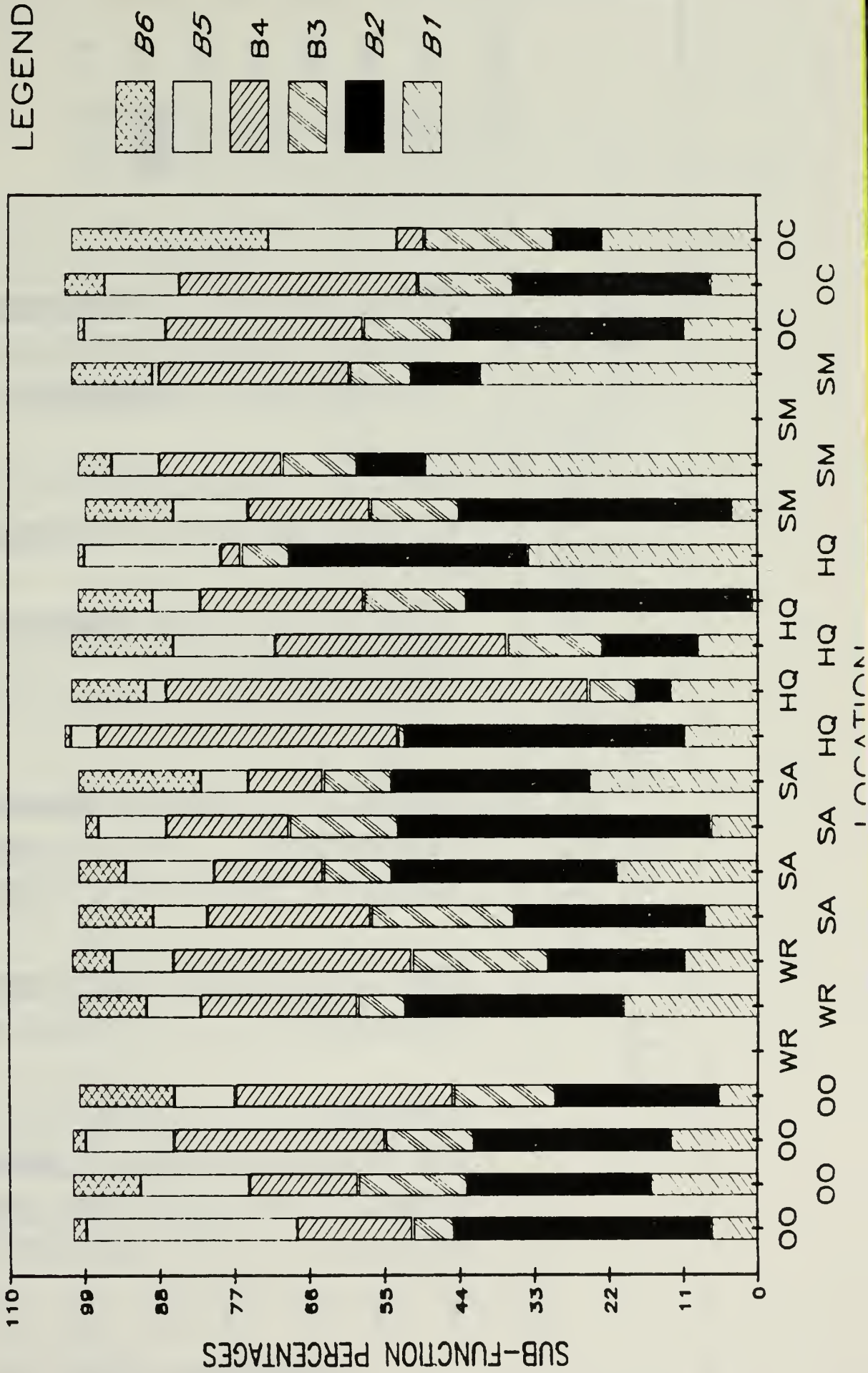
MM ACQ&DIST FUNCTIONS INDIVIDUAL VALUES



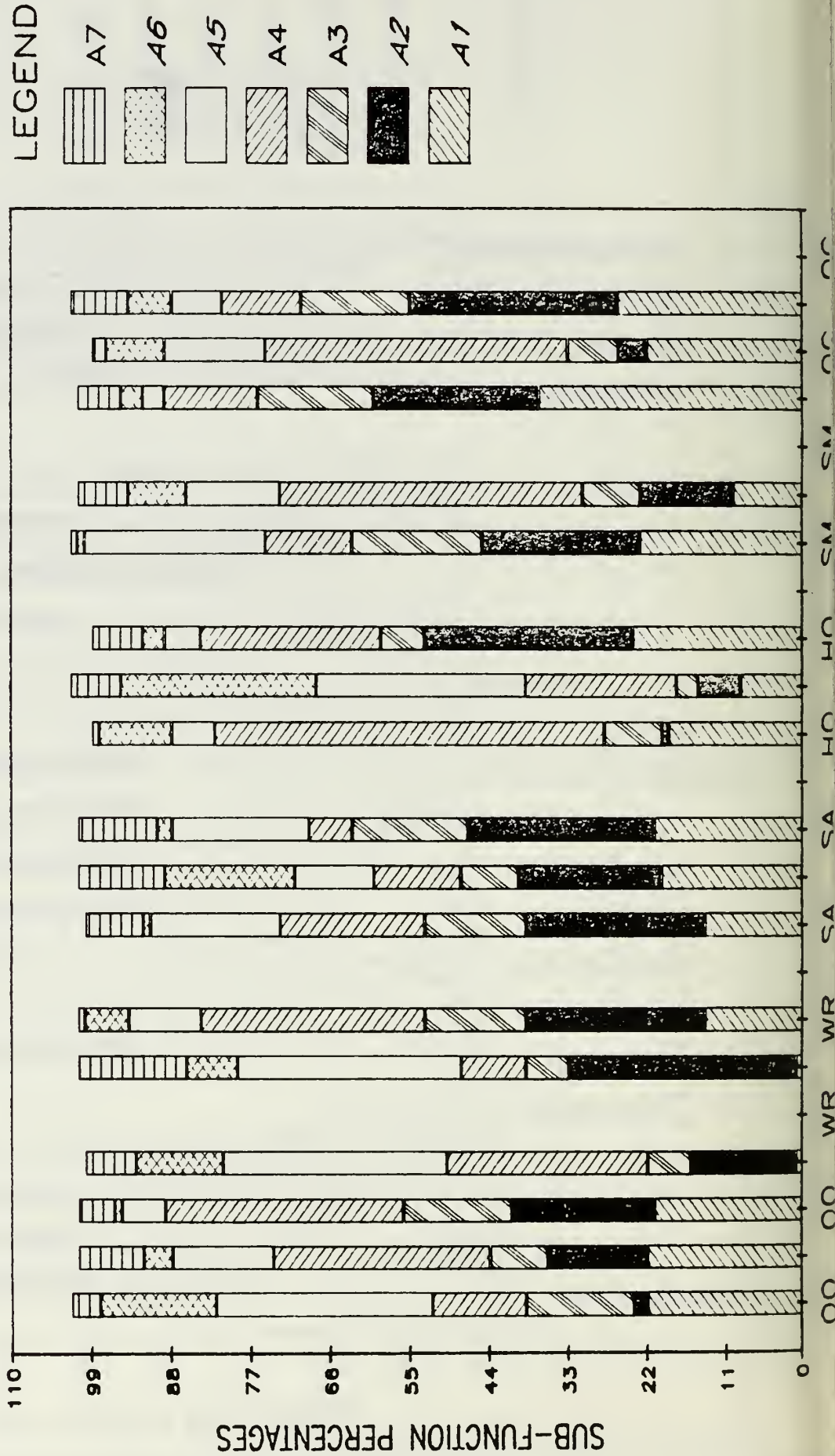
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