TRI FILE COPY

ESD-TR-71-366, Vol. II

REQUIREMENTS ANALYSIS OF THE PERSONNEL AND
LOGISTICS SUBSYSTEM OF THE POST 1975 AIR
FORCE COMPONENT COMMAND POST (FINAL REPORT)

October 1971

DEPUTY FOR PLANNING AND TECHNOLOGY
HQ ELECTRONIC SYSTEMS DIVISION (AFSC)
L. G. Hanscom Field, Bedford, Massachusetts 01730

ESD-TR-71-366, Vol. II

AD735734

LEGAL NOTICE

REQUIREMENTS ANALYSIS OF THE PERSONNEL AND LOGISTICS SUBSYSTEM OF THE POST 1975 AIR FORCE COMPONENT COMMAND POST (FINAL REPORT)

October 1971

DEPUTY FOR PLANNING AND TECHNOLOGY
HQ ELECTRONIC SYSTEMS DIVISION (AFSC)
L. G. Hanscom Field, Bedford, Massachusetts 01730

Approved for public release;
distribution unlimited.

TABLE OF CONTENTS

TABLE OF CONTENTS (Continued)

iv

LIST OF ILLUSTRATIONS

LIST OF TABLES

SECTION 1
INTRODUCTION

1.1 STUDY DESCRIPTION

This report is the third and final report of the study of the Personnel and Logistics subsystems (PLSS) of the Air Force Component Command Post (AFCCP) as projected to the post 1975 time frame. The earlier reports addressed the definition of the functional requirements of the PLSS in providing support to the Tactical Air Control Center (TACC) and the specification of the interfaces of the PLSS within the Air Force Forces (AFFOR) and with higher and lateral commands. This report extends the earlier effort with an identification of problem areas and deficiencies and concludes with a presentation of system concepts which provide successive degrees of the desired operational capability for the post 1975 AFCCP.

The PLSS study involved the accomplishment of five interim objectives or tasks addressed to the Logistics subsystem, and a similar set of tasks for the Personnel subsystem. These tasks were: Data Collection, Function Analysis, Personnel/Logistics – TACC Interface Definition, Other Personnel/Logistics Interfaces Definition, and finally Deficiencies Analysis. The overall study objectives of establishing performance parameters for the preliminary design of the PLSS of the post 1975 AFCCP have been accomplished and are discussed in this report. A summary of study objectives and approach is presented in 1.3. The final recommendations and conclusions are summerized in 1.4.

The initial tasks of data collection relied extensively on visits and observations at Tactical Air Command (TAC) headquarters and operating installations, USAF Command Post Logistics Readiness Center (LRC) and Personnel Readiness Center (PRC), Air Force Logistics Command (AFLC), and the Air Force Military Personnel Center. The principal guidance for the development of data was TACM 55-45, with related doctrine from Air Force and TAC regulations, manuals and operational directives. The Continental United States (CONUS) activities and duties of personnel and material elements at various organizational levels were evaluated for applicability to the Air Force Forces (AFFOR) situation. Consideration was given to the added managerial independence characteristic of contingency operations which are remote from the normal context of a Major Command (MAJCOM) and home base operations. Additional functions were derived by implication from the manuals and regulations governing the functions and responsibilities of lower level units at the Wing/Base and Squadron levels.

The study team was directed to avoid the use of AFFOR operations in South-East Asia as a model for this study. It was concluded the SEA situation was overly large, and as a consequence of years of operations, it more closely resembled CONUS activities and practices. Interviews with many TAC Headquarters and unit personnel who had served in SEA were conducted which provided information and perspective as to the implications for the study tasks and objectives.

The information flow requirements in support of the PLSS were defined in terms of discrete messages and assembled into a message catalog (Appendix I of the Interface Requirements report). Concurrently, the data base and information processing requirements were identified on the basis of the functional requirements of the Personnel and Logistics subsystems. The effects of three levels of potential deployments, as sized in TACM 55-45, were determined along with indications of effects of activity levels. Preliminary concepts of systems for satisfying the foregoing performance parameters were postulated and evaluated. In the process additional visibility of unanticipated problems was developed. Refinement of the performance parameters and the concepts was accompanied by greater understanding of the noted problems and potential deficiencies.

This report is organized into three sections which summarize program results, address general command staff relationships and problem areas of the AFFOR, identify the requirements of the Personnel and Logistics subsystems, and present and compare four candidate conceptual solutions. Section 2.1 discusses overall considerations of AFCCP staff relationships, the force structures and activity levels used in the study, the effects of anticipated developments in the post 1975 time frame and general problem areas associated with the AFCCP concept which bear on the PLSS requirements.

Section 2.2 and 2.3 identify and summarize the previously developed requirements of the Personnel and Logistics Subsystems and identify the problem areas and limitations which affect these staffs. Section 3.1 establishes the criteria used in conceptual system evaluation and discusses relevant ADP support capabilities employed by some of the conceptual solutions. Sections 3.2 through 3.5 present four conceptual solutions to PLSS requirements which are then compared in section 3.6.

1.2 REQUIREMENTS, PROBLEM AREAS AND DEFICIENCIES SUMMARY

Both general and detailed requirements are specified in this report. The general requirements include those of the Personnel and Logistics Subsystem (PLSS) in

the support of the Tactical Air Control Center (TACC) and in support of the deployed Air Force air operations relative to the accomplishment of mission objectives. Logistic subsystem and the Personnel subsystem performance requirements, are defined in terms of the data base structure and size, input/output message requirements, communications requirements, interface compatibility, backup requirements and capability for growth.

PLSS problem areas and deficiencies are concerned with the support of the TACC and of the Materiel and Personnel system operation and performance within the deployed Air Force Forces (AFFOR). The TACC support deficiencies include those of information content, availability and number, the timeliness of information of resource status, responsiveness of the subsystem to the needs of the TACC, the ability of the PLSS to determine limiting factors and to predict trends which would have an adverse effect upon air operations of the AFFOR.

The problem areas and deficiencies in the area of Personnel and Logistics systems operations and performance include those which deal with planning, with the determination of AFFOR needs, with the determination of rates of resupply, expenditure rates, and with the capability to provide efficient monitoring of materiel and personnel elements within the deployed force.

1.2.1 Logistics

The Logistics Subsystem (LSS) problem areas and deficiencies are in the area of providing support to the Tactical Air Control Center and other Air Force Component Command Post (AFCCP) staff elements and of the operation of the AFFOR materiel elements. In the current logistic system few requirements are placed on the AFCCP materiel staff which directly reflect the requirements of the TACC. Current resource status is received by the TACC via the Tactical Air Communication System from information generated by the Tactical Unit Operations Center (TUOC); however aircraft availability is first determined by the Maintenance Control Center materiel agency of the tactical unit. Summaries of maintenance action are not available now at the AFCCP. Maintenance Action data cards are sent directly to the Air Force Logistics Command (AFLC), bypassing the Deputy for Material at the AFCCP.

Another example of the materiel support system deficiency was the lack of pylon configuration reporting by tactical units in the field. In both Vietnam and in the Continental United States (CONUS), operations frag orders are being generated and sent to tactical units who are unable to comply with ordnance selection because of pylon configuration which will not accommodate the frag ordnance.

1.2.2 Personnel

The current U.S. Air Force (USAF) personnel data reporting system is not responsive primarily to the needs of the MAJCOMs concerned with the deployment. Reports prepared by Consolidated Base Personnel Office (CBPO) or Personnel Support of Contingency Operations (PERSCO) units bypass the intermediate (AFFOR) command, being addressed to Major and Theatre commands where personnel data is collated and analyzed. Another deficiency noted is the lack of a meaningful morning report. This lack does not allow the deployed tactical wing access to current manpower status of its subordinate units; at the Air Force Component Command Deputy for Personnel (D/P) level, there is little or no direct access to personnel status of the subordinate elements of the AFFOR.

1.3 THE APPROACH AND ASSUMPTIONS

The steps used to identify current personnel and logistics subsystem problem areas and deficiencies are shown in Figure 1.3-1. Conceptual approaches were defined which would solve or minimize the problem areas and deficiencies. Conceptual approaches were then evaluated using general evaluation criteria to evaluate the best conceptual approach. Alternative candidate approaches were identified along with a definition of their advantages and disadvantages.

The primary inputs to the requirements analysis task were the results of both the PLSS functional analysis and interface analysis tasks, the data collection visits and interviews, the USAF and Tactical Air Command (TAC) regulations and manuals, and other contractor studies. The functional requirements developed during the functional analysis identified the activities and events required to support TACC operations and to direct, monitor, and control the personnel and logistics operations of the deployed AFFOR. The data base requirements and the message catalog provided the basis for the definition of the PLSS performance requirements.

The first step in this effort was to integrate and specify the PLSS operational requirements in terms of the functions that they perform, the performance requirements in terms of the data base structure and the incoming and outgoing messages, of interface compatibility requirements, and of backup and growth requirements. The current PLSS capabilities were then defined and compared with the operational requirements to define and identify problem areas and/or deficiencies. Conceptual approaches were then defined and evaluated relative to solving or minimizing the current PLSS problem areas and deficiencies and to satisfy the PLSS operational requirements for the Post-1975 time period.

The major assumptions used in this requirements analysis effort are:
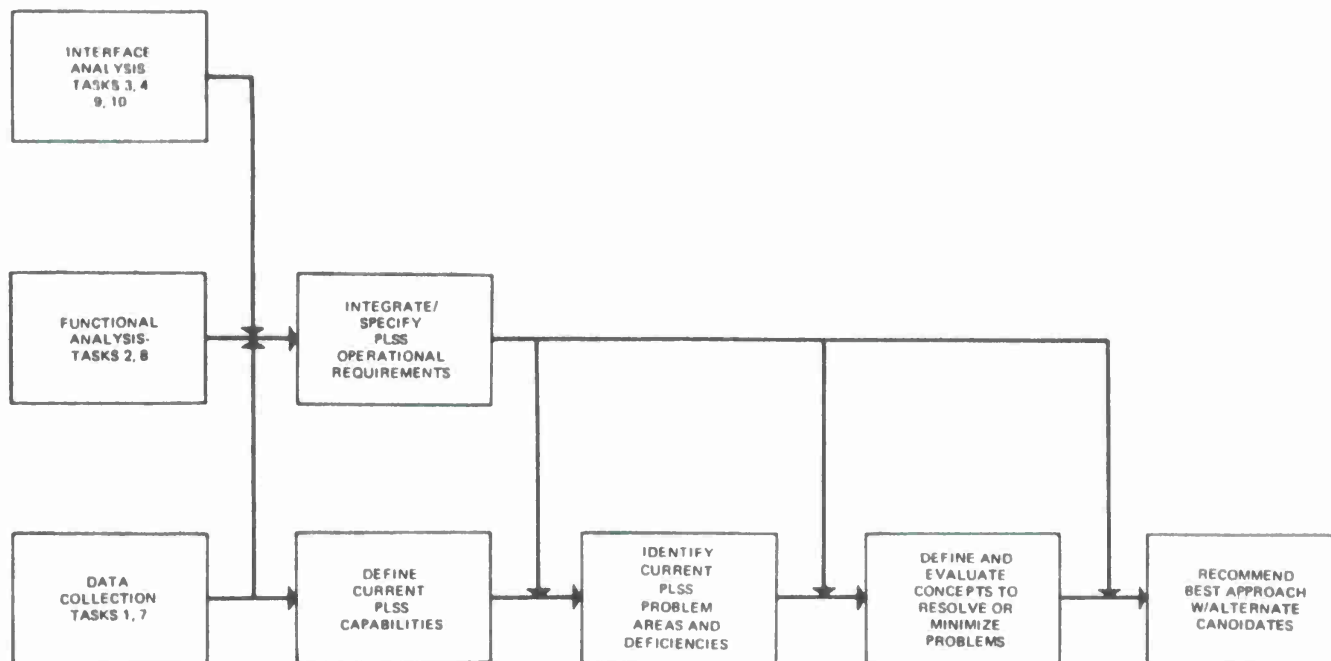
Figure 1.3-1. Requirements Analysis Methodology

a. The AFFOR is deployed outside the CONUS on a contingency deployment of greater than ten days, but less than six months, thus exercising War Readiness Spares Kits (WRSK) and requiring resupply establishment.

b. The operations Command and Control System has a capability to plan a deployment within the objective area and in time periods of a few hours.

c. Automatic data processing equipment and software will be available and capable of performing materiel and personnel functions at the wing/base as well as the AFCCP levels.

d. The Post-1975 automated TACC will be operational and used to conduct detailed and comprehensive mission planning and adjustments, requiring thereby more timely and complete resource status information.

e. The personnel and logistics organizations in the CONUS and the major theater commands will continue to be supported by automated data processing systems.

f. The Personnel and Logistics Readiness Centers at Headquarters USAF and at major commands will be automated and will be capable of interfacing with the automated CONUS wing/base units.

g. Communications channels including digital, teletype and voice will be available and will be utilized between the PLSS and materiel and personnel elements at the wing bases.

The assumptions specified represent the more general and encompassing factors which have been taken into consideration in developing the conceptual approaches as solutions to the current PLSS problem areas and deficiencies. More detailed or specific assumptions are identified as required throughout the following sections and subsections of this report.

1.4 CONCLUSIONS AND RECOMMENDATIONS

This study of the PLSS of the post 1975 AFCCP has been conducted over a period of six months to address the requirements of these areas as they apply primarily to interaction with and support of the TACC. It has been necessary to consider the total range of logistics and personnel operations in the deployed Force situation in selected depth in order to properly identify and evaluate AFCCP staff functions. Other recent and current programs such as the Joint Logistics Review Board, Project Corona Harvest, and USAF MPCs Contingency Management Information investigation have considered the problems of effective personnel and

1-3

logistics management in the contingency situation and their findings are fundamental to the question of staff requirements. This study, under the direction of AFSC-ESD has provided a formalized assembly and examination of the operational requirements on the PLSS of the AFCCP but was not aimed at the development of a specific system design solution. Therefore the recommendations are oriented primarily to more fundamental areas which would facilitate the ultimate development of effective solutions. The following discussion presents recommendations in the areas of Doctrine, Compatibility of management systems, the need for Base Automation support and its bearing on Staff Automation, and the Candidate Concept Solutions developed during this program.

A major objective of this study and one of the principal problems was the identification of AFCCP Personnel and Logistic staff roles and responsibilities. Current applicable doctrine is distributed over several sources, each of which, more or less, indirectly identify staff functions in varying degrees of detail. Staff level personnel are aware of the situation but are nevertheless fully capable of effective performance because of their formal training and experience. However, efforts to organize and address problem areas and to institute system improvements do appear to be impeded by the lack of centralized authority in doctrine. A pattern for detailed doctrine development exists in current command and control operations oriented manuals which describe operations staff positions and duties in detail, while several excellent bases for further Personnel and Logistics doctrine development exist in manuals such as AFM 400-2, 400-11, 28-4, 2-40, 66-1, 66-31, and 35-33.

The broad scope, complexity and competence of USAF Personnel and Logistics management and operations have been graphically demonstrated to the investigators. Modern techniques of automation are extensively used and have been developed to fit the needs of a number of geographical areas and operating agencies. This tailor made approach has produced generally excellent results but has also generated problems of compatibility. As 'local' problems are solved the desire to address interface needs with proven techniques is the logical next step. It is noted that total or universal compatibility of management information systems and command and control systems is not necessarily desirable nor attainable in the near term. However, a degree of information exchange is needed and is being addressed through such measures as Joint Chiefs of Staff (JCS) reporting and communications standards. The systems compatibility problem is being addressed within the USAF and will be resolved in an evolutionary manner. The importance of the resolution of compatibility problems through appropriate standards and guidelines for new AFCCP System developments is crucial to the evaluation and selection of candidate solution concepts.

Addressing the specific needs of the AFFOR in the deployed contingency environment, the requirement for appropriate automatic data processing support for tactical base level and the headquarters staff should be developed and refined. The functions which the PSS and LSS must perform depend heavily upon the nature of the management information handling capability of the Wing and Squadron units at tactical bases. At the current time Tactical units which are deployed from their home bases to an austere or bare base must leave their management support systems behind since these consist of commercial equipment and are needed by the elements remaining at the home base. Attempting to convert this situation to an advantage by supporting deployed unit information handling requirements with home-base automation via remote communications would establish severe requirements on long range communications and would be of questionable responsiveness. Deployable unit ADP capability is estimated to be a cost effective solution which should be pursued in the near future. Because of the interdependence of staff and tactical unit activities in the personnel and logistics areas, decisions on staff automation should carefully consider the effect of base management information processing.

The candidate conceptual solutions identified to respond to the requirements and problem areas developed in this study constitute an evolutionary progression of capabilities for the Personnel and Logistics staff. The selection and recommendation of a preferred solution properly requires further review and validation of requirements and consideration of implementation planning factors. All of the candidate concepts which were judged to be effective involved substantial advances in information handling with the employment of ADP. These concepts also assumed substantial capabilities at tactical units and bases in order to effectively support the staff with timely information and response to direction. Automation support to the entire D/M and D/P staffs (the automated PLSS concept) presented the greatest technical performance, is technically feasible with current technology and is regarded as an ultimate solution. The concept of a PLSC closely associated with the TACC is intermediate in capabilities and scope of functions performed, while the automated PRC and LRC concept represents an entry level situation in the employment of automation. These solution concepts are not considered to be the only possible system designs which can be effective but they provide useful baselines for refinement of requirements and definition of implementation plans.

2.1 GENERAL REQUIREMENTS ANALYSIS

The functions and operations of the AFCCP staff elements have been considered in the course of this study in order to identify their inter-relationships and their role in supporting the objectives of the forces. A primary distinction of the Personnel and Materiel staffs is their concern with resources management as opposed to the command-control role of the operations staff.

This section of the requirements analysis is devoted to the discussion of the relationships among the AFCCP staffs with special emphasis on the interactions between operations and the personnel and materiel elements. In addition, the operational environment is presented to establish the context within which force requirements are developed. The nature and duration of a contingency operation is of prime significance to the role of the component staffs. For the purposes of this study the force structures defined in TACM-55-45 have been used. However, it is recognized that many other force structures are possible and likely in the 1975-85 time frame. Variations in force structures occasioned by different force objectives and durations of action would have profound effects upon staff roles. Those considerations are discussed to identify some of the potential variations in requirements to which any proposed solution must adapt.

The final portions of the discussion of general requirements is concerned with problem areas which concern both the Personnel and Materiel staffs and the overall concept of the Tactical Air Forces Headquarters in a deployed environment. The appropriate nature and duties of such a staff will vary, not only as a direct function of the force structure and conflict duration, but will also be profoundly affected in detail by the organization and description of the force elements, the relationship of their combat capabilities to their possessed personnel and equipments, their state of readiness to enter combat upon deployment, and the use that deployed forces can make of existing, in-garrison and home base capabilities. The evolution of Tactical Air Forces command and control doctrine has been a major concern during this study; many questions of future methods and policies have been resolved by the USAF and a number still remain. It is the aim of the following discussions to identify the impact of some of these questions, as perceived by the study team, on the findings of the study. The discussion addresses Command Staff roles, TACC functions, the Force structures used in this study, possible effects of the post 1975 time frame and general problem areas associated with AFCCP concepts.

2.1.1 Command Staff Relationships

From the outset of this study of the PLSS of the AFCCP, it was recognized that basic organizational principles are key considerations in a proper evaluation of staff roles and interactions. Among these basic considerations are what is currently done, by whom, and why, and what is the reason for departures from rigid structures or procedures. This discussion of staff roles is presented in the interest of exposing some of these considerations as they have affected the study. These basic considerations have been generally confirmed in discussions with USAF personnel and are implicit in doctrine. In the absence of an operational AFCCP to provide a reference baseline, force requirements and staff activities were modeled upon current Major Command (MAJCOM) and intermediate level command staffs augmented by the interpretive guidance from officers experienced in similar staff roles both in the CONUS and in hostilities situations.

Basic guidance as to staff functions was obtained from basic USAF and logistics doctrine coupled with general theory of organization. Basic doctrine provides that management of resources is a responsibility of a Commander as an aspect of Command and Control (reference AFM 400-2). In addition, efficient and effective management of resources is fundamental to the maintenance of combat capabilities and the ultimate attainment of force objectives. The theory of organization provides that the functions of an organization can be most effectively accomplished by allocating the elements of the work to groups to which can bring specialized skills and knowledge to the effort producing a higher quality result. The problem is to assure that all necessary areas are covered and can be integrated under unifying leadership to assure that all aspects of the larger objectives of the effort are addressed and satisfactorily met. The need also exists, in any organization, to provide for the handling of conditions which tend to straddle organizational lines or demand more timely and cooperative action than can be achieved by routine procedures.

Command Staff organization strongly reflects the principles described above. This can be effectively illustrated by considering the respective roles of the Operations and Materiel staffs in a headquarters. Each staff acts for the Commander in a clearly defined area. Operations, is the Commander's instrument for control of combat activities and arranges for the most effective employment of the combat resources of the forces. Materiel on the other hand is the Commander's instrument for direction and control of measures to assure the availability of the required combat resources. To

simplify, the Materiel staff aids in assuring the attainment of certain standards of resource availability and Operations relies upon the attainment of these standards in planning and directing the employment of resources. Thus, the staffs have relatively independent detailed objectives which allow them to operate on a non-interfering basis while each directly supports the attainment of force objectives. Naturally, the routine attainment of the objectives of each staff cannot be assured in the fluidity of the combat environment where the Forces must deal not only with the enemy but with Nature and the inherent characteristics of complex weapons systems. Therefore special elements of the staff are designated to respond to special problems and to expedite the resolution of critical deficiencies. Examples of such staff elements are the Logistics Readiness Center (LRC) and the Personnel Readiness Center (PRC) which are frequently formed to provide especially direct and timely action on designated problem areas.

Effective unification of staff efforts is realized through command leadership and by focusing their efforts upon the preparation and execution of comprehensive operations plans. Since it is not generally possible or economical to attain a position on resources which can accommodate every eventuality, the supporting staffs concentrate their efforts on measures needed to support specific operations plans. Similarly, the Operations staff must tailor their plans to the realities of the resources situation as currently observable and predictable. In fact, the plans formation process is carried out jointly to assure realistic results. The focusing of efforts on specific plans is a major source of and reason for interactions between these staffs and is the vehicle for their cooperative efforts in attainment of force objectives. Another source of staff interactions results from variations in plans and from discrepancies detected in the attainment of resource standards which necessitate special actions to minimize limiting factors and critical consequences. Variations of plans are a necessary Commander's prerogative for flexible and effective employment of his forces in order to seize opportunities and to respond to severe effects created by the combination of enemy actions and natural forces. The implications of such variations must be exposed to aid in decision making.

The foregoing considerations encompass the rationale of AFCCP staff functions used in this study to clarify operational requirements and evaluate their implications. The following discussion addresses the relationships of the AFFOR Headquarters staffs to the activities of the execution elements of the forces.

2.1.2 Deployed Force Levels and Organization

The deployed force levels were defined as the minimum, medium and maximum force levels specified by TACM 55-45. The assumed type and number of elements of each force level are presented in Table 2.1.2-1. The organizational relationships include all organizational elements from the CONUS to the deployed area. Figures 2.1.2-1 through 2.1.2-3 depict schematically the organizational relationship of the minimum, medium and maximum size AFFOR. Figure 2.1.2-4 shows the Tactical Air Control System, depicting the subordinate elements and control responsibilities. The related operational planning factors used in this study are shown in Table 2.1.2-2.

As the number of elements of the deployed AFFOR grow in size, the increased requirements imposed upon the AFFOR staff elements at the AFCCP causes increases in the size and changes in the organizational relationship of these staff elements. In the minimum force, the Deputy for Personnel, is a special staff agency; in the medium and maximum force, the Deputy for Personnel assumes a general staff level. The functions within the Deputy for Operations and Deputy for Materiel also change with the growth of the AFFOR. Table 2.1.2-2 shows the change in organization of these staff elements with the increase in AFFOR size.

2.1.3 Post-1975 Effects on Personnel and Logistics Requirements

This study has been conducted against a continually changing situation concerning the evolving concepts of operations and support of the USAF. This change and evolution arises from a perception of changing military requirements, the need to achieve a high degree of flexibility, from small contingency situations to major wars, the effort to establish more effective employment of current and new weapons and systems, and the desire to employ advanced techniques of management and control to enhance effectiveness, flexibility and economy. The general impact of the various changes in USAF concepts and procedures on the Personnel and Logistics subsystems of the AFCCP is to require more timely and precise knowledge of current force status and evaluation of projected force status. The specific areas which are anticipated to affect Personnel and Logistics staff operations include advances in operations concepts and weapons technology, variations in the size and nature of conflicts, the influence of desired readiness posture and of force packaging concepts, and the effects of improved communications.

Advances in operations concepts have been and are being continually introduced to reflect the lessons of experience with new weapons and warfare situations and to achieve greater force flexibility and responsiveness. A general trend is observable in the area of operations planning toward more comprehensive planning which is accomplished in an equal or shorter time. Improvements in the scope of plans are needed to deal with the increased complexity of the air situation as exemplified by larger numbers of Air Force and
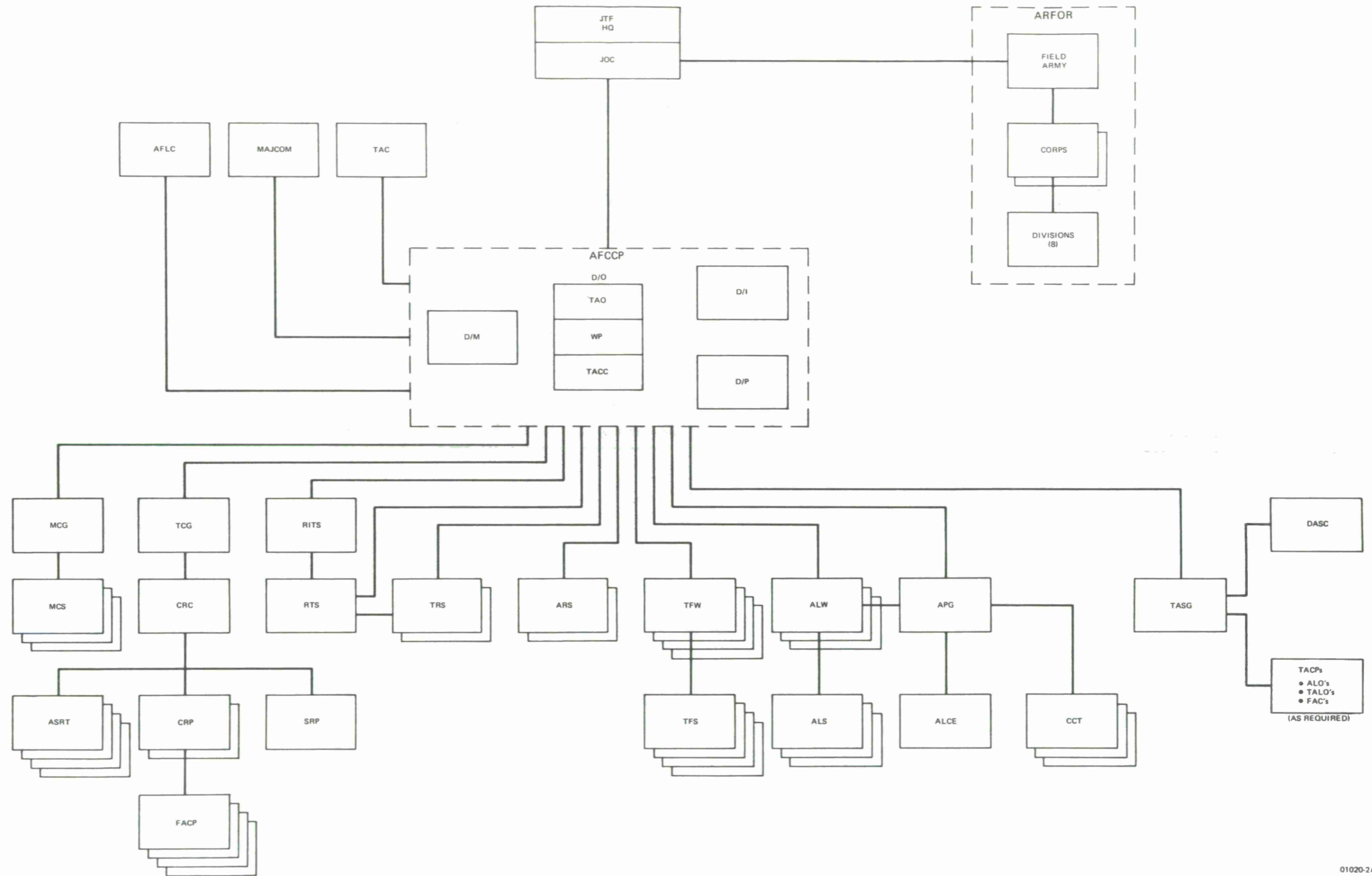
Figure 2.1.2-1. Maximum Deployed AFFOR

01020-2A
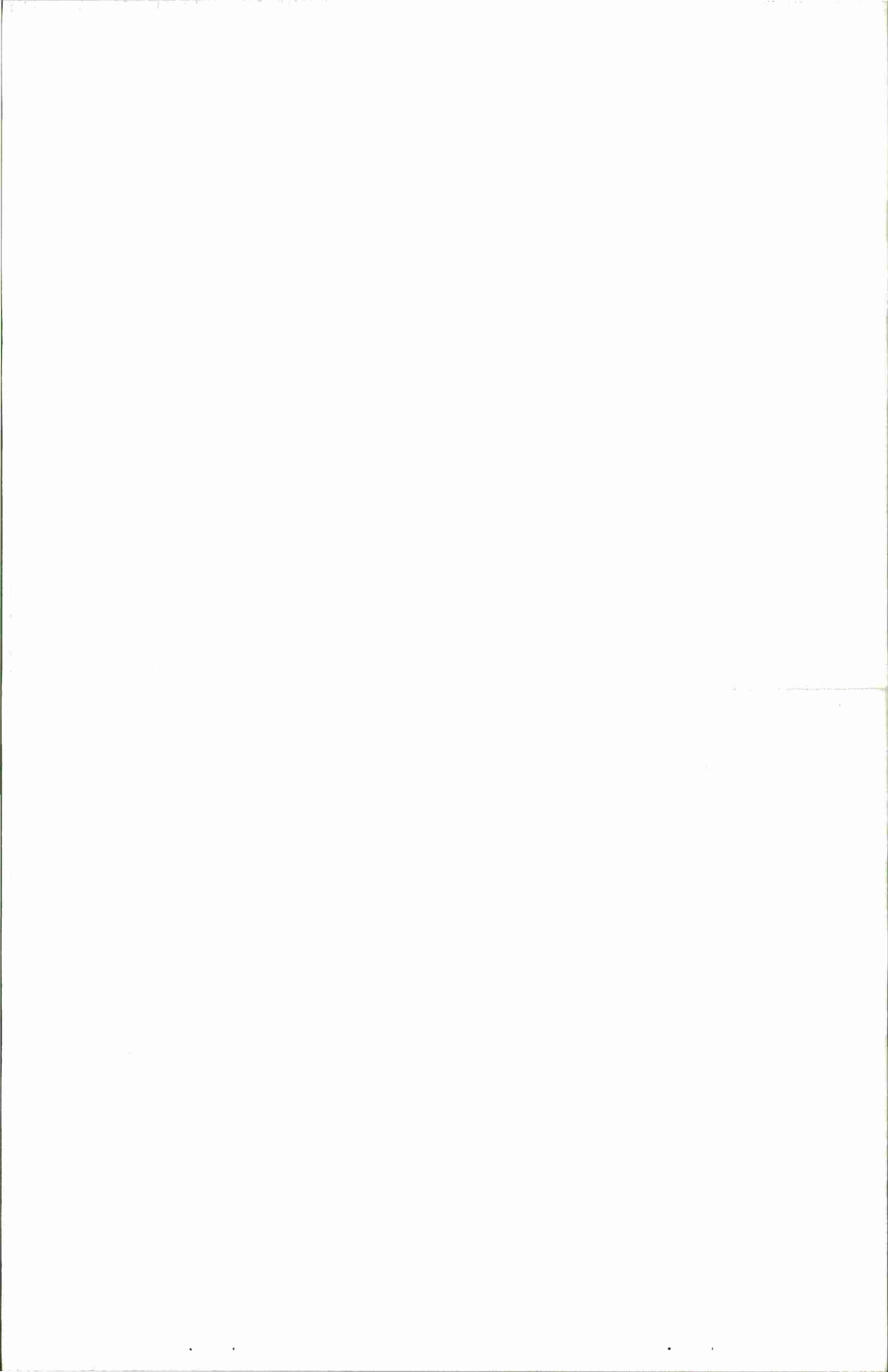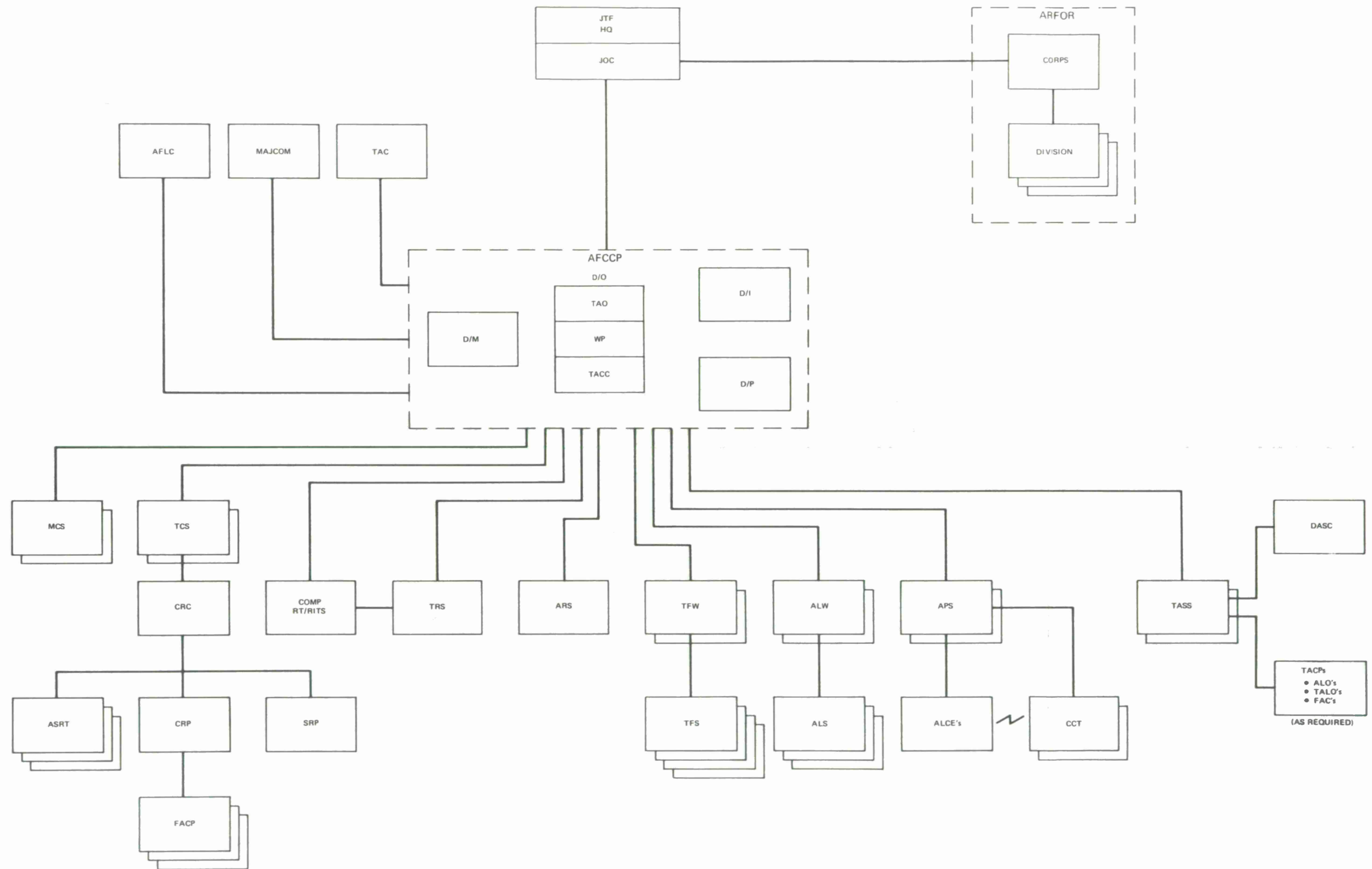
Figure 2.1.2-2. Medium Deployed AFFOR

01020-3A
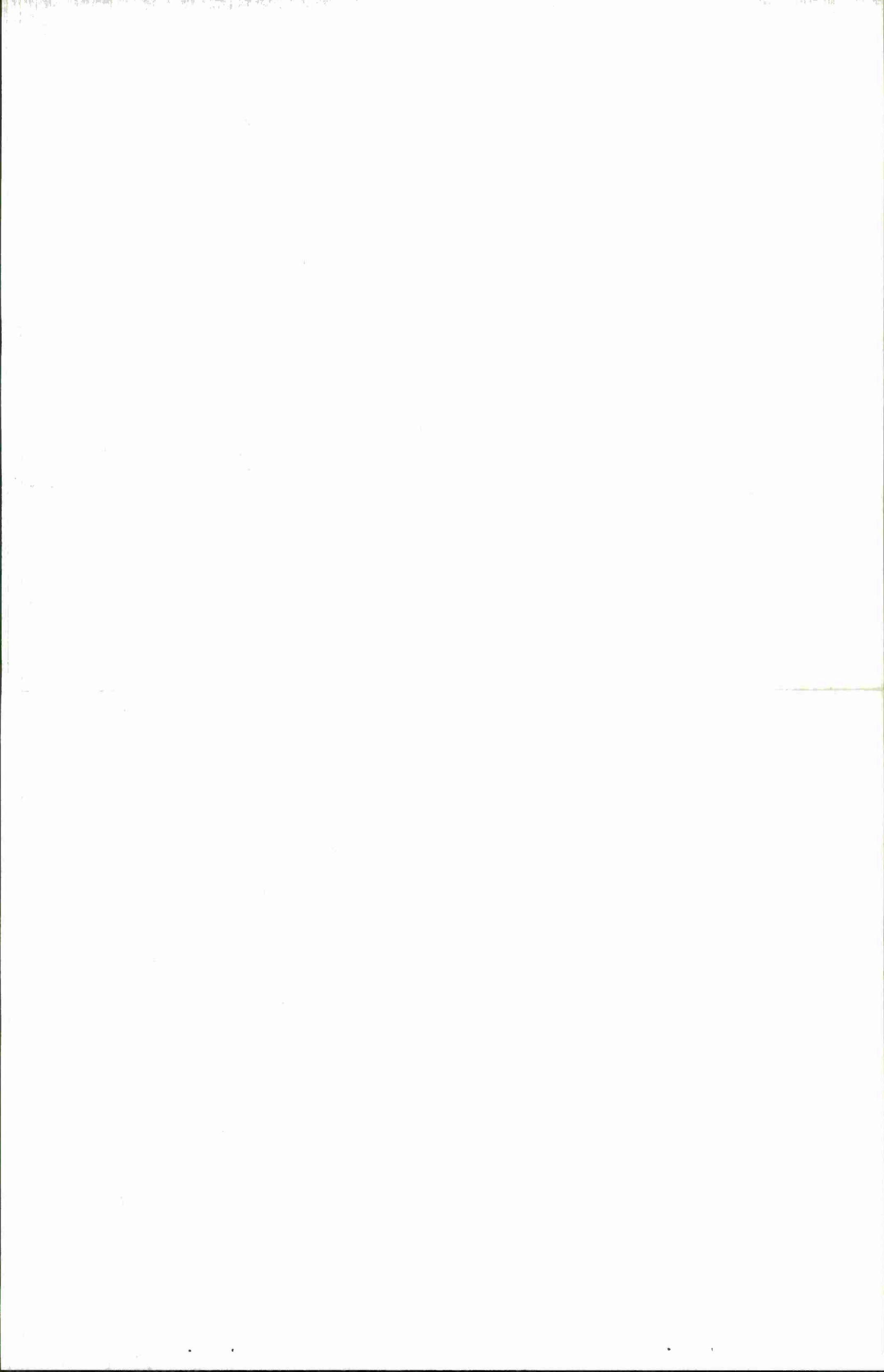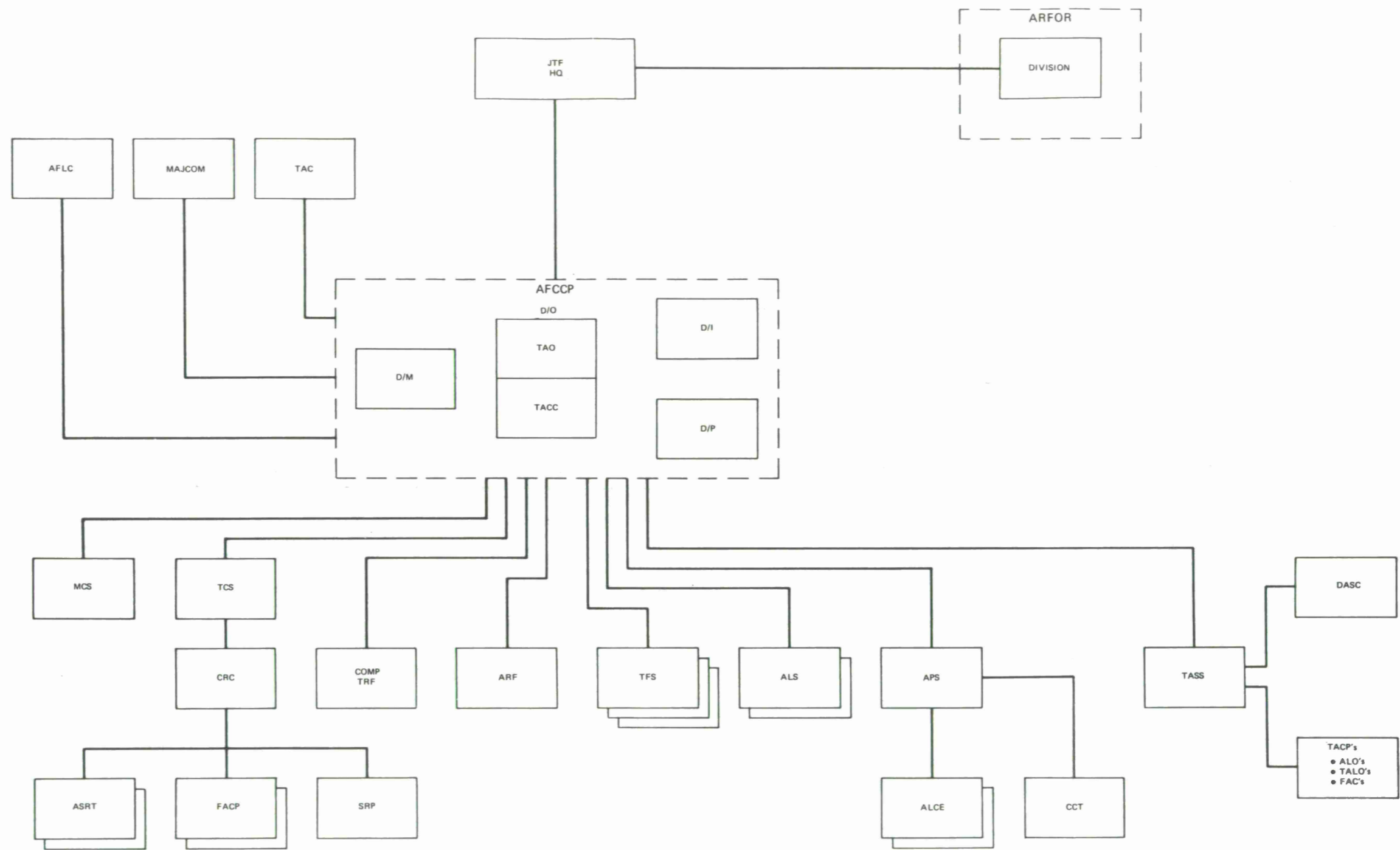
Figure 2.1.2-3. Minimum Deployed AFFOR

01020-4A
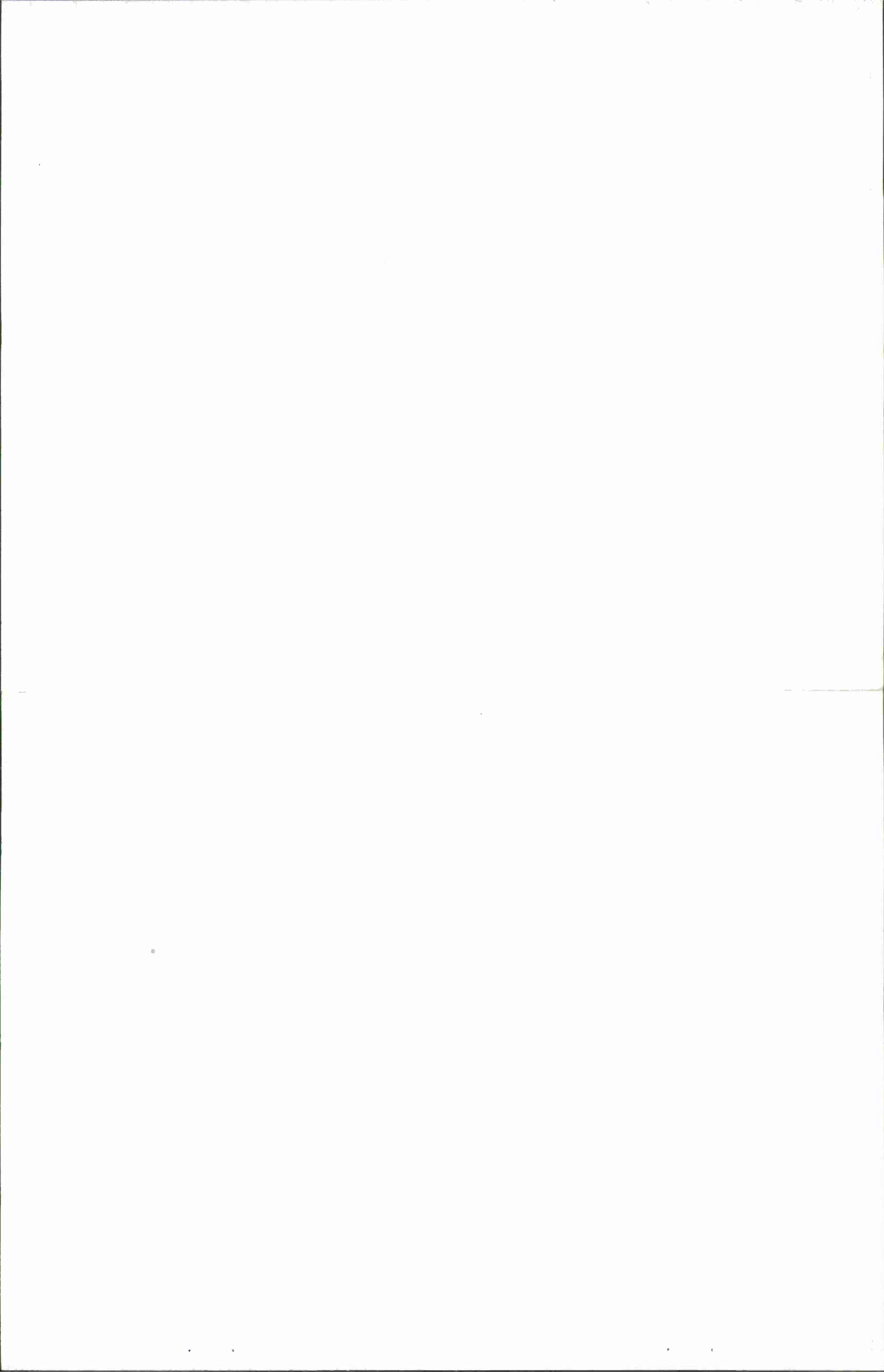
Table 2.1.2-1. Typical Deployed Force Compositions

Number of Elements, Deployed			
Unit	Minimum Force	Medium Force	Maximum Force
Joint Force Headquarters	1	1	1
Supported Army Element	1 Division	1 Corps (3 Divisions)	1 Field Army (2 Corps)
AFCCP	1	1	1
Tactical Fighter Wings	–	2	4
Tactical Fighter	3	8	16
Recce Flight/Squadron	1 Comp Flight	1 Squadron	2 Squadrons
Tanker Flight/Squadron	1 Flight	1 Squadron	2 Squadrons
Airlift Wings	–	2	3
Airlift Squadron	2	6	9
Aerial Port Squadron/Group	1 Squadron	2 Squadrons	1 Group
Tactical Control Squadron Group	1 Squadron	2 Squadrons	1 Group
Tactical Air Support Squadron/Group	1 Squadron	2 Squadrons	1 Group
Mobile Communications Squadron/Group	1 Squadron	2 Squadrons	1 Group (3 Squadrons)
TACC	1	1	1
CRC	1	1	1
CRP	0	1	2
SRP	1	1	1
FACP	2	3	4
ASRT	2	3	4
ALCEs	2	6	14
CCTs	1	2	3
DASCs	1	1	2
TACPs	*	*	*

*As required.

01020-6

Army aircraft, extensive artillery and missile fire, enemy air actions and advanced air defense measures which must be penetrated. A degree of concentration of power in fewer aircraft and the desire to get the most out of each of these major assets frequently implies more sorties per vehicle which tends to increase the volume of planning. Complex plans for high intensity combat require more information on more details of status of resources and higher activity levels imply greater workloads in supply, servicing and maintenance. The impact then of more complex planning on the Personnel and Logistics systems is to demand more timely evaluation of support needs and to prepare more detailed planning factors for projection of resources status.

Trends in Current Operations appear to be oriented similarly to Current Plans in that there is greater concern to closely follow the air situation and to provide more responsive immediate support to ground forces. While important problems are being solved in this area the impact of advanced complexity in force supervision and control has only indirect effects on personnel and logistics. Current status and situation reporting has been intensified and expanded on operations channels and is a rich source of updated information for the resources management staffs. However, the brunt of the greater status reporting and evaluation of implications falls on the combat units who must evaluate and report the operational implications of status rather than on the headquarters staff in their senior
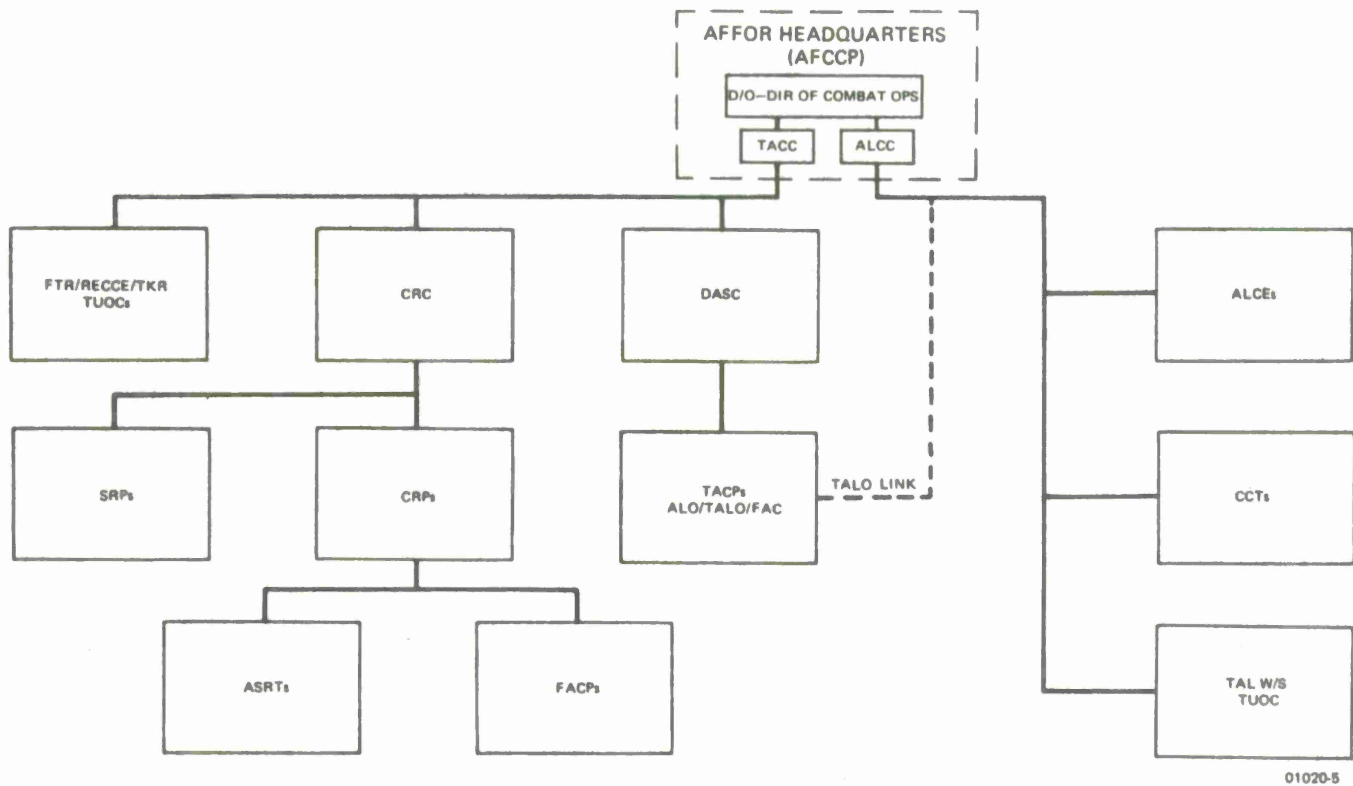
Figure 2.1.2-4. Tactical Air Control System (TACS)

management role. Whether a more effective capability could be achieved by reallocating the evaluation aspects of status information to the command staff is doubtful because the responsibility for remedial action rests with the subordinate unit Commander and he must perform evaluation in order to select and institute corrective action and report his effective operational capability.

Force assembly for deployment and Readiness posture are Major Command responsibilities which are receiving much attention and have profound impact upon the personnel and logistics areas. One might say that deployment is mainly a logistical activity. From the point of view of the deployed Force headquarters the problem is: (1) to establish that deployment aims have in fact been met and (2) to begin to assess further requirements for operational and service support as dictated by the developing situation. Allied with deployment and readiness is the degree of force mobility involved in the contingency situation. Measures designed to enhance mobility generally aggravate the problem of location of resources and their maintenance. The establishment and control of received or redeployed assets and personnel in the buildup phase and during mobility actions is another major burden upon the staffs. Proper handling of moved assets and the arrangement of appropriate procedures to avoid

shortages and excesses is an area which requires substantial information handling capabilities not now readily available in the AFCCP concept. It might be pointed out that the detailed control and distribution of initial assets is a task for which the subordinate Wing and Base level elements require enhancement of capabilities to actually do the necessary work and render timely reports to the staff.

The development and utilization of advanced technology in weapons, and systems for their employment, is a major source of additional effort for the Personnel and Materiel staffs. Since technology has so far concentrated on greater capabilities rather than easier support, new systems imply new skills and new sets of essential components which must be closely controlled. Force structures involving fewer Mission-Design-Series aircraft types and extensive commonality among ground control elements and communications are relatively easier to support with the concomitant simplification of the support management process. The prospect in the 1975 to 1985 time frame is for continued proliferation of types of vehicles, weapons, and ground control equipment coupled with higher activity rates which will severely challenge the maintenance and supply systems. The same effects will be observable in the personnel area in terms of skill categories which are low in quantity in the forces thereby heightening the impact when such personnel become non-available.

2-10

Table 2.1.2-2. Related Operational Planning Factors

Planning Factor	Agency	Minimum Force	Medium Force	Maximum Force
Tactical Aircraft		109 Aircraft	288 Aircraft	522 Aircraft
Sortie Rate 1.2 (Availability 71-85%)		92-111 sorties/day	245-294 sorties/day	445-532 sorties/day
Mission/Sortie Relationship		Fighters – 4 sorties/mission	Same	Same
		Recce – 1 sortie/mission	Same	Same
		Airlift – 10 sorties/mission by 1 A/C	Same	Same
Special Missions		10/day	20/day	30/day
Loss/Damage Rate		2% force/day (Loss – 1% Damage – 1%)	Same	Same
Tactical Air Units (or Squadron)		7	16	29
TACS Elements		5	7	10
Tactical Wings		2 (equivalent)	7 (actual)	10 (actual)
Air Bases		2	4	7
	Deputy for Personnel	Special Staff	General Staff	General Staff
			Military Personnel	Personnel Plans
			Civil Affairs	Officer Branch
				Airmen Branch
				Civilian Personnel
	Deputy for Operations	General Staff	General Staff	General Staff
		Tactical Oper. (TACC)	TACC	Tactical Air Control System
		War Plans	War Plans	War Plan
			Tactical Air Oper	Tactical Air Operation
				Communications-Electronics
	Deputy for Materiel	General Staff	General Staff	General Staff
		Supply	Logistics Plan	Logistics Plan
		Transportation	Supply	Supply
		Maintenance	Transportation	Transportation
			Maintenance	Maintenance
				Munitions
				Procurement

Communications is one area of technological development which deserves individual attention because of its key role in making command and control possible. Advanced Personnel and Logistics management requires more communications facilities to transfer the necessary information in a timely manner. Two major problem areas affecting communications are frequency spectrum availability and security; these problems are severe now and the prospect is that they will become more severe in the future. Efforts to ameliorate these problems are already underway and are within the state of the art of today's technology. These measures, which are expected to be introduced to widespread common use in the 1975-1985 time frame, include digital signaling and the use of satellites for effective worldwide communication. Digital techniques alone provide multiple benefits in the areas of spectrum space and security. Basically digital techniques increase channel range, make more efficient use of facilities through the discipline required to encode reports digitally, allow easy application of security measures, and interface directly with information processing facilities. The importance of the last point is illustrated by the results of the Interface Analysis wherein the daily communications loads were shown to be no severe burden to communications, but were estimated to constitute a considerable challenge to staff personnel in terms of receiving and employing the information. Selectively applied Automatic Data Processing, directly interfaced with digital communications will provide a

major advance in capabilities without aggravating existing problems.

A more subtle contribution of effective communications can be, and has, been realized in connection with the allocation of functions to force elements and echelons of command which are not necessarily at the immediate location of the managed effort. While such concepts cannot replace the on-the-scene leadership and supervision, they may be able to relieve the action elements of much tedious bookkeeping and paperwork. A degree of centralization of force information processing will also benefit command by allowing ready integration of force status and assessment of overall trends with more timely exposure of information for Command decisions. The personnel systems have made great strides in this area with their base and MAJCOM ADP aided personnel information and reporting systems. In this case centralization of information analysis efforts includes the feedback of summary and analytical products to lower echelons which could not have been produced with reasonable organic capabilities.

Another aspect of military operations which is evolving new capabilities for the post 1975 time frame is transportation. Southeast Asia operations have demonstrated what can be done by strategic and tactical airlift in support of combat elements for emergency resupply and redeployment. The compression of time scale available through the use of airlift is also reflected into the requirements formation, distribution control and transportation management aspects of the personnel and logistics systems. Aeromedical evacuation is an example of an area which has become a major multistaff and multiservice activity with concomitant increases in workload and information flow needed for effective management. The concept of the LRC is strongly associated with airlift support for essential and critical items and is an example of an emerging staff concept designed to cope with special needs in a compressed time frame.

All of the foregoing areas represent dimensions along which the USAF is evolving. The sum total of these developments will be a highly flexible and efficient capability to meet Tactical Air Force responsibilities at any scale, anywhere. While a forecast of the potential needs and operation which may be encountered in the Post 1975 time frame is beyond the scope of this effort, it can be appreciated that the nature, size, and duration of future conflicts have an influence on the AFCCP concept and upon the roles of the Personnel and Materiel staffs. Only a limited view of force variability was employed in this study in response to the direction to consider the minimum, medium and maximum force structures associated with division, corps and field army size actions. These force structures did serve however to illustrate the range of capabilities required of system solution concepts. Size

flexibility through modular staff facilities has been shown to be a key requirement and its attainment will provide the best possible posture for dealing with future contingencies.

2.1.4 General Problem Areas

During the course of the Personnel and Logistics study a number of problem areas were identified which are more generally associated with the AFCCP than with the specifics of its Personnel and Logistics functions. These problem areas were pointed up during the study by the scarcity of regulations and manuals which treated specifically of the AFCCP Personnel and Logistics staffs and the fact that an appropriate parallel to these staffs was very difficult to identify in today's Air Force. While this apparent lack of definition of the AFCCP constituted a difficulty for this study, it is not regarded as a major deficiency of current doctrine. Also, it was noted that experts in the Personnel and Logistics areas are largely aware of these problems at many levels and are conducting efforts to correct these problem areas with interim procedural changes and new doctrine. In fact, many measures are available to resourceful commanders to weld together the capabilities needed in a specific situation from trained logistics and personnel people. A problem may be presented as the time that it takes to assemble such an organization and in the availability of trained personnel whose experience is consistent with the needs of a headquarters staff position.

Another general aspect of the AFCCP problem is concerned with the functions performed by the staff as opposed to those performed by the personnel and logistics elements at Wing and Base levels. During the study a number of functions were identified which required execution at some level in order to provide for comprehensive status and trends visibility so that policy decisions leading to Command Direction and Guidance could be made. These functions were allocated to the staff by analogy with their handling in the Major Commands. The principal result of the study, namely: the need for improved information handling capabilities, was the direct result of this attempt to define comprehensive and timely staff capabilities.

The following discussion presents additional detail on the general problems associated with the concept of the AFCCP as they have become visible to the study team. Problem areas discussed are AFCCP staff responsibilities, training and readiness, and compatibility with subordinate/lateral/higher interfacing organizations. In this discussion of deployed Tactical Air Force Headquarters Personnel and Logistics staff it must be recognized that the following observations are made in the absence of detailed doctrine for this emerging area. Furthermore, this introductory discussion is aimed at some of the high points of the problem and is not an attempt to be definitive.

AFCCP staff responsibilities are regarded as substantially distinct from those of the Wing/Base/Squadron organizations and similar but not identical to those of the MAJCOM staffs. The distinction from subordinate commands arises out of the Wing/Base need to implement the supply, service, maintenance and transport actions necessary to achieve and maintain force capabilities. The headquarters staff on the other hand is concerned with integration of force status and requirements on behalf of the Air Force Component Commander, the supervision of subordinate element's conformance to procedures and standards, the dissemination of policies and guidance, the establishment of special support arrangements, and numerous special tasks as required. The problem faced by this staff is to acquire and process sufficient information to accomplish timely and comprehensive force management without reaching the complexity of information used in the MAJCOMs to support additional objectives such as training, career management, and the numerous ancillary tasks of the in-garrison environment.

Naturally, the longer a contingency, the more complex the duties of the staff. But, concentrating upon the combat related aspects of personnel and logistics, major problems in information handling are evident. Staff supervision of subordinate element activites can require monitoring of numerous communications with supporting agencies and complex correlations of records: the proper balance between detail and effort is essential. Staff supervision cannot be abandoned in the contingency environment because strict adherence to established procedures is the most effective way to assure the efficient maintenance of a sustained force capability. Integration of unit status and requirements is an activity where the staff can materially aid the units and support operations by relocating critical assets and skills. Collection of force status and operating information is also vital to establishment of planning factors and the projection of force status in support of operations plans. Hence, the benefits of a large information volume must be weighed against the penalties incurred in staffing, handling equipment and communications required to handle this information. Allocation of information processing functions to subordinate units must be extensively used to avoid overload at staff levels.

Training and readiness considerations are fundamental to the establishment of a viable AFCCP concept. A basic problem area appears to be that no current team exists to man such an agency in the event an AFCCP must be deployed in support of a contingency except for the headquarters of the 19th Air Force. In addition, the elements of the AFCCP staff have no day to day counterpart in the peace time or in-garrison situation through which they can be trained as a team for eventual deployment. Elements of a contingency headquarters which would be drawn from other numbered Air Force headquarters to augment

19th Air Force personnel would have to be integrated in a short time into jobs which are substantially different from their normal tasks.

If the AFCCP is developed in the future with automation aids for staff elements, steps will have to be taken to operate and maintain the equipment on a continuing basis, that is to give it an in-garrison mission. In addition, it will be necessary to establish procedures for initialization of the system for specific deployments and its activation in the deployment area with the subsequent ability to expand or contract in capabilities as dictated by the needs of the situation. The current system containing tents, desks, telephones and people could hardly be more mobile and flexible but more sophisticated information handling and analysis capabilities appear to be required for optimum effectiveness in logistics management. Personnel functions and facilities for the deployed forces have been addressed by TAC and Military Personnel Center (MPC) and significant progress has been made through the use of PERSCO and Personnel Control teams.

Compatibility of AFCCP systems and information requirements with those prepared by subordinate units for supporting agencies such as AFLC, MPC and the host and parent MAJCOMs is another general problem area. Current systems such as PERSCO are strongly oriented to the needs of the parent MAJCOM for the TDY phase of operations and rely upon communications facilities and information analysis equipment not present in the current concept of an AFCCP. It has not been possible to establish a firm position on the appropriateness of AUTODIN data systems and even of ADP equipment in the short term, minimum force deployment situation. Nevertheless all agencies supporting a contingency force, of whatever size, employ ADP to so great a degree that the AFCCP staffs may be forced to employ compatible data handling equipments to obtain the information necessary for comprehensive staff support to the Commander. The development and projected wide use of digital communications for command/control in the forces will also heighten this forcing effect.

The foregoing discussion has attempted to mention the general kinds of problem areas associated with the AFCCP concept in the areas of Responsibilities, Readiness, and Compatibility. The study team is aware of efforts in TAC and other commands to address these problems and anticipates their resolution through a consistent integrated capability which can achieve improved effectiveness.

2.2 ANALYSIS OF LOGISTICS SUBSYSTEM REQUIREMENTS

The functional requirements of the Logistics Subsystem (LSS) of the AFCCP have been developed and were presented in the Functional Analysis Report. Interfaces of the LSS were established in relation to

LSS functions and detailed with data base files and messages in the Interface Analysis Report. This discussion will repeat some of the previously developed information in order to provide a clearer and more independent development of LSS limitations and problem areas. The following discussion presents a review of the functions performed by the LSS, its relationship to interfacing materiel organizations, and the necessary performance parameters of data base size, interface communication requirements and compatibility requirements. Then, an assessment of observed and derived limitations on AFCCP D/M staff efficiency and effectiveness and of problem areas which have an impact on TACC effectiveness is presented.

2.2.1 Functions Performed by the LSS

The PLSS Functional Analysis Report provided the basic descriptions and interrelationships of D/M staff activities and functions. These functions of the LSS have been further indentured and correlated with each of the basic elements of the LSS. Specifically, the LSS elements defined for this analysis include plans, supply, munitions, transport, maintenance, and procurement. Functions performed by these elements are:

a. The plans element of the LSS performs the following functions:

(1) Monitor and summarize activity rates for major W/S and equipments (this includes flying time, operating time, etc.).

(2) Monitor and summarize consumption rates of expendables, i.e., POL and Ammunition.

(3) Monitor and summarize major End Item and spares usage of repairables and nonrepairables. Establish cycle times.

(4) Develop and modify planning factors reflecting observed usage rates.

(5) Evaluate operations plans feasibility based on current and projected availabilities. Identify level of effort needed to support and determine feasibility of achievement.

(6) Develop, through coordination, methods and procedures for resupply and depot support of the deployed force.

(7) Maintain an LRC to follow and expedite critical items in transport and distribution.

b. The supply element of the LSS performs the following functions:

(1) Monitor current status, quantity and distribution of supply classes relative to standard levels. Monitor War Readiness Material (WRM) status.

(2) Arrange and coordinate with supplier on pipeline levels for repairables and resupply

items. Prepare transportation requirements for input to transportation section.

(3) Monitor and expedite Not Operationally Ready for Supply (NORS), (ANORS), and other critical items.

(4) Maintain master schedule of entering assets.

(5) Maintain master financial status.

(6) Supervise supply control procedures of subordinate supply elements. Assure the maintenance of supply discipline.

(7) Supervise operations of Forward Support bases.

(8) Coordinate with procurement on materiel acquisition.

c. The LSS munitions element performs the following functions:

(1) Monitor current status (quantities and distribution) of munitions items and services.

(2) Integrate and evaluate scheduled munitions resupply.

(3) Process munitions redistribution requirements in response to special needs emanating from bases and TACC.

(4) Coordinate munitions items problems with other services.

(5) Generate munitions transport requirements.

d. The LSS Transport element performs the following functions:

(1) Arrange/coordinate on all transport to/from the objective area (with JTF, MAJCOMS and TOAs).

(2) Integrate and establish priorities on transport requirements from D/M directorates and forward to/coordinate with intra-area transportation control elements (i.e., ALCC, ARmy, others).

(3) Maintain general status of transport resources available intra-area.

(4) Follow and expedite movement of critical items.

(5) Integrate transport requirements and schedules for evacuated materiel and personnel.

e. The LSS Maintenance element performs the following functions:

(1) Supervise subordinate maintenance elements to assure effective maintenance management.

(2) Monitor current status (quantity and distribution) of possessed maintenance and servicing

capabilities in terms of skills, tools, and facilities. Maintain detail status on 'high value' skills distribution and requirements.

(3) Monitor repairables flow, Due In From Maintenance (DIFM) and Not Operationally Ready-Maintenance (NORM) conditions.

(4) Evaluate maintenance utilization and formulate and integrate requirements for additional support.

(5) Establish/coordinate depot support.

(6) Coordinate with supply and munitions on essential and critical parts and supplies.

(7) Integrate major end-item maintenance scheduling to coordinate with force operations as appropriate. Promulgate command guidance for such items as time changes, TCTOs, etc.

f. The LSS Procurement element performs the following functions:

(1) Identify local sources of supply category items.

(2) Develop local procurement plans and budgets.

(3) Select sources and administer procurement actions.

(4) Coordinate transport and distribution requirements from sources to users.

(5) Arrange for materiel receipt and quality control.

(6) Supervise and coordinate with Base procurement activities.

2.2.2 Interfaces of the Logistics Subsystem with Other Materiel Agencies

The deployed AFFOR is supported by and is a participant in the total USAF Logistics capability from AFLC through the MAJCOMs to the tactical units comprising the Force. Under the concepts of tactical readiness and employment now in effect the tactical units are the focal point of supply and maintenance control and implementation as the ultimate consumers of these services. The tactical units (and command and control units) translate effective logistics support into operational capability. Figure 2.2.2-1 illustrates the general support relationships between the AFFOR and major USAF organizations.

The overall management of supply operations in the Air Force is under the cognizance of the AFLC which is charged with procurement, distribution and accounting of Air Force supply items including weapon systems. Within each MAJCOM and within the deployed AFFOR, the D/M and staff at each level is responsible for the efficient management of materiel and logistics matters within the command. Figure 2.2.2-2 shows the relationship between AFLC, an operating MAJCOM,
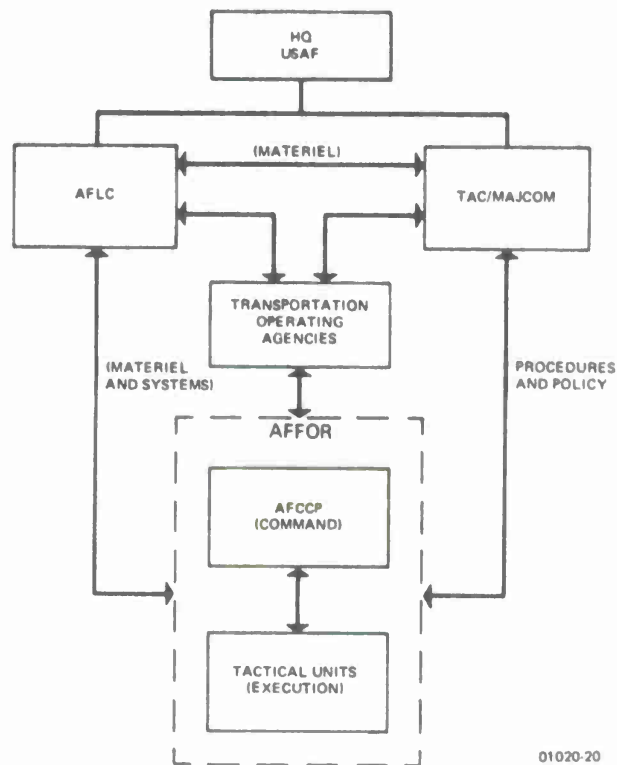
Figure 2.2.2-1. Principal USAF-Deployed AFFOR Support Relationships

TAC as an owning command, and the deployed AFFOR. The subordinate AFFOR materiel elements use automated data processing (punched card) techniques at fixed bases for supply reporting to AFLC which is necessary to AFLC asset management. There is a two-way information flow between the D/M at the AFCCP, AFLC and its prime AMAs, and with the Materiel Staff at the MAJCOMs. Materiel operations within the deployed force are supervised and coordinated by the Deputy for Materiel and Staff at the AFCCP. Figure 2.2.2-3 illustrates the interfaces of the AFCCP LSS with AFFOR elements for the maximum deployed Force.

The AFFOR Materiel System for specific contingency situations, together with peculiar or unique requirements for support of the deployed Air Force, is identified in the Log Annex of the primary Operations Plan/Order establishing the Force. Any special guidance and direction which is necessary concerning the support of forces in specific areas is provided by USAF Headquarters and coordinated through the deploying and employing MAJCOMs. Generally, basic doctrine of organizational practices and procedures is employed. In this context, the D/M staff of the AFFOR headquarters exercises supervision over, and acts as the coordinating agency for materiel matters for the deployed forces.
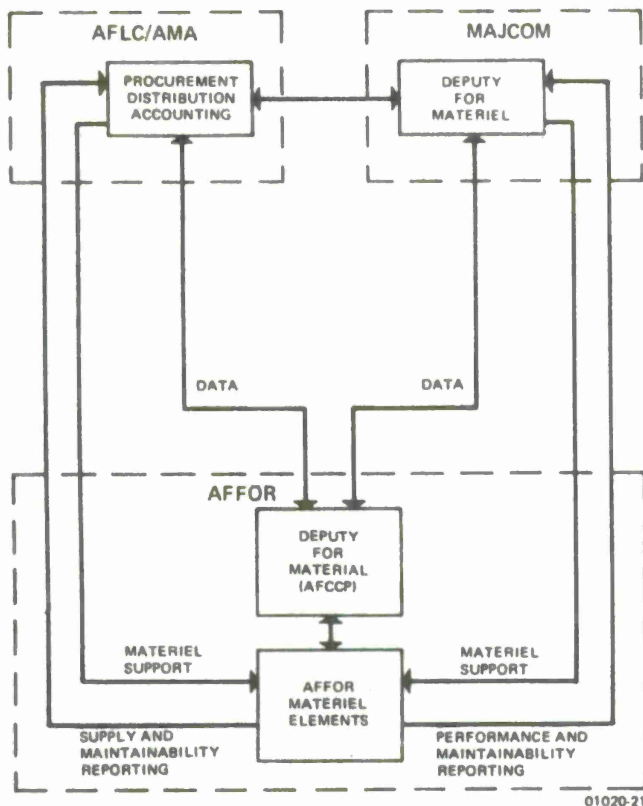
Figure 2.2.2-2. USAF Materiel System

The D/M and his staffs are considered to constitute the Logistics Subsystem of the AFCCP, for this study. The functional activities of the various staffs or directorates of the LSS have been cited in section 2.2.1, and in the Functional Analysis Report. The D/M directorate of Log Plans is usually designated to be responsible for the maintenance and operation of a Logistics Readiness Center, LRC, to expedite actions on critical aspects of supply and maintenance and to provide materiel information to aid the Commander in his decision making. Accordingly, the LRC performs as a point of contact for logistics information for the D/M staff as schematically depicted in Figure 2.2.2-4. The LRC functions as a discrete facility, appropriately staffed, maintaining display and status boards to provide visibility of data reflecting current status of selected AFFOR resources. The facilities are usually located in close proximity to the Operations Center or are tied to it by 'hot-lines.'

At the Wing levels and lower, the materiel systems have recently been changed by the issuance of TACM 66-31, dated 31 July 1970. Previously, the wing/group base structure (Figure 2.2.2-5) stressed support to the Wing Commander to aid him in mission orientation. The Commander had reporting to him, in addition to a minimum number of chiefs of special offices, only the chiefs of organizational elements essential to his primary mission; for example:

a. Deputy Commander for Operations (or Mission).

b. D/M.

c. Support Group/Squadron Commander.

d. Hospital/Dispensary Commander.

Aside from relieving the Commander of direct supervision of other elements, this dual deputy and support group structure permitted the D/M to institute a centralized hierarchy of Wing maintenance capability. Essentially, the mission squadrons had retained so-called flight line maintenance capability while relying upon the Wing Support Group for organizational and intermediate maintenance support (Figure 2.2.2-6). Maintenance control and the MCC were Wing functions and allocated and scheduled maintenance resources for the entire Wing. The recent guidance of TACM 66-31 has changed the centralized maintenance structure to a decentralized structure aimed at greater squadron capabilities and relative independence of the Wing structure.

The basic impact is illustrated in Figure 2.2.2-7, Current Wing Organizational Structure. The Wing Commander now has his Director of Operations and of Materiel as before, but he now also has Field Maintenance Squadron, Supply Squadron, Recce Tech Squadron, and the Tactical Squadrons reporting directly to him. The current organization of the Wing Director of Materiel is illustrated in Figure 2.2.2-8. The current Tactical Squadron is presented in Figure 2.2.2-9. The change involved placing maintenance control at the tactical squadron and the capability for organizational maintenance, including required personnel and equipments. In addition, munitions services and maintenance training are placed under the squadron Materiel Officer. In addition to these recent developments, further description of the Materiel System includes basic comments on the supply activites.

The above developments concerning the newly decentralized maintenance capabilities run counter to the latest developments in Supply doctrine. AFM 67-1, and related TAC Supplement No. 1, 7 April 1970, indicate greater centralization by directing the Chief of Supply in reorganized wings to report to the Wing Commander instead of to the D/M. An example of a new functional requirement for management by the Chief of Supply is the Electronic Asset Control Center (EACC) at principal bases to manage critical or insurance type items of communications, electronics or missile equipment. However, basic supply units will continue to be organic to the Tactical Squadrons with resupply provided from the designated AFLC/AMA.

2.2.3 Logistics Subsystem Performance Requirements

The AFCCP LSS qualitative performance needs have been determined in terms of data base content and approximate size and in terms of communications
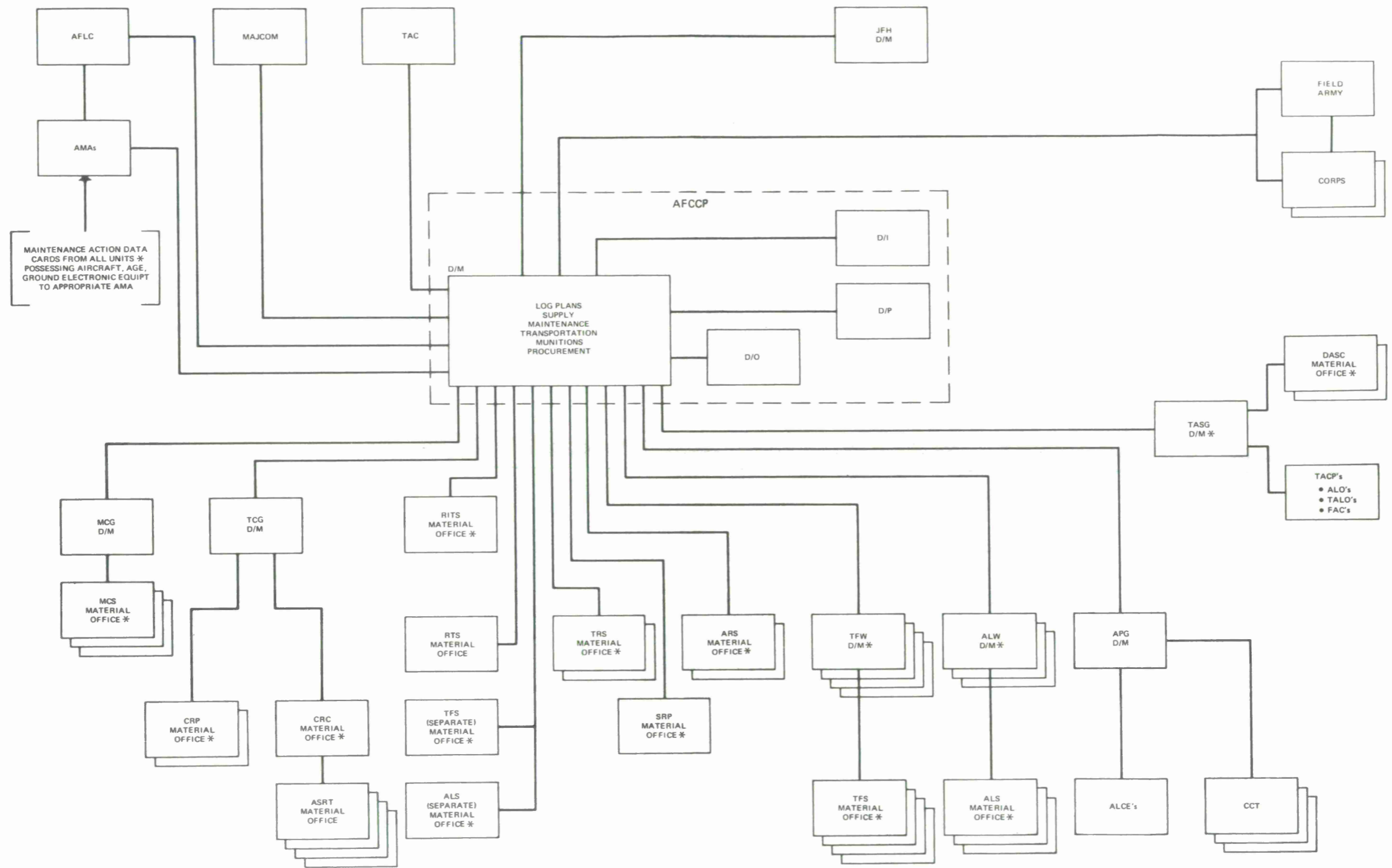
Figure 2.2.2-3. Materiel/Logistics Operations System Elements (Maximum AFFOR)
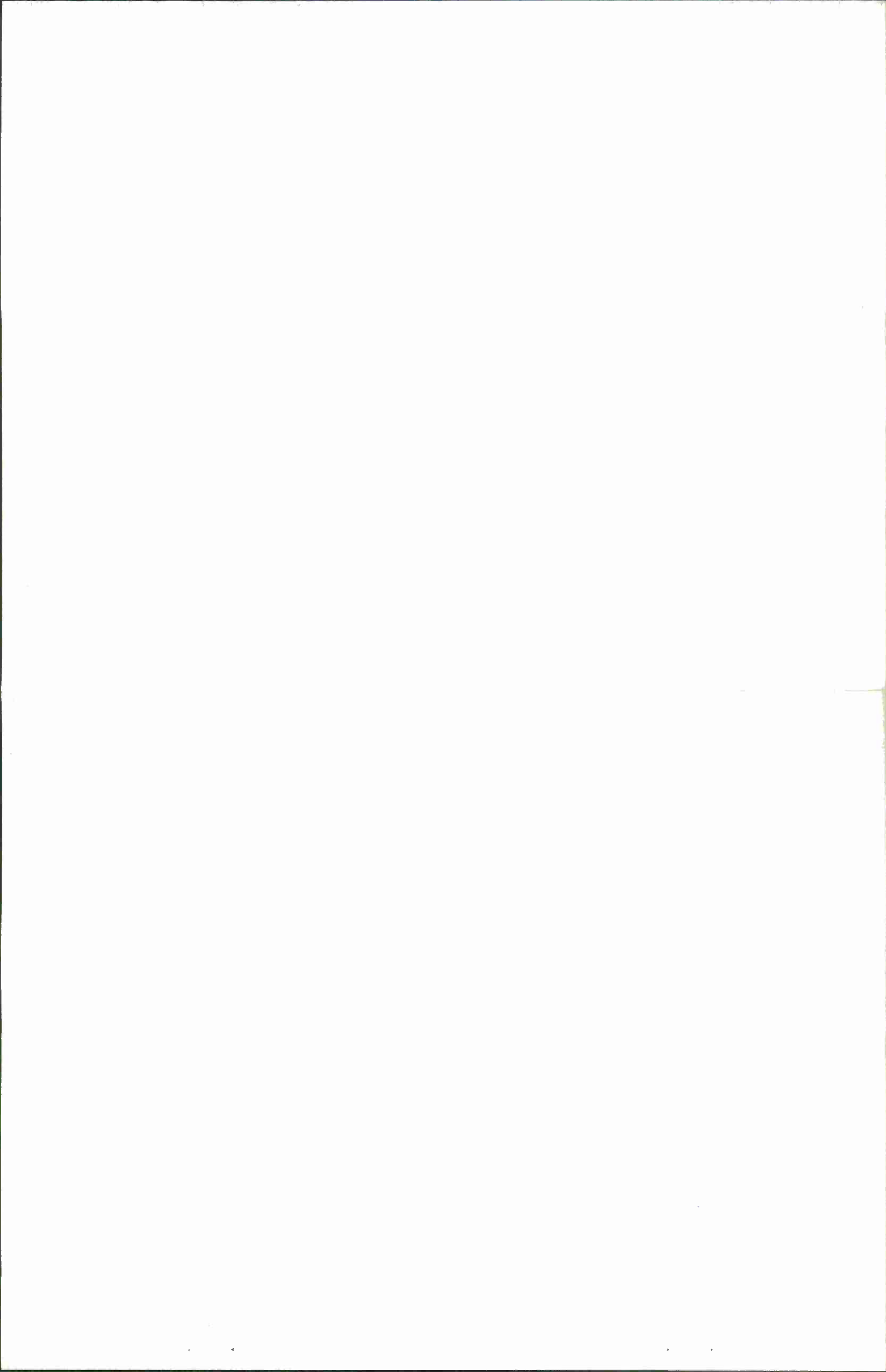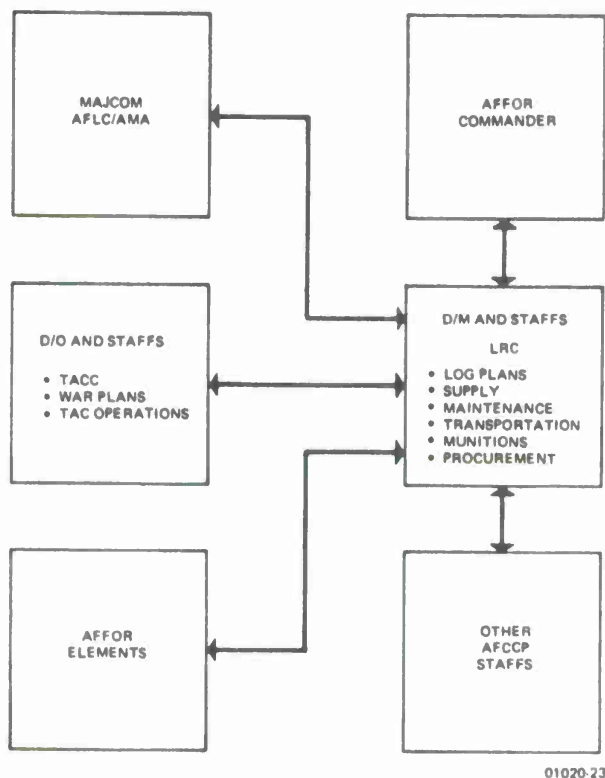
01020-22

01020-23

Figure 2.2.2-4. AFFOR-LRC (The Expanded
Interface for AFFOR Resources Data)

traffic. Another vital dimension of performance is the
processing required to implement the functions of the
staff. The definition of such processing requires an
establishment of details which were beyond the scope
of this study. In addition to functional performance,
there is a major concern in LSS requirements for
compatibility with existing related systems at all eche-
lons of command and in supporting agencies. The
following discussion presents a summary and review of
the data base, message traffic, backup features and
possible performance growth requirements of the LSS.

The data base files defined in the Interface Analysis
Report are repeated in Table 2.2.3-1 and oriented to
the staff directorates which employ them. Some of the
files and the functions that they serve are more
strongly oriented to support of the TACC for various
purposes as shown in Table 2.2.3-2 for the minimum,
medium and maximum force levels. In general, those
files associated with assessment of usage rates for
planning factor determination and projection of force
status are most voluminous. In addition, it is recog-
nized that some of the files represent data which may
not now be collected because of the substantial effort
involved in using such data; this aspect of information
collection and utilization is regarded as appropriate to
the more precise management control visualized as
appropriate to the post 1975 time frame. The file sizes

used by each staff element are summarized in thou-
sands of equivalent 80-column cards as:

a. Plans – 69/120/186.

b. Supply – 69/93/132.

c. Munitions – 13.2/28/53.

d. Transport – 1.7/3.6/8.

e. Maintenance – 1.2/3.1/6.1.

f. Procurement – .7/1.4/2.8.

The communications requirements on the LSS have
been found to be extensive in terms of the number of
different types of messages which must be handled.
The extensive data base structure also has implied a
considerable traffic of update information. Much of
the information communicated to the LSS involves
relatively routine information which is used in con-
junction with other data to establish trends and de-
velop planning factors. A far smaller amount of infor-
mation is concerned with special event or critical item
or incident reporting which conforms to the normal
communications policies of reporting by exception.

The necessity for the collection of extensive informa-
tion at the AFCCP in order to establish Force-wide
status, trends, and planning factors suggests that other
methods be found for the preparation of such analyses.
Employing alternate analysis and data collection meth-
ods would be essential if there were a scarcity of
communications services or for larger force structures
than those considered in this study. Ideally, the staff
requirement for information handling should not ad-
vance very rapidly with increases in force size. Such an
objective might be met by requiring summarization of
status and activities by the report originators.

The total message list is presented in the Interface
Analysis Report and is summarized in Table 2.2.3-3
where the number of message types associated with
major categories of LSS activity are specified.

The LSS was found to require the TTY, Voice, and
other communications capacity shown in Table 2.2.3-4.
This table presents postulated average and peak-mes-
sage rates per day for each interface. Transmission
rates were derived based on a postulated peak time
period within which all messages have to be transmit-
ted. Taking the worst case which is the digital-data-
link between the LSS and the subordinate elements in
the maximum force level (600,000 characters incoming
a day without additional bits for error checking and
acknowledging) of approximately 25 minutes based
upon a possible data rate of 2400 bits per second (400
char/sec). The message rates to the other interfaces are
much smaller (3,600 to 100,000 char/day) at maxi-
mum force level. The heaviest TTY – communication
traffic occurs between LSS and the subordinate ele-
ments (350,000 characters per day incoming to LSS).
With the today's possible communication rate of 900
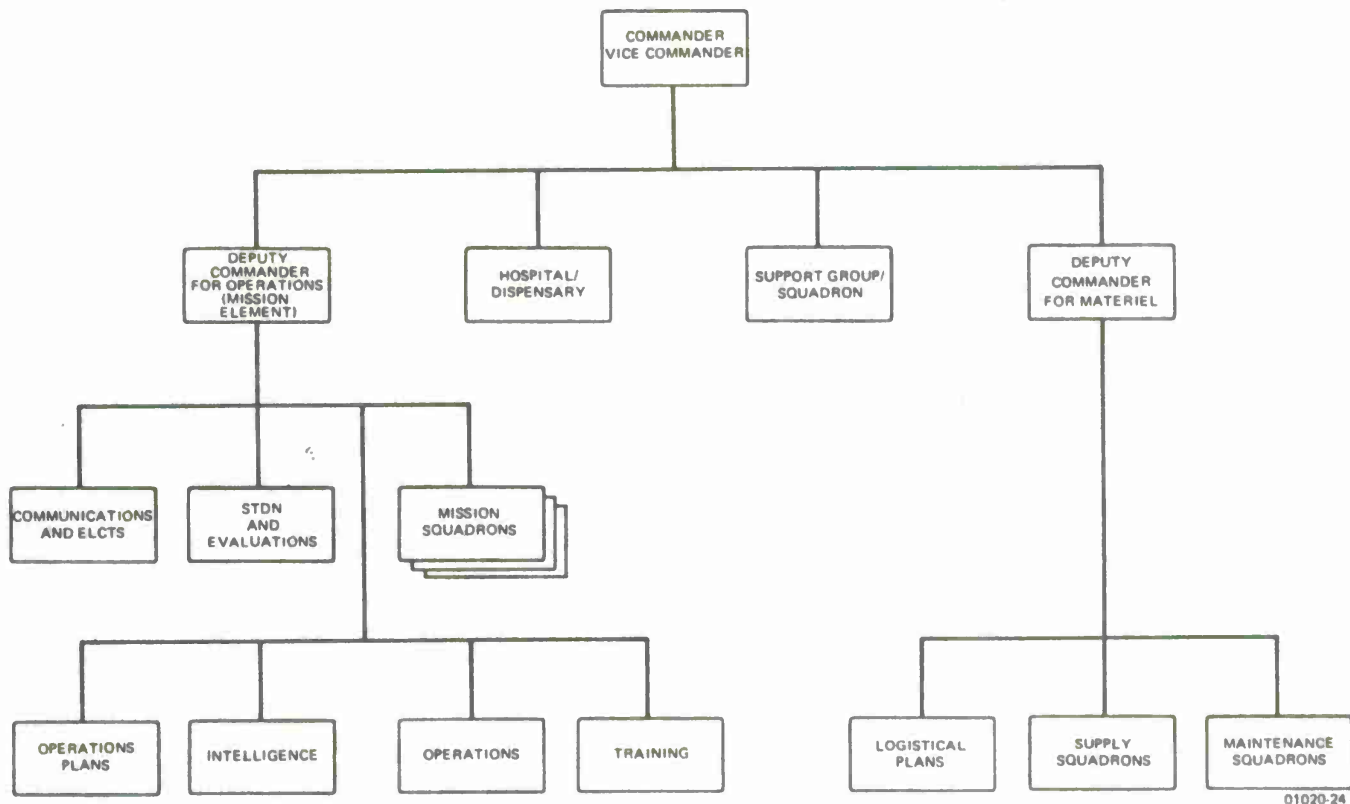
Figure 2.2.2-5. Previous Wing/Group Organization Structure
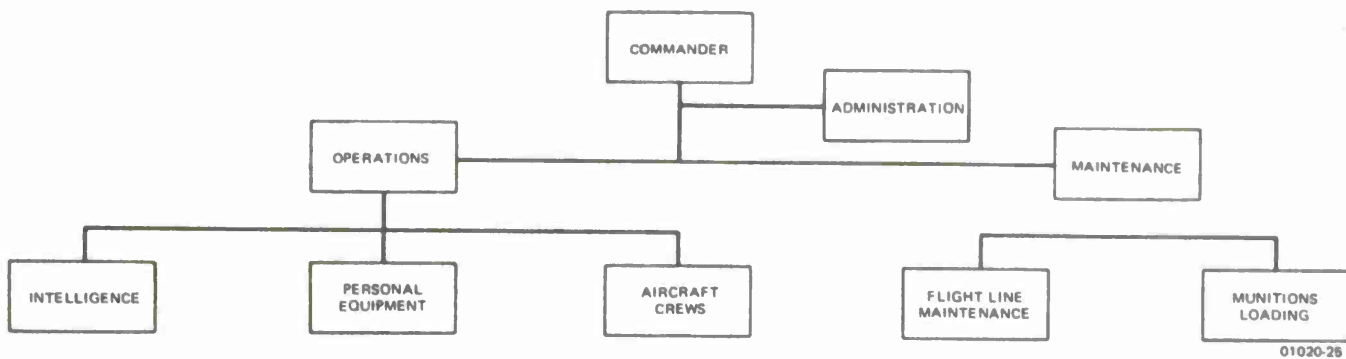
Figure 2.2.2-6. Previous Tactical/Mission Squadron Organization Structure

characters per minute it would take about 7 hours to transmit all the messages without interruption. The remaining TTY communications load is however much smaller. The LSS - Voice Channels show a fairly constant load over all interfaces (1400 to 3000 characters/day at minimum force level and 12,000 to 51,000 character/day at max. force level). With a possible voice transmission rate of 500 characters per minute it would take approximately 100 minutes for the peak case. With average voice rates of 100 characters per minute the time is 8.3 hours.

The LSS supporting the TACC incorporates redundancy in resource status reporting and has inherent backup capabilities in the materiel management functions of the Bases. Examination of the message catalog in the Interface Analysis Report demonstrates this redundancy for materiel and logistics status messages. The L-500 series of messages deal with status reporting by subordinate AFFOR elements to the AFCCP D/M. It should be noted in each case there is an alternate source for the resource data. The interface between the AFCCP D/M and staff and the Deputy for Operations staffs in the TACC, War Plans and

2-20
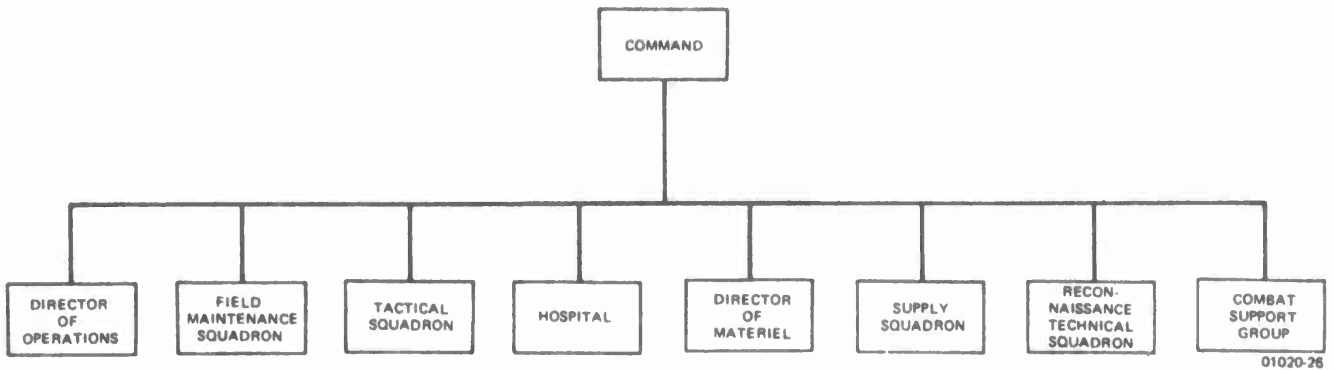
Figure 2.2.2-7. Current Wing Organizational Structure
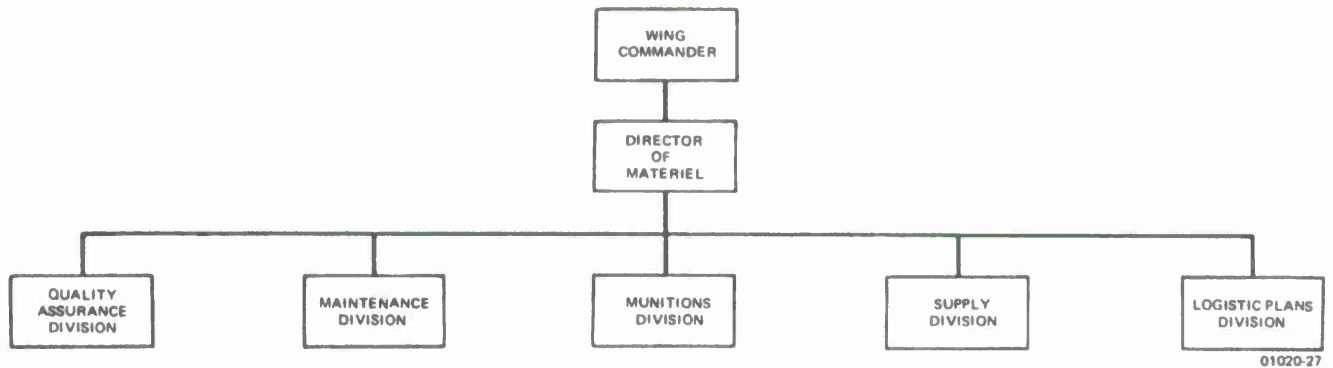
Figure 2.2.2-8. Current Wing Director of Materiel Organization

Tactical Air Operations by voice and text. There is no redundancy for messages originating within the D/M destined for the Deputy for Operations area. The LSS design is evolutionary in nature in supporting the automated TACC.

2.2.4 LSS Problem Areas and Deficiencies

During the Data Collection field trips (Task No. 1), it was ascertained that direct LSS support to the TACC is:

a. Very limited in CONUS and PACAF TACC installations, (per reports based on the recent experiences of both Operations and Materiel officers who were involved in relevant positions at the AFCCP levels).

b. Not exercised, or even involved, in the many field exercises and CONUS deployments of recent years: e.g., Gamecock VI and VII, Bold Shot-Brim Fire, Exotic Dancer III (they are *too brief* to exercise materiel support).

c. Related to convenience of data access. When a materiel (LSS) representative was located in the TACC, he was an active contributor. Without him, the 'hot lines' to the TUOCs were used

while the 'dial-up' lines to the D/M's staff at the AFCCP were seldom used.

With these preliminary observations, the specific problem areas identified in this study are discussed in the following paragraphs.

In support of TACC operations, increased capability of the automated TACC in the post-1975 environment, will require performance equivalence of the LSS. The AFCCP D/M staff will require electronic data processing assistance to maintain responsive compatibility with the TACC, with the subordinate materiel elements the associated lateral force units (Army, Navy, Marines), and the AFLC/AMA/MAJCOM reporting requirements. Additionallly, maintenance of AFFOR-wide cognizance of materiel allocations, distributions, and requirements will require an extensive data base, updating and adjustment. Manual files require increased numbers of staff personnel, with significant time delays, to develop and provide data. Consequently, the provision of LSS support to the TACC will require that commensurate/compatible EDP capability be provided to (or be available for) LSS operations.

In support of TACC operations, increased detail and

```
                        ┌──────────┐
                        │ COMMAND  │
                        └──────────┘

    ┌─────────┐  ┌─────────────┐  ┌──────────┐  ┌──────────┐
    │ MEDICAL │  │ INTELLIGENCE│  │ SQUADRON │  │ WEAPONS  │
    │         │  │             │  │ SECTION  │  │ SYSTEMS  │
    │         │  │             │  │          │  │ SECURITY │
    └─────────┘  └─────────────┘  └──────────┘  └──────────┘

      ┌────────────┐                    ┌──────────┐
      │ OPERATIONS │                    │ MATERIEL │
      └────────────┘                    └──────────┘
```
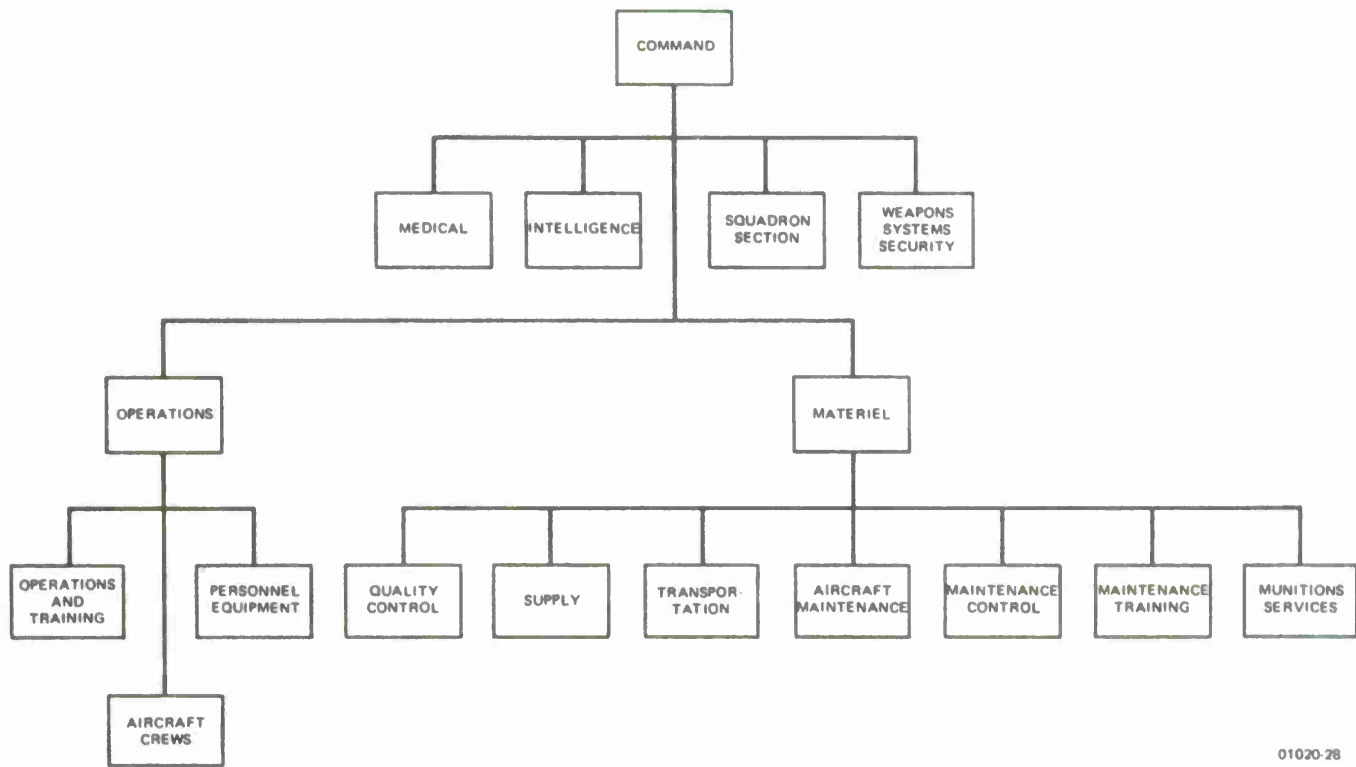
Figure 2.2.2-9. Current Tactical Squadron Organization

(Organization chart — boxes: COMMAND at top; second level: MEDICAL, INTELLIGENCE, SQUADRON SECTION, WEAPONS SYSTEMS SECURITY; third level: OPERATIONS, MATERIEL; under OPERATIONS: OPERATIONS AND TRAINING, PERSONNEL EQUIPMENT, and AIRCRAFT CREWS; under MATERIEL: QUALITY CONTROL, SUPPLY, TRANSPORTATION, AIRCRAFT MAINTENANCE, MAINTENANCE CONTROL, MAINTENANCE TRAINING, MUNITIONS SERVICES.)

01020-28

currency of data will be required. For example, aircraft resource status is now received by the TACC via TACS from information generated at the TUOC. In a combat environment, this resource status will be received during or after the debriefing of the flight crews. The tactical unit MCC is the first recipient of the aircraft status data after aircraft return from a mission. If unscheduled maintenance is required, the planned AF-FOR resources are reduced. Reports of aircraft non-availability generated by the MCC for the LSS include an estimated time for return to combat readiness. In the 1975 time frame, the capability for such earlier status reporting from the LSS to the TACC, estimated at from 10 to 15 minutes, may be essential.

Another example of how increased detail and currency of data can be developed for the TACC is described as follows:

Tactical unit maintenance status reports (TAC K29) normally are sent four times daily (in DEFCON 5) to the AFCCP D/M. This status report includes the estimated time to return to combat readiness for aircraft undergoing maintenance. Such information concerning resource status provided by the D/M to the TACC would be more accurate than the 'average day' projections of aircraft availability currently used for TACC operations. Average day projections reflect

the past 3 (or past 30) days experience in the Squadron's activities.

An example of the need for increased detail and currency of data is as follows:

There is no pylon configuration reporting system currently in use in the TAC. Operations frag orders in both Vietnam and in CONUS are generated and sent to tactical units who may be unable to comply with the selection of ordnance, because the pylon configuration of possessed aircraft will not accommodate desired weapons or munitions.

Planning factors, predictions, and evaluation data are required in support of TACC operations. Currently there is no system set up whereby the Materiel staff can be made more responsive to the needs of the operations. An example of this deficiency is the fact there is no current system whereby LSS personnel can readily advise TACC operations personnel of the effects of higher or hyperactive sortie rates upon the overall force posture. Continued abnormally high sortie rates could result in a major degradation of force capability but reasonably precise estimation of effects requires time consuming analysis which is difficult to accomplish in the staff because of the lack of detailed unit data.

Table 2.2.3-1. Data Base File Usage

Plans File	Supply Files	Munitions Files	Maintenance Files	Transport Files	Procurement Files
Aircraft History	WRM Status	Munitions Current Status	Maint Reporting Control/Error Log	Current Transport Requirements	Purchase Log
Major End Item History (CEM, Veh, OGE, etc.)	Current Requisitions	Ordnance Technical Data	Maint Key Personnel	Transport Resources Abstract	Qualified Sources File
POL Assets Usage (C3-A)	Supply Movement Abstract	Munitions Movement Abstract	Maint Resources Status	Critical Items Movements	Local Procurement Actions Summary
Ground POL Usage (C3-W)	Stock Cost Listing	Current Supply Status Scheduled Acquisitions	Special Skills Locator		
Ammunitions Usage (C5)	Consumption Budget (Plan)		Repairables Flow Summary		
Subsistence Consumption (C1)	Supply Error Record		NORMS, NORS File		
Class 2 Usage – Ind Equipment and Tools	Base Capacity Report		Workload Dist Summary		
Class 4 Construction Usage	Local Procurement Actions Summary		Time Change Summary		
Class 8 Medical Usage	Local Procurement History				
Class 9 Repair Parts Usage	POL Assets Usage (C3-A)				
WRM Spares Usage	Ground POL Usage (C3-W)				
Operations Plans	Ammunition Usage (C5)				
Frag Orders	Subsistence Consumption (C1)				
Log Annex Working File	Class 2 Usage – Ind Equipment and Tools				
Log Planning Factors	Class 4 Construction Usage				
Current Status of Supply	Class 8 Medical Usage				
Schedule Acquisitions	Class 9 Repair Parts Usage				
Current Capabilities	WRM Spares Usage				
Projected Capabilities	Current Status of Supply				
Supply Source Index (USAF)	Scheduled Acquisitions				
Critical Items Index	Critical Items Index				
Action Items File					
Unit Comm. Directory					
Critical Items Mvmts.					

01020-29

Table 2.2.3-2. Operations Oriented Files

File Name	Size*		
	Minimum	Medium	Maximum
Files on Force Status and Capabilities			
Current Capabilities	1,000	2,500	4,000
Projected Capabilities	5,000	12,500	20,000
Base Capacity	160	320	560
Transport Resource	120	160	200
Maintenance Resource	200	600	1,500
Unit Communications Directory	100	200	300
Subtotal	6,580	17,280	34,560
Supply Level Files			
Supply Status (Selected Items)	900	2,000	3,800
Scheduled Acquisitions	2,000	4,000	8,000
Munitions Status	600	1,600	3,200
WRM Status	1,000	2,800	7,000
Subtotal	4,500	10,400	22,000
Maintenance Actions			
Workload Distribution Summary	100	300	750
Maintenance Key Personnel	150	400	700
NORMS, NORS File	25	70	130
Subtotal	275	770	1,580
Critical Actions and Resources			
Action Items File	500	1,000	2,000
Critical Items Index	150	400	700
Critical Items Movements	150	400	700
Subtotal	800	1,800	3,400
Use Rates for Equipments			
Aircraft History	1,000	3,000	5,000
Major End Item History (less A/C)	2,000	6,000	10,000
Subtotal	3,000	9,000	15,000
Consumption Rates of Expendables			
POL Assets Usage	1,000	1,500	2,000
Munitions Usage	2,000	5,000	10,000
WRM Spares Usage	1,000	3,000	7,000
Subtotal	4,000	23,000	19,000
Total Cards Required	19,150	62,250	95,500
File size in millions of characters	1.5	5.0	7.7

*Refer to Tables 3.1.4-1 and 3.1.4-2 for sizing rules.

00878-45

2-24

Table 2.2.3-3. Interface Analysis Report Summary

LSS Functional Areas	Message Types
Force Status and Capabilities	38
Supply Levels	20
Maintenance Actions	18
Critical Actions and Resources	13
Use Rates for Equipment	3
Consumption Rates of Expendables	4
Other General Information/Coordination	23

01020-30

Other planning or limiting factors of interest to the TACC operations and available from the LSS are:

a. LOX generation capabilities for sustaining basic tactical unit sortie rates.

b. Re-location times for repositioning tactical units, AGE equipment, support activities, and critical supplies.

c. Consumpton rates and resupply rates of key items.

d. Major maintenance requirement profiles for AFFOR aircraft inventory, including Time Compliance Technical Orders (TCTOs) and theater environmental factors.

The above items concerned with the improved support of TACC operations by the LSS are merely representative. Since it is not possible to identify in advance all of the wanted or critical data items, LSS ADP capabilities should have adequate flexibility to accommodate changing or new data requirements. The identification, tracing, and tracking of critical items across the AFFOR materiel resources should be performed by operator console actions instead of by programming changes. Also, special data requirements for TACC operations can exploit the LSS support of AFFOR operations as described in following paragraphs.

To determine AFFOR deficiencies and special support requirements, the AFCCP D/M staff requires a digital communications capability to interact with the subordinate materiel elements of the AFFOR. Increasing use of punched card reporting of maintenance actions and supply actions between the base units (elements of the AFFOR) and the MAJCOM and AFLC/AMAs means that the AFCCP D/M staff is effectively out of the loop until these data are available to them. For example, in the area of aircraft maintenance reporting, the maintenance action data cards are now sent to the AFLC for statistical analysis. These could properly be consolidated by the wing and summary data forwarded to the D/M Staff at the AFCCP

where further analysis of the maintenance performances of the tactical wings within the AFFOR could be made and trends forecast.

In addition to better/digital communications, the requirement exists for better personnel status reporting. It is essential for the effective scheduling and/or rescheduling of materiel support services. Daily reports are needed, as early as possible, to enable proper utilization of personnel, and to identify potential support problems for critical requirements. In association with this requirement, there is a need for a positive interface between the AFCCP D/P and the D/M on current and forecast critical skill deficiencies and their effect upon materiel and logistics support of AFFOR operations.

The capability to perform rapid planning and assessment of alternatives in allocation and/or employment of resources (materiel and services) is vital to the LSS in the critical early period of a contingency deployment. In the later time period established practices, SOPs and long range planning are appropriate. However, for an AFFOR Commander to exploit his resources in the highly fluid early phases of operations, he is especially dependent upon his LSS effectiveness. The management capability (effectiveness) of the LSS requires the ability to perform rapid planning, visibility of resources and constraints and assessment of alternatives. For example, cooperative planning by the AFCCP D/M staff with the TACC staff can result in responsive reallocations of materiel support to provide increased availabilities of wanted weapons systems (aircraft and ordnance). There is no mechanism or assigned responsibility for this activity in support of near term or extended planning support to the TACC.

The variety of potential combinations of tactical operations available to TACC selection and fragging is so great that the LSS cannot anticipate all possible support requirements. Providing responsive support in most situations can be accomplished by acquisition and distribution of ample levels of materiel to cover any special requirements. Alternatively, lower levels of materiel with responsive capability to plan and redistribute resources can promote tactical air power mobility and flexibility. Consequently, a rapid planning capability for the determination of preferred options or alternatives by the LSS enable for AFFOR Commander to more effectively exploit available resources.

The capability to implement responsive adjustments and redistributions of materiel resources is the final requirement for LSS support of AFFOR operations. The responsibility of the D/M to the Commander for exercising staff supervision of subordinate units materiel elements is clear. The manner of accomplishment

may change considerably through application of digital communications and EDP capabilities. A considered review and assessment of the impact of automation developments upon the AFFOR LSS and its functioning with the subordinate units materiel elements is essential to the development of improved LSS support of TACC operations.

2.3 ANALYSIS OF PERSONNEL SUBSYSTEM REQUIREMENTS

The functional requirements of the PSS of the AFCCP have been developed and were presented in the Functional Analysis Report. Interfaces of the PSS were established in relation to PSS functions and detailed with data base files and messages in the Interface Analysis Report. This discussion will repeat some of the previously developed information in order to provide a clearer and more independent development of PSS limitations and problem areas. The following discussion presents a review of the functions performed by the PSS, its relationship to interfacing personnel organizations, and its performance requirements for data base and communications. An assessment of observed and derived limitations on the efficiency and effectiveness of the AFCCP Personnel staff is presented along with a discussion of problem areas which may have a possible impact on TACC effectiveness.

2.3.1 Functions Performed by the PSS

The D/P staff activities and functions like those of the D/M, were based on the PLSS Functional Analysis Report and its source AF/TAC regulations, manuals and directives. The functions of the personnel staff of the AFCCP have been stated on the basis that the AFFOR operates for an extended period, that is for at least 30 to 60 days, and is sufficiently remote from home bases and MAJCOM support that a number of functions normally associated with the MAJCOM are at least partially accomplished. Although it is recognized that the personnel staff may not be large enough in the smaller deployments to qualify as a Deputate, the terminology DP is used for brevity throughout this discussion. The staff 'directorates' are identified on the basis of the functional analysis and reflect the nominal division of responsibilities, stated for intermediate headquarters in AFM 35-33, with the exception that the administrative staff functions are not listed because of the negligible requirement for unique data base support. The functions allocated to the personnel subsystem in the previous functional analysis tasks have been related to the D/P Plans, Personnel Requirements and Personnel Actions and Services staff elements. The detailed functions or tasks that are performed by each of the PSS elements specified are as follows:

a. The D/P Plans element performs the following functions:

(1) Monitor and summarize force personnel status and distribution of Air Force Specialty Codes (AFSC) and Unit Authorization/Assigned/Available.

(2) Evaluate and summarize causes of personnel not available, casualty and accident/illness/other rates.

(3) Evaluate and summarize force personnel posture based upon current status and projected changes due to personnel actions and force operations. Develop planning factor modifications reflecting AFFOR experience.

(4) Prepare personnel annex to Operations Plans in support of the Operations staff. Support other AFCCP staffs in their planning functions with personnel information.

(5) Support special task-unit formation planning.

b. The D/P Personnel Requirements element performs the following functions:

(1) Maintain and provide inquiry service on force personnel location/assignment and background status as appropriate [i.e., TDY/PCS, Home Base, time to rotation, etc.].

(2) Maintain summary of personnel replacement and augmentation requirements submitted by units/bases and act for the AFFOR commander in coordinating.

(3) Maintain and summarize scheduled personnel acquisitions and reassignments (out of AFFOR); provide focal point for coordination with higher headquarters.

(4) Maintain file of key personnel background resumes for incoming, present and outgoing officers.

c. The D/P Personnel Actions and Services element performs functions which consist mainly in providing staff supervision and policy guidance to subordinate units on:

(1) Promotion and career development programs and actions.

(2) Awards and decorations.

(3) Morale and recreation program; coordinate on resolution of special problems.

(4) Coordination with Medical Staff and with D/M on mortuary services.

(5) Coordination with Comptroller and Security staffs.

(6) Promulgate and Coordinate POW procedures.

(7) Coordinate on Courts Martial procedures.

(8) Civilian personnel procurement, administration, financial and security coordination.

Table 2.2.3-4. LSS Communications Requirements

		LSS	Digital Minimum Avg	Digital Minimum Max	Digital Medium Avg	Digital Medium Max	Digital Maximum Avg	Digital Maximum Max	TTY Minimum Avg	TTY Minimum Max	TTY Medium Avg	TTY Medium Max	TTY Maximum Avg	TTY Maximum Max	Voice Minimum Avg	Voice Minimum Max	Voice Medium Avg	Voice Medium Max	Voice Maximum Avg	Voice Maximum Max	Other Minimum Avg	Other Minimum Max	Other Medium Avg	Other Medium Max	Other Maximum Avg	Other Maximum Max
TACC Operations		Incoming to LSS	2,880	11,471	4,480	23,443	6,500	36,614	–	–	–	–	–	–	10,700	10,700	22,500	22,500	30,000	39,800	1,830	16,800	3,780	22,800	7,350	39,600
TACC Operations		Outgoing from LSS	20,500	29,800	46,200	59,600	78,500	101,400	–	–	–	–	–	–	6,600	6,600	15,600	15,600	21,600	21,600	2,950	6,600	5,950	13,200	10,500	20,800
Materiel Operations	Higher Lateral Commands	Incoming to LSS	600	1,200	2,400	2,400	3,600	3,600	600	686	1,200	1,372	1,800	2,058	–	–	–	–	–	–	–	–	–	–	–	–
Materiel Operations	Higher Lateral Commands	Outgoing from LSS	4,480	12,800	8,400	25,600	12,600	38,000	1,600	1,600	3,200	3,200	5,600	5,600	10,000	10,000	20,000	20,000	35,000	35,000	10,000 M	10,000 M	20,000 M	20,000 M	30,000 M	30,000 M
Materiel Operations	Other AFCCP Staffs	Incoming to LSS	–	–	–	–	–	–	–	–	–	–	–	–	14,300	14,300	29,600	29,600	51,500	51,600	5,465	20,214	9,390	41,572	18,695	70,686
Materiel Operations	Other AFCCP Staffs	Outgoing from LSS	2,000	2,000	2,800	2,800	4,000	4,000	–	–	–	–	–	–	4,000	4,000	8,000	8,000	14,000	14,000	1,300	1,300	2,600	2,600	3,900	3,900
Materiel Operations	Subordinate Elements	Incoming to LSS	132.000	172,770	275,000	361,882	492,000	605,336	83,000	96,540	170,000	196,480	310,000	345,340	6,700	12,040	9,550	23,440	15,200	40,280	1,300	2,400	2,888	4,800	5,720	8,400
Materiel Operations	Subordinate Elements	Outgoing from LSS	4,300	17,700	8,000	27,700	12,900	46,600	2,370	5,000	3,530	8,800	5,100	13,000	3,000	3,000	6,000	6,000	12,000	12,000	–	–	–	–	–	–

01020-31A
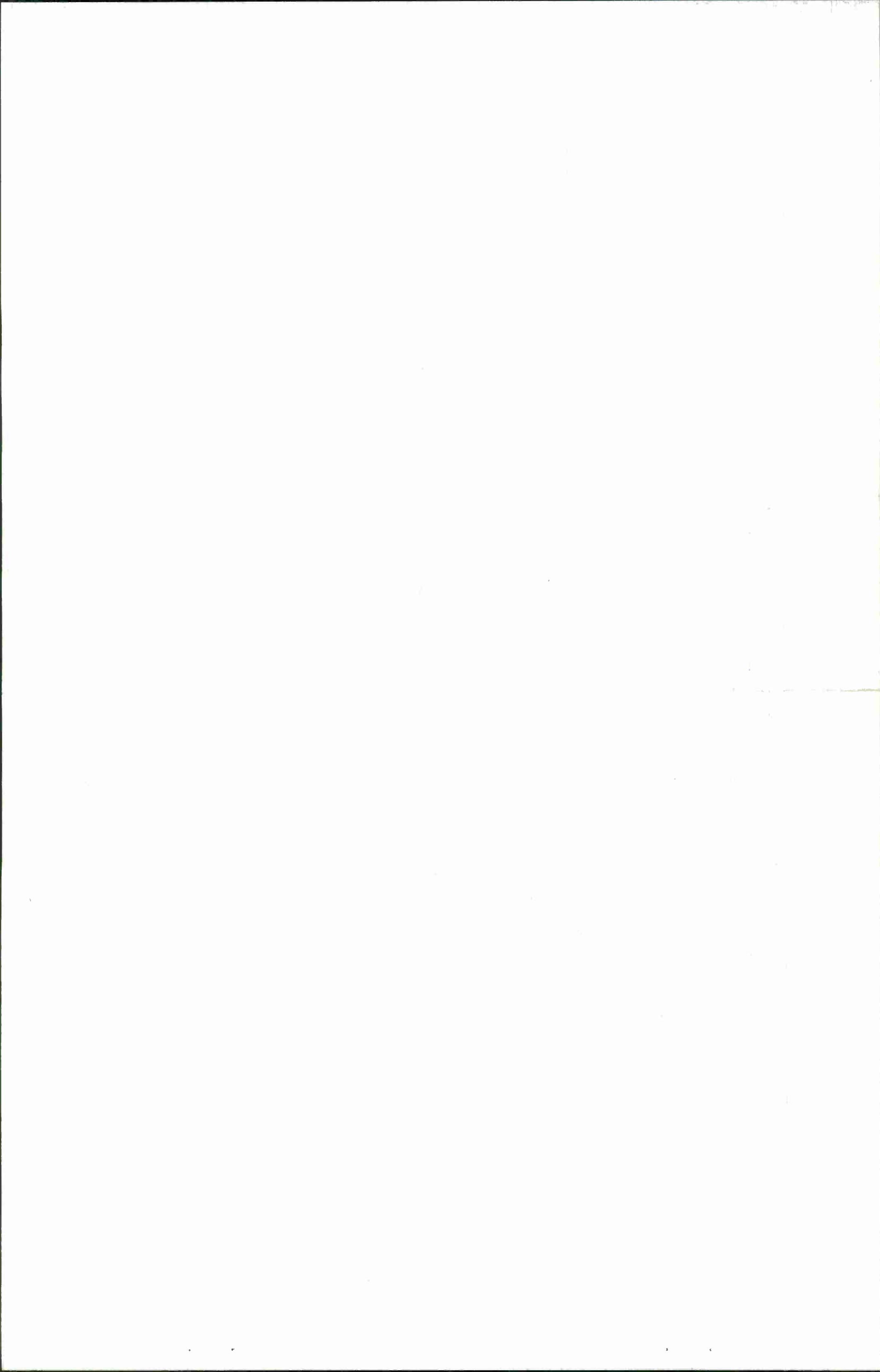
2.3.2 Interfaces of the Personnel Subsystem with Other Personnel Agencies

Personnel operations are more sensitive to the difference between the deployed force combat and the in-garrison situations because of the unique nature of this principal resource of the USAF. In the peacetime in-garrison environment Air Force wide programs for training, career development and personal/family services are employed for efficiency and to assure uniform and equitable practices. In the combat environment the needs of the situation dictate that the relative emphasis is first upon doing the job and after that upon more personal considerations. One effect of this change in emphasis is to reduce for a greater or lesser period the interaction between Force personnel and personnel agencies. In the initial time period of a deployment only the most essential personnel functions are addressed while as time goes on a more complete range of services is required.

Another very significant difference between the personnel and materiel areas is that the analogy of people to commodities breaks down when effectiveness is considered. Although Air Force Specialty Codes (AFSCs) provide skill level designators the crucial evaluation of personnel effectiveness is necessarily performed by supervisors and Commanders and makes the estimation of force capabilities based on personnel an inexact matter at best. The practice of availability measurement is a meaningful step in the direction of facilitating the Force-wide evaluation of the status of personnel and is accordingly a primary essential function. The MAJCOMs have recognized this and have instituted effective procedures to assure accurate reporting of the availability of personnel for duty.

The PSS of the AFCCP accordingly must interact with the deploying and supporting MAJCOM(s) to report deployment status to the AFFOR Commander. Evaluation of personnel effectivenss and the impact of personnel status on operational capability however is a function of the supervisor and subordinate Commanders and cannot be performed by the PSS. Therefore PSS functions are characteristically separate from operational considerations except in long range and indirect terms. Extensive interfaces are observed between the personnel activities at tactical bases and the PSS for the purposes of trend analysis of unavailable personnel and for requirements formation.

As the contingency ages or enlarges the functions the PSS must perform in aid of the Commander become more varied and complex and so does the interface activity. The primary orientation of Force personnel is to their units however and therefore most personal actions and services are accommodated through unit or base personnel capabilities. In the TDY (temporary duty) situation the home bases are used for most services as directly as possible in order to avoid burdening the AFFOR staff with the need for extensive and complex records systems. Hence the AFCCP PSS has few interfaces external to the forces. Figure 2.3.2-1 illustrates the personnel support/reporting relationships from Headquarters USAF/MPC through the MAJCOMs to the AFFOR tactical units.

The functions identified in 2.3.1 include trend analysis activities which would require considerable involvement of the PSS in the detailed data reporting performed by the bases to the MAJCOMs. Hence compatibility requirements exist in machine data handling, formats and reporting codes and procedures. Interactions of the PSS with MAJCOMs also require mechanized data communication and reporting capabilities because of the highly mechanized personnel systems in use there. If mechanized information processing is not available then a number of functions become much more difficult because of the great number of people involved in even the minimum force levels considered.

2.3.3 Personnel Subsystem Performance Requirements

The PSS qualitative performance needs have been determined in terms of the data base content and approximate size and the communications traffic associated with force operations. It was assumed that almost all personnel traffic generated by base personnel actions had counterpart effects on PSS message traffic. The data files estimated to be used by the Plans, Requirements and Actions/Services staff elements are presented in Table 2.3.3-1 in terms of 80 character cards. The indicated card totals amount to 2, 5, or 10 million characters for the minimum, medium and maximum force sizes, respectively. The PSS I/O message requirements are similar in context to those for the LSS. The PSS must be capable of supporting the incoming and outgoing message types indicated below. The majority of incoming messages are file update information from subordinate personnel elements, and the majority of outgoing messages are operations reports to other AFCCP staffs and higher/lateral commands. The primary medium is digital data transmission via Autodin formats. There are 20 types of file update messages and 29 message types to accommodate other coordination needs.

Table 2.3.3-2 presents the message traffic estimated in the Interface Analysis Report. This table presents estimated average and peak-day message rates in terms of characters per day. The PSS – Voice Channels show only a small load within the range of 500 to 4500 characters per day. The total number of transmitted messages is much smaller than the number of messages incoming and outgoing from the LSS. The only text messages incoming to PSS from other AFCCP staffs comprise about 2,000 to 7,000 per day. The digital communication requirements for the PSS can be determined in a manner similar to those for the LSS. The maximum load on an interface comprises about 350
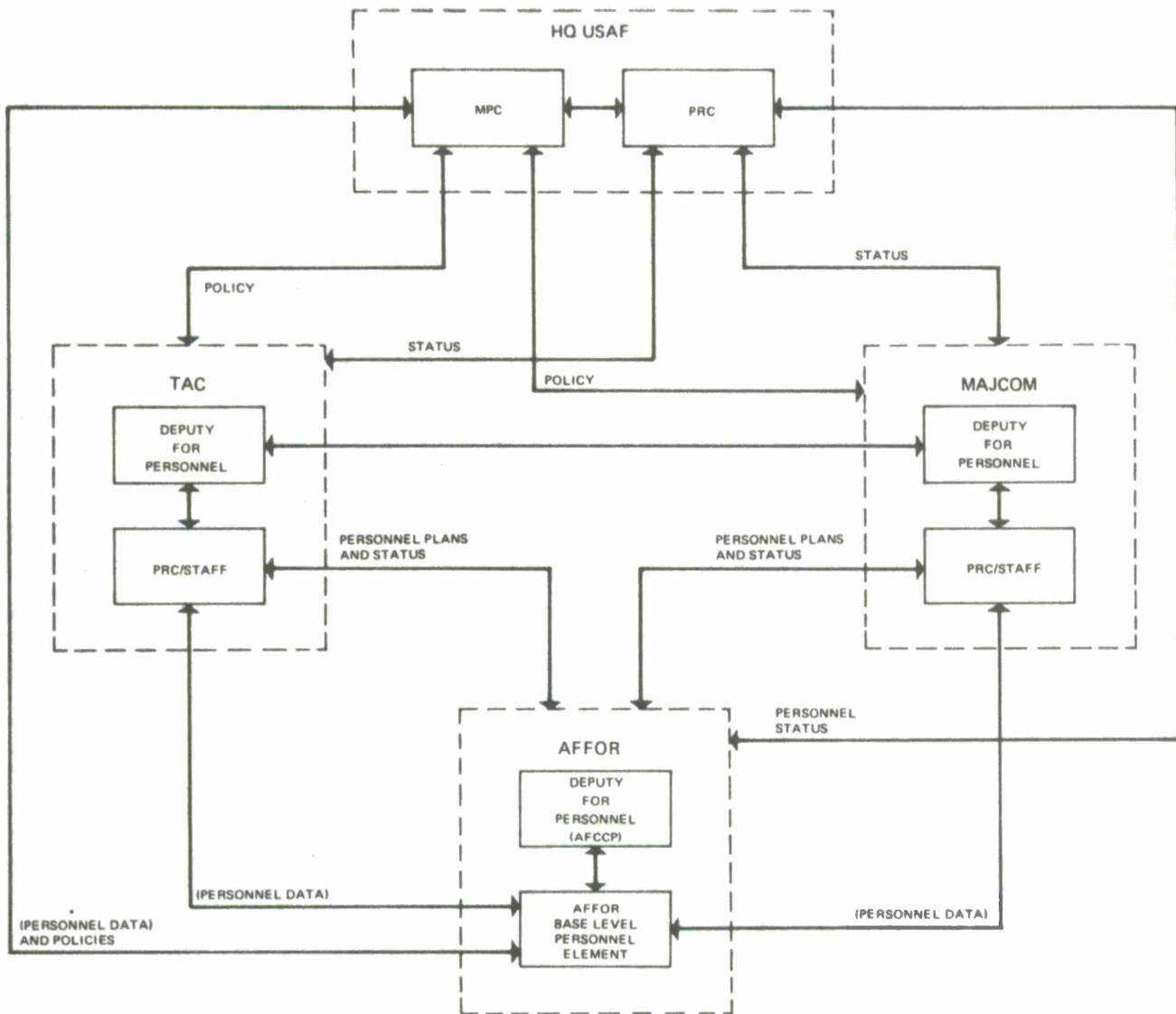
01020-32

Figure 2.3.2-1. USAF Personnel System in Support of a Deployed AFFOR in TDY Mode

messages/day with an average length of 1,700 characters. This traffic aggregates approximately 600,000 characters per day which would require at least 25 minutes of continuous transmission with a speed of 2400 bits/second. TTY communication occurs only between TSS and the higher/lateral commands. A maximum of 4200 character is outgoing from the PSS once a month whereas only 200 characters per day are incoming to the PSS. The 42,000 characters sent continuously would require about 50 minutes transmission time. (900 characters per minute).

2.3.4 PSS Problem Areas and Deficiencies

It has been evident throughout the course of this study that more effective support of TACC operations can be achieved through better utilization of both personnel and logistics data. Implicit in every LSS support capability, whether it is mounting of munitions loads onto aircraft pylons or the obtaining of a critical NORS item, is the availability of qualified personnel to perform the actual work involved and to signify its accomplishment in terms of mission readiness or aircraft availability. Likewise in the determination of LSS support requirements, deficiencies, planning, and adjustments of resources, the availability of required personnel with appropriate skills was a prime factor. Integrated management of men and materiel resources is essential to the AFFOR, particularly in the early phases of a deployment when the AFFOR is resource-limited. An objective relative to solving of the above noted need would be to define the impact of

Table 2.3.3-1. PSS Data Files

File Name	Force/File Size		
	Min	Med	Max
Positions File	4000	12,000	23,000
Personnel Locator File	9000	24,000	45,000
Status Detail File	1800	4,800	9,000
D/P Planning Factors	200	200	200
Flying Personnel History	2000	6,000	10,000
Critical Skills History	100	140	200
Personnel Input/Output Schedule	1000	2,500	4,500
Projected Status File	4000	12,000	23,000
Unit/Organizations	900	2,400	4,200
Opns Orders	1000	2,000	4,000
Personnel Requests	1000	2,500	4,500
Personnel Backgrounds (Selected)	500	1,200	2,000
Total Cards	23,300	63,800	119,000

01020-33

automation upon the LSS and subordinate materiel elements in terms of achieving integrated management capability for AFFOR personnel and materiel resources.

The specific problem areas noted in 3.3 are somewhat pertinent to the PSS, as are the discussions of LSS examples in 3.4. Special problems unique to the PSS include the mechanized personnel reporting system as defined by Air Force Manual 30-3. This personnel reporting system satisfies the need of the MAJCOMs and Headquarters Air Force, but is not responsive to the needs of the deployed force, a point which is attested to by the development of additional systems in other commands. In most cases, reports generated by CBPO and PERSCO units bypass the Intermediate Command, being addressed to Major Commands, Theater Commands, TAC or Headquarters USAF. In the absence of a meaningful morning report the Tactical Wing cannot assess the current manpower status of its subordinate units. The AFCCP D/P and Staff has no direct report of the personnel status of the subordinate elements of the AFFOR. In the current system, the collation and evaluation of the personnel status reports is accomplished at a major command; summary information of this status then flows back to the Intermediate Command at the AFFOR level. Another deficiency of the PSS is that there is no identifiable procedure at present for the tactical wing in the deployed AFFOR to prepare personnel summaries of critical skills and other personnel matters at the base and forward these to the D/P staff at the AFCCP for evaluation of the personnel posture of the total deployed force. The AFCCP D/P should have the capability to evaluate current and forecast critical skill deficiencies in the deployed AFFOR and to advise the Commander and the Deputy for Operations of the impact of these deficiencies on current and future air operations and the time needed to correct the deficiencies. The rapid development of automation capabilities within the USAF MPC system, and centralization currently at MAJCOM D/P levels, impose primary compatibility requirements on personnel support activities aimed at AFCCP needs.
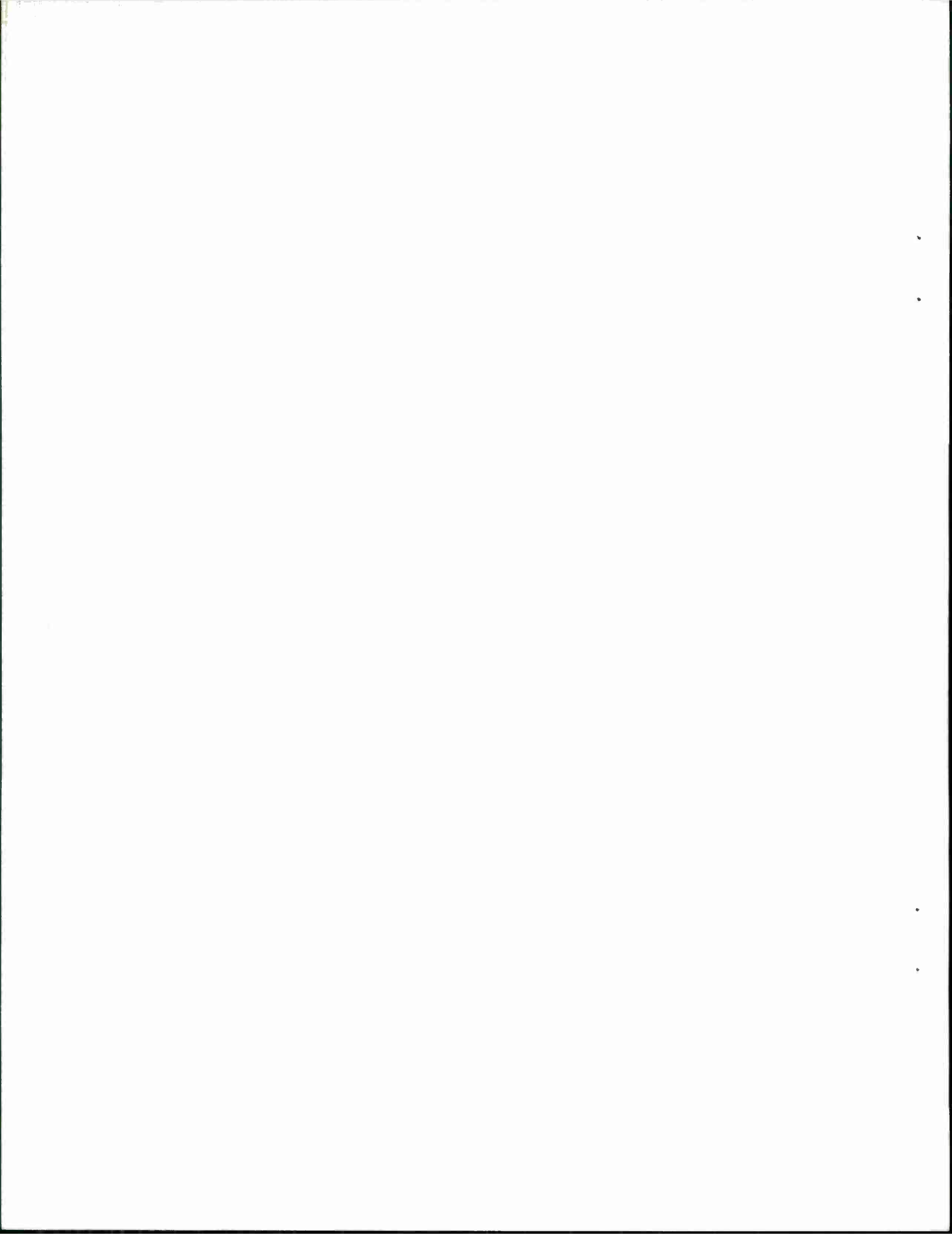
Table 2.3.3-2. PSS Communications Requirements

		PSS Messages	Digital						TTY						Voice						Other					
			Minimum		Medium		Maximum		Minimum		Medium		Maximum		Minimum		Medium		Maximum		Minimum		Medium		Maximum	
			Avg	Max	Avg	Max	Avg	Max	Avg	Max	Avg	Max	Avg	Max	Avg	Max	Avg	Max	Avg	Max	Avg	Max	Avg	Max	Avg	Max
Combat Operations	TACC	INCOMING	-	-	-	-	-	-	-	-	-	-	-	-	500	500	2,000	2,000	3,500	3,500	-	-	-	-	-	-
		OUTGOING	3,000	11,000	6,800	22,000	12,100	38,500	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Personnel Operations	HIGHER/ LATERAL COMMANDS	INCOMING	-	-	-	-	-	-	200	200	200	200	200	200	-	-	-	-	-	-	-	-	-	-	-	-
		OUTGOING	12,540	16,890	31,500	32,780	51,600	57,970	12,000/M	12,000/M	24,000/M	24,000/M	42,000/M	42,000/M	5,000	5,000	10,000	10,000	17,500	17,500	-	-	-	-	-	-
	OTHER AFCCP STAFFS	INCOMING	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,990	2,086	3,980	4,172	6,965	7,258
		OUTGOING	1,520	1,520	2,720	2,720	4,320	4,520	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	SUBORDINATE ELEMENTS	INCOMING	152,000	156,780	345,000	380,200	570,000	648,546	-	-	-	-	-	-	12,960	13,000	25,900	26,000	45,360	45,500	-	-	-	-	-	-
		OUTGOING	1,200	1,200	2,400	2,400	4,200	4,200	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Note: M = monthly

01020-34
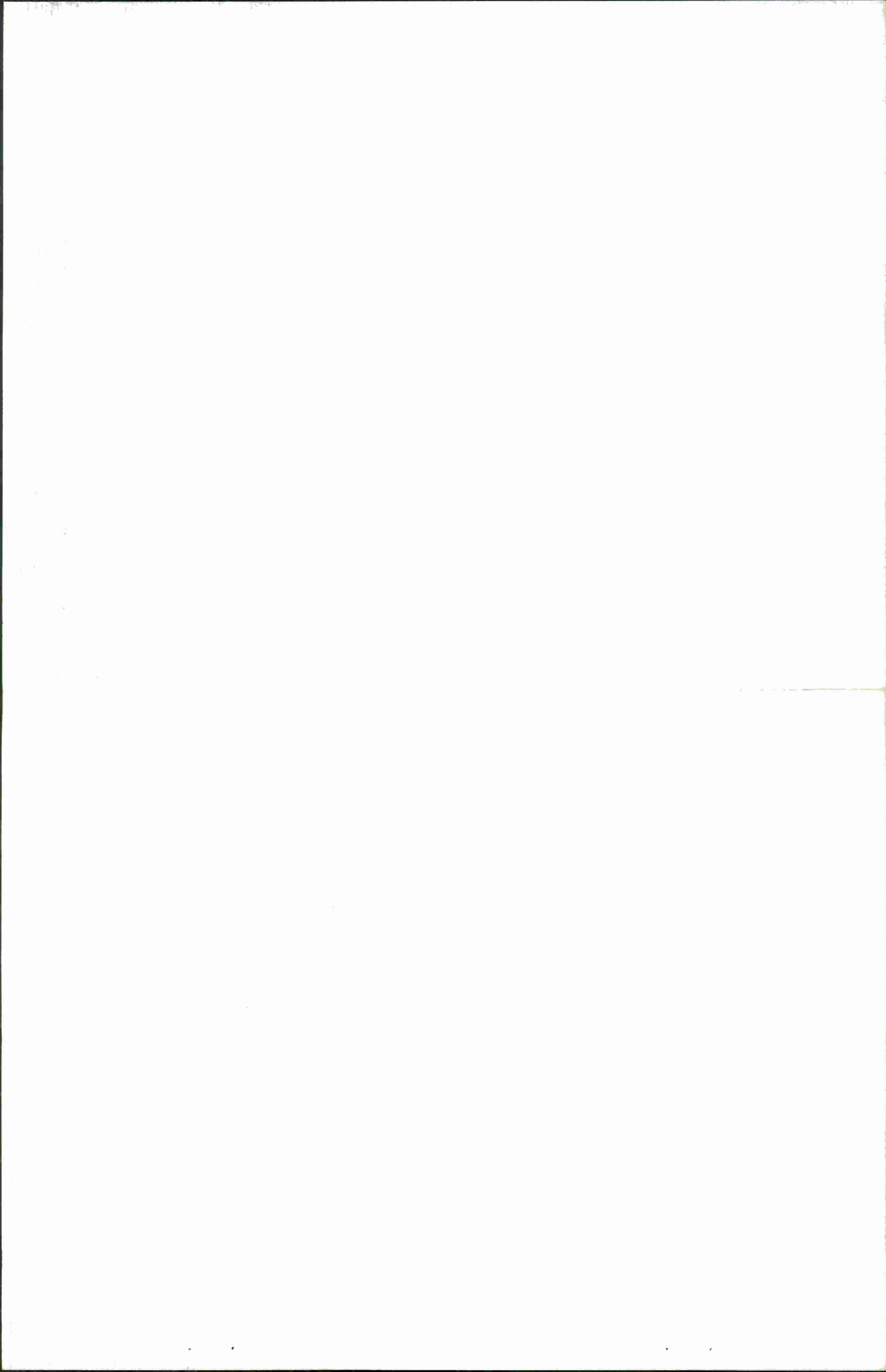
SECTION 3
ANALYSIS OF SOLUTION CONCEPTS

3.1 CONCEPTUAL APPROACH CONSIDERATIONS

The development of operational concepts which will solve or minimize the current PLSS problem areas and/or deficiencies have required the consideration of certain system operational and evaluation parameters. Since some of the candidate system solution concepts employ Automatic Data Processing (ADP) a discussion of the expected functions performed by the ADP facilities is presented. These parameters include general evaluation criteria and system compatibility considerations. General evaluation criteria for the synthesis and analysis of conceptual approaches were established as follows:

a. *Data currency.* The degree to which file data reflects or approaches the real world situation.

b. *Data validity.* The integrity or correctness of the data, freedom from errors.

c. *Data reduction time.* Times involved in processing data to obtain report/file/working data.

d. *Data reduction efficiency.* Processing effort/time involved in data reduction process.

e. *Ease of access to data base/files.* Operator/machine time involved in accessing files.

f. *Time required to update file.* Measure of machine time involved in process.

g. *Time required for maintenance evaluations.* Selective correlations of various file data from various sources.

h. *Time required for statistical analyses.* Selective mathematical processing routines to generate data.

i. *Real time data completeness.* Ability to provide complete set of wanted data.

j. *Interface response time.* Ability to establish data exchanges with a particular interface.

k. *Real time support to AFFOR commander.* Ability to produce/provide materiel resources data.

l. *Real-time support to TACC (current operations).* Ability to provide current resources status data.

m. *Rapid planning support to TACC.* Ability to project trends and evaluate alternatives for support to extended planning and Frag Order preparation.

n. *Source data reporting.* Adequacy of communications interface support.

o. *Compatibility with interfacing systems.* Ability to accept and exchange data without conversions.

p. *Manning requirements.* Manpower levels to support and operate system.

q. *Magnitude of relative cost.* Preliminary estimates of costs involved (investment only).

r. *Responsiveness to force level changes.* Modularity of system to accommodate add-on units for increased capability.

s. *Identification of source deficiencies.* Ability to isolate sources contributing errors or problems.

t. *Technical skills required.* Level of skill training and basic capabilities.

u. *Special training required.* Specific backgrounds and experience levels necessary.

All PLSS conceptual approaches have been developed to solve or minimize the current problem areas and/or deficiencies must be compatible with a feasible transition from the current personnel and logistics subsystem operations and with the current and evolving capabilities of PLSS interfacing CONUS-based command and deployed force elements. This compatibility requirement includes the following specific areas:

a. Current and feasible ADP growth configurations at the wing/base materiel and personnel elements.

b. TACS source data reporting capabilities (current and post 1975).

c. Permissible degraded mode operations for the AFCCP and the supporting deployed force elements.

d. Automated TACC capabilities.

e. Current and planned implementation and utilization of digital communications in the deployed environment.

f. The continued evolution of CONUS-based logistics and personnel system improvements (expanded or new capabilities).

g. The ability to interface with lateral forces of the Army and Navy as well as with allied force units that may be operating in the contingency environment.

h. Planned (or new) command and control systems such as AWACS.

i. Current and projected JCS and USAF data and reporting standards.

Automated data processing support to PLSS functions can be of substantial value in providing complete, current and accurate data of AFFOR resources in a timely and responsive manner. This ADP support in a deployed AFFOR would employ typical data processing functions such as those developed and proved in, for example, the Air Force Logistics Command, Base Automation System (B 3500), USAF Personnel System, and the LRC/PRC system at the USAF Command Post.

The analysis of the functional requirements of the Logistics Subsystem has been based on the typical staff elements of the D/Ms organization at the AFCCP. These staff elements include Log Plans, Supply, Maintenance, Munitions, Transportation and Procurement. The following discussion provides a detailed description of each type of ADP support indicated for these staff elements. The types of support include Data input management, Message processing, File updating, Data reduction, Information Retrieval, Report generation and transmission, Monitoring status, and providing for operator interactions. Pertinent details of such support are discussed in the following paragraphs.

The development of data processing support for an activity that has been essentially manual in its operations imposes two principal constraints. One is for a greater formalization of information flows and procedures for the conduct of routine activities. The other is for standardization and formatting of information into data items. Within such constraints, the automated data processor can be employed effectively to accept, identify, process, store, retrieve, and distribute logistics information on AFFOR resources and capabilities.

With the greater formalization of information flows, it becomes possible to plan for and schedule the inputs of data, i.e., the reporting of activities and transactions, as well as status and changes. Information of prime significance can be scheduled on a more frequent basis whereas information of non-critical nature can be considered less frequently. Accordingly, the data reported frequently can be planned for direct entry into the ADP System; possibly by remote digital or by TTY terminals. The weekly reports can be accommodated by manual entry (keyboard) into the ADP system. Determining factors in conjunction with these report schedules are the number of units (sources) which generate such inputs and the size of the individual reports. If many units have to provide the frequent reports, the receiving LSS facility would become a bottle-neck if it had to manually enter such reports into its ADP system. Alternatively, if the reports were lengthy, a manual entry problem could develop at the LSS.

Factors which are involved in message processing include verifying correctness of the address, error checking of the message digits (bits), initiating requests for retransmission if necessary (due to such errors in the message as received), acknowledgement of receipt of the message (if correct), and processing the message into acceptable form for the ADP system. Once in acceptable form, the data are identified for their relationship to the ADP system files. Data for updating the data base files may be further checked for consistency with the content of the file. Incomplete data or incorrectly sequenced data in the message will initiate a rejection by the ADP System with suitable notification to the System Operator. Valid data is entered into the files, and becomes a part of the current status data.

Data which are identified by the ADP System as needing reduction (processing) may merely require conversion from one format to another for further use. Alternatively, the new data may need to be correlated, sorted or merged with existing data from one or more files. This data reduction is a more sophisticated process than the file update, but the end result is substantially the same; the LSS data base is updated in accordance with the input.

Retrieval of data from the ADP System (and the LSS data base) is accomplished for a number of purposes. The most frequent is for use in connection with acceptance of new data (updating). Another retrieval may be for the development of a scheduled report or output to Higher Commands to show current resource status. The retrieval of data by an Operator for his use in analysis, review or monitoring activities is a typical application. In support of such retrieval functions, the ADP System has different response time requirements. For example, in doing internal processing, a retrieval must be at speeds compatible with the processing cycle times, i.e., as fast as possible. In doing retrieval for report generation, times of the order of milliseconds may be acceptable, since the principal time lag is associated with physical output of the report and its review to transmission. Retrieval of data for the Operator can be still slower, since the general response times for console/display operators can be of the order of several seconds without impairment of the overall task accomplishment.

The function of report preparation and distribution was touched on in the previous paragraph, in that the content of the report is developed from the data files. This process of content development from data in the files may or may not involve calculations, summarizations, and evaluations. On completion of the report by the ADP, it must be routed to the proper addressee by means of an output terminal for pre-processing for transmission. If the output terminal is a display, the ADP performs the display formatting of the report for presentation to the Operator of the display. If the output terminal is a printer, the report is produced as hard copy for subsequent use/distribution.

The ADP system provides a very useful function in a monitoring and evaluation role. The scheduled report

inputs can be monitored to enable determination of late or not received reports. Further, the ADP System can evaluate the received report contents against preset threshold values or other appropriate criteria. In this way, any out-of-limit values can be noted immediately and flagged to the attention of the System Users.

The remaining functional capability of the ADP System in support of the LSS is that of responsive operator and ADP System interaction. A system Operator, using a Console entry station/position, can make data inputs, request data outputs, initiate analyses and evaluations, adjust system operations and verify system validity through suitable checks. This responsive capability to interact directly with the ADP System maintains LSS flexibility to accommodate unplanned/unscheduled data requests from the TACC or the D/M and AFFOR Commander. The employment of this ADP capability, and the others noted earlier, in the basic LSS staff activities is addressed in the discussions of the candidate system concepts.

3.2 DESCRIPTION AND EVALUATION OF THE IMPROVED MANUAL SYSTEM

One of the primary motivations for the initiation of an improved manual system is to provide better response to the needs of the Operations personnel within the Air Force Component Command Post.

The current deployed AFFOR has dedicated communications channels between the Operations staff at the AFCCP and the TUOC to carry operations traffic. For personnel and materiel operations, administrative circuits must be shared with other units of the AFCCP staff and subordinate elements of the AFFOR at the tactical air bases. Figure 3.2-1 depicts an improved manual PLSS system wherein dedicated personnel and materiel communications are provided to in effect parallel the TACS operational net, by linking the materiel and personnel elements of the AFCCP with those of the subordinate elements of the AFFOR.

An LRC is established at the AFCCP and at the subordinate units or air bases. A PRC is established at the AFCCP and at the tactical air base; for units smaller than wing size, Personnel Elements are substituted for the Personnel Centers. The Materiel net services the LRCs; the Personnel net services the PRCs and Personnel Elements. The Materiel net provides the means for the Deputy for Materiel (D/M) at the AFCCP to have ready access to the resource status source agencies, and provides a means for more effective materiel operations within the deployed AFFOR. Personnel data is sent by digital means from the PRCs and Personnel Elements at the tactical unit or air base to the Deputy for Personnel (D/P) at the MAJCOM and the Military Personnel Center (MPC). The improved manual system can serve as an interim system to service the AFFOR Commander and Personnel and Materiel staffs upon a contingency deployment of an AFFOR. The cost of the improved manual system would be primarily in the establishment of these dedicated communications.

3.2.1 Materiel

The principal change to improve the manual materiel system would be the establishment of dedicated voice and teletype communications channels and terminals for directing materiel operations and for communicating resource status to the materiel staff at the AFCCP from the materiel elements in subordinate units and agencies of the deployed force.

A major feature of the improved manual materiel system is the location of LRC at the AFFCP adjacent to the TACC and the establishment of LRCs at the tactical Wings to provide the Wing Deputy for Materiel with action agencies for Wing materiel operations. The AFCCP LRC will have resource status displays and duty desks for maintenance, supply, munitions, and transportation functions and will be manual. The LRCs at the subordinate element will be at the tactical Wing and Group level. In the case of separate squadrons the logistics element will be at the Maintenance Control Center (MCC) of the tactical unit. The LRCs at the tactical wings will be established physically within the Tactical Unit Command Post (TUCP) and would be closely associated with the TUOC.

In case of loss of the TACS operational circuits, the dedicated Materiel communications nets may be used as operational backup. The establishment of the Wing/Base LRC will provide the capability for the Wing Materiel Staff to act for the Wing D/M and provide flexibility in AFFOR materiel operations. Further, this will provide a contact point for the LRC personnel at the AFCCP for immediate access to Wing/Base materiel source data. Examples of messages for this alternate source of resource status, as found in the message catalog (ref. Appendix I, PLSS Message Catalog, Interface Requirements Report) are:

a. *L522 (TAC K-29) Maintenance Status Report.* Primary source in all tactical wings; alternate sources at each deployed tactical unit.

b. *L517 - The Air Refueling, Search and Rescue, Special Air Operations Tactical Unit Status Report.* Primary source at the tactical unit or squadron; alternate source at the tactical air base.

c. *L515 Aerospace Vehicles Status Report (1-HAF-A1).* Primary source the tactical unit; alternate source at the tactical wing TUCP.

d. *L511 (TAC S54) Radar Status Report.* Primary source the tactical control group; alternate source the radar units.

e. *L525 DIFM The Due in From Maintenance Report.* Primary source the tactical unit; alternate source the tactical wing TUCP.

The principal advantage of the improved manual system is the increased responsiveness to the needs of the TACC in providing more accurate and current resource status data for planning and operations control. Communications required at a tactical air base can be reduced by centralizing the data in the manual data file of the LRC at the Wing TUCP. The centralized manual data file would simplify the preparation of summary materiel reports at the wing LRC for transmission to the LRC at the AFCCP. The Materiel Staff of the LRC at the AFCCP would utilize these subordinate materiel summary reports in analyzing the overall materiel operations of the deployed AFFOR. The use of the dedicated materiel communications net decreases the time required to respond to queries from the TACC.

The major disadvantage of the improved manual materiel system would be the requirement for the dedicated communications channels between the LRCs at the air base and at the AFCCP, with the possible need for additional communications equipment and personnel to be deployed with the AFFOR. Personnel manning the LRCs may require additional training to function as an integrating agency for resource status and availability data, and to be more responsive to the information needs of the TACC and D/O planning personnel at the AFCCP.

3.2.2 Personnel

The major change in the improved manual Personnel system will be the requirement for base Personnel agencies to provide summary personnel reports to the D/P staff at the AFCCP. The current Air Force personnel system will be modified so that it will be more responsive to the needs of the AFFOR Commander during a contingency deployment. The current Personnel Reporting System would not be changed except to provide that the personnel agencies of the subordinate units of the deployed force transmit summary personnel data to the D/P at the AFCCP.

Personnel Readiness Centers will be established at the AFCCP adjacent to the TACC and at tactical Wings within the deployed AFFOR. Subordinate Groups such as Mobile Communications, Tactical Control, Tactical Air Support, and separate squadrons within the AFFOR will have Personnel Elements established adjacent to the TUOC. These Personnel Elements will report personnel resource status and other personnel information to the AFCCP. The improved manual Personnel system requires a PRC to be established at the Air Force Component Command Post adjacent to the TACC within the AFCCP. Supporting communications will be established between the PRC at the AFCCP and the PRCs at TACC or wings and Personnel Elements at the subordinate groups and separate squadrons of the deployed AFFOR.

Personnel at the tactical wing or base PRC provide summary personnel data via assigned communications lines to the PRC at the AFCCP. The D/P staff members in the PRC at the AFCCP analyze and provide summary and resource status to the staff of the D/O. The PRCs at all levels will determine the level of critical skills and forecast critical skill shortages far enough in advance, so that action may be taken in order that air operations not be curtailed.

The introduction of the improved manual personnel system will require no changes in the current methods used by CBPOs or PERSCO units for reporting personnel data to MAJCOM and to the Military Personnel Center. The establishment of PRCs at the air bases and Personnel Elements at the separate groups and squadrons form an immediate point of contact for the D/P staff at the PRC at the AFCCP in determining personnel resource data and critical skill information. In addition, the PRC at the Wing will provide a means for the Wing Deputy for Personnel to establish and maintain a personnel data base. The concentration of Wing/Base personnel data will assist in the establishment of critical skills shortages and personnel resource status of the Wing. The use of the Personnel Elements at the separate groups and squadrons will provide the group and squadron commanders with similar means. The improved Personnel system will utilize summary personnel reports prepared by the subordinate elements and analyzed by D/P staff at the AFCCP with the means of determining the critical skill requirements of the deployed AFFOR.

The growth capabilities of the improved manual personnel system are evident as a better means for later transition to automatic data processing for the personnel system within the deployed AFFOR. Personnel Elements and Personnel staffs at the subordinate Wings become trained in the preparation of summary personnel reports and data for transmission and analysis at the personnel readiness center at the AFCCP. Manual preparation will provide valuable training for later use in a semi-automated and fully automated system.

The improved manual personnel system provides a means for furnishing more current personnel resource status to the D/P staff at the AFCCP. It also provides a means for the Wing and Group commanders to have summary personnel data available adjacent to the TUOC and reduces the time required for the Personnel staff at the AFCCP to determine the personnel status of the units in the deployed force. The primary disadvantage of the improved manual personnel system is the requirement for additional communications equipment and personnel to be deployed with the AFFOR.

3.3 DESCRIPTION AND EVALUATION OF THE AUTOMATED LRC AND PRC

A candidate conceptual configuration for the LSS and the PSS which provides for an automated LRC
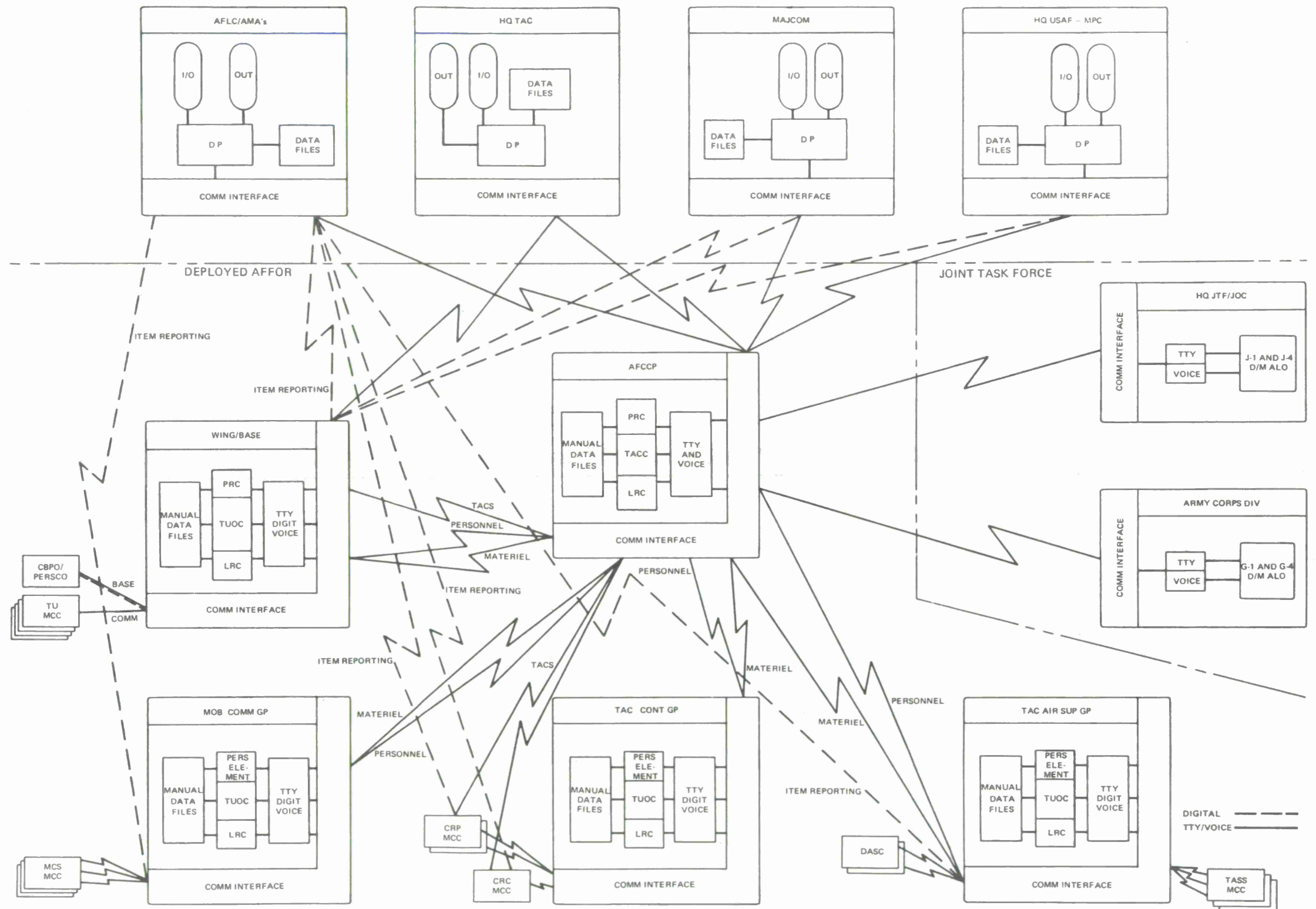
Figure 3.2-1. Improved Manual Personnel Logistics System
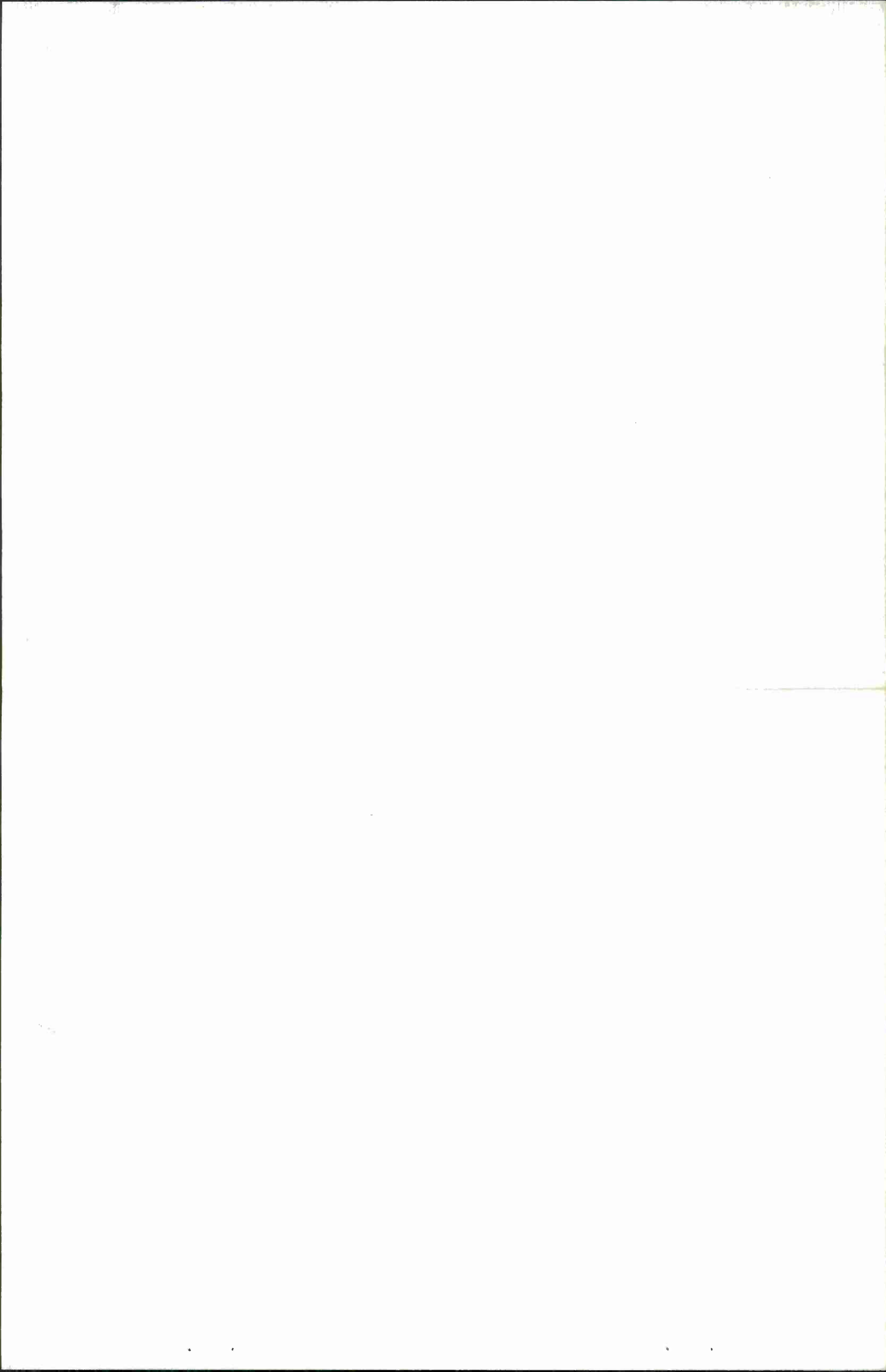
and a PRC is a logical progression from the current or from the improved manual system and parallels the fixed headquarters developments now underway at MAJCOMs and HQ USAF. This candidate system concept is described on both a system and subsystem basis to show how it would meet PLSS requirements, solve or minimize the identified problem areas or deficiencies, and what the corresponding advantages and disadvantages are.

3.3.1 System Description

Figure 3.3.1-1 shows, in block diagram form, the personnel and material administrative, command and operations elements required to support a minimum, medium and maximum deployed AFFOR. The primary LRC and the PRC are an integral part of the AFCCP and provide the primary focal points for responding to all operations requests for logistic and personnel support. The LRC and PRC will have input/output and output terminals connected to the data processor for access to the PLSS data file. All digital and teletype incoming/outgoing messages required to support the TACC and the conduct of the air operations will be handled through the Input/Output (I/O) terminals via the communications interfaces. The output terminal is a printer or similar device which may be used to generate hardcopy outputs for staff use and dissemination by courier. Both the D/M and D/P staffs will directly interface with, employ and support their respective automated centers.

At every deployed tactical wing or support base there will be an automated logistics element to provide the coordination and reporting of materiel status and availability data to the AFCCP/Automated LRC. An automated Personnel Element will also perform or be the focal point for incoming and outgoing personnel status and availability data going to the automated personnel center at the AFCCP. I/O terminals and hardcopy terminals, as required, are tied to the base (consolidated) ADP capability. The base/unit processing capability would then be tied by digital communications to the AFCCP ADP facilities. The MCCs at each squadron will perform their tasks of collecting and reporting the necessary maintenance data to the logistics element on each base. The MCCs will be manual and will either hand carry or voice telephone their data to the automated logistic element for entering into the ADP based system. The use of remote terminals tied to base ADP for data collection is feasible alternative which may provide substantial benefits in implementing source data automation. In a similar manner the CBPOs or the PERSCOs will also operate manually or semiautomatically, to support the automated personnel element on each base with the necessary personnel status and availability data.

Each tactical wing base through the automated logistic element will continue to provide maintenance cards and other required messages directly to the CONUS

based commands as indicated on Figure 3.3.1-1. However, the availability of on base ADP will greatly facilitate the preparation of summaries for base use and for transmission to the AFFOR PRC. In a similar manner, the personnel data will be reported via cards as it is done at the present time. The CBPOs will be capable of employing base ADP and assembling data and reports as the the maintenance people do, so that a summary of the personnel rosters or status information can be entered into the automated PRC via the I/O terminals.

Independent agencies which may be partially tenanted on tactical air bases such as the Mobile Communications Group, the Tactical Control Groups, and the Tactical Air Support Groups, will employ base ADP facilities through appropriate automated logistics and personnel elements. For remotely located units voice, TTY or austere data terminals will be employed to communicate personnel and logistics data to the supporting base LRC and PRC for consolidation.

At the higher and lateral deployed force elements an I/O terminal will be required at both the Joint Task Force Headquarters/JOC and the Army Corps or Division Headquarters. The I/O terminal will be for use by the appropriate J1 or J4, and the Materiel Liaison Officer, for receiving necessary materiel and personnel reports.

3.3.2 Subsystem Description

The primary subsystems of this conceptual configuration are the logistics subsystem and the personnel subsystem that are organized and operate at a deployed AFCCP. The functional layout of both subsystems and their ADP support is described in Figure 3.3.2-1 which shows a block diagram of how the LSS/LRC configuration which is deployed operates within the AFCCP. A LSS/TACC Coordinator is located within the TACC with direct access to the data processor and logistics data files through an input/output terminal. The LSS/TACC Coordinator provides the primary interface for TACC personnel on all materiel or logistics matters that are pertinent to extended planning, frag order preparation and current operations monitoring, adjustment and control. The logistics center is located within the AFCCP complex and would have two sections; the LRC and Materiel Operations. The LRC section is organized into resource availability, transportation and maintenance. The materiel operations has a typical break down of the normal materiel functional activity areas, e.g., plans, supply, munitions, maintenance as required.

Transportable shelters would be desirable mainly for deploying and housing the data processing equipment although it should be able to be used outside of a shelter. The operator terminals would be sufficiently rugged to avoid the necessity for a shelter environment. If a number of personnel must access the ADP
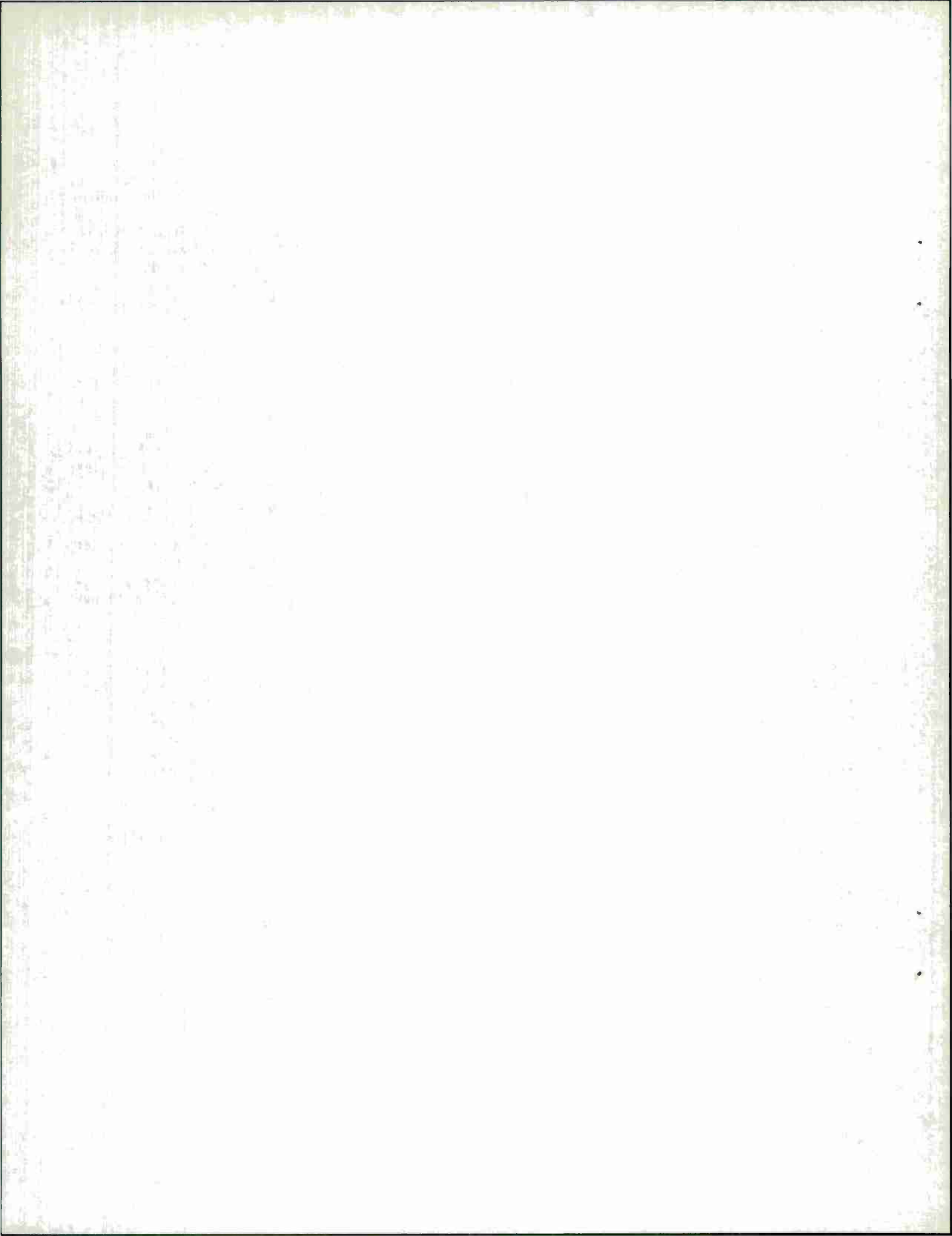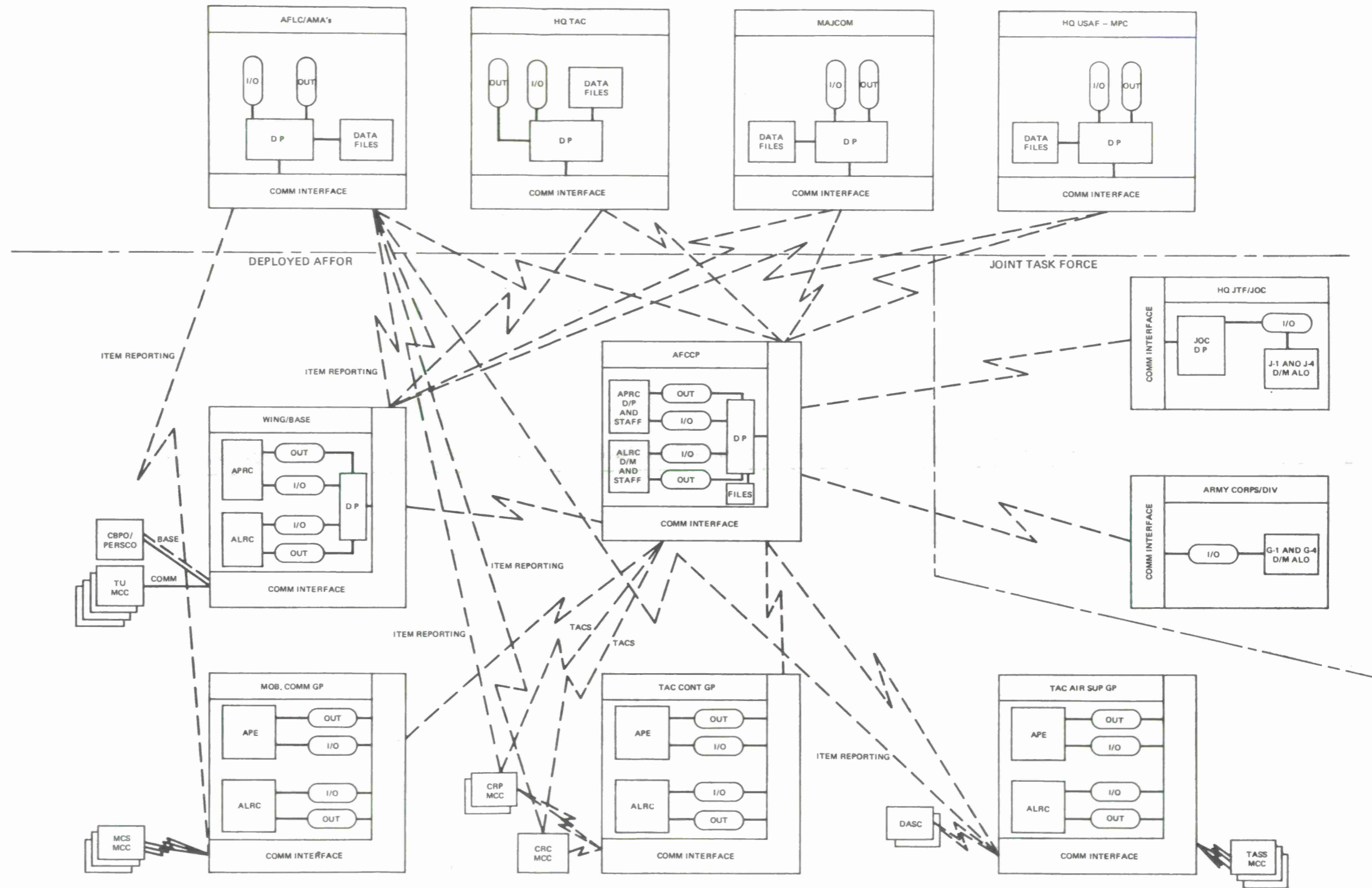
Figure 3.3.1-1. Automated Personnel LRCs

01020-9
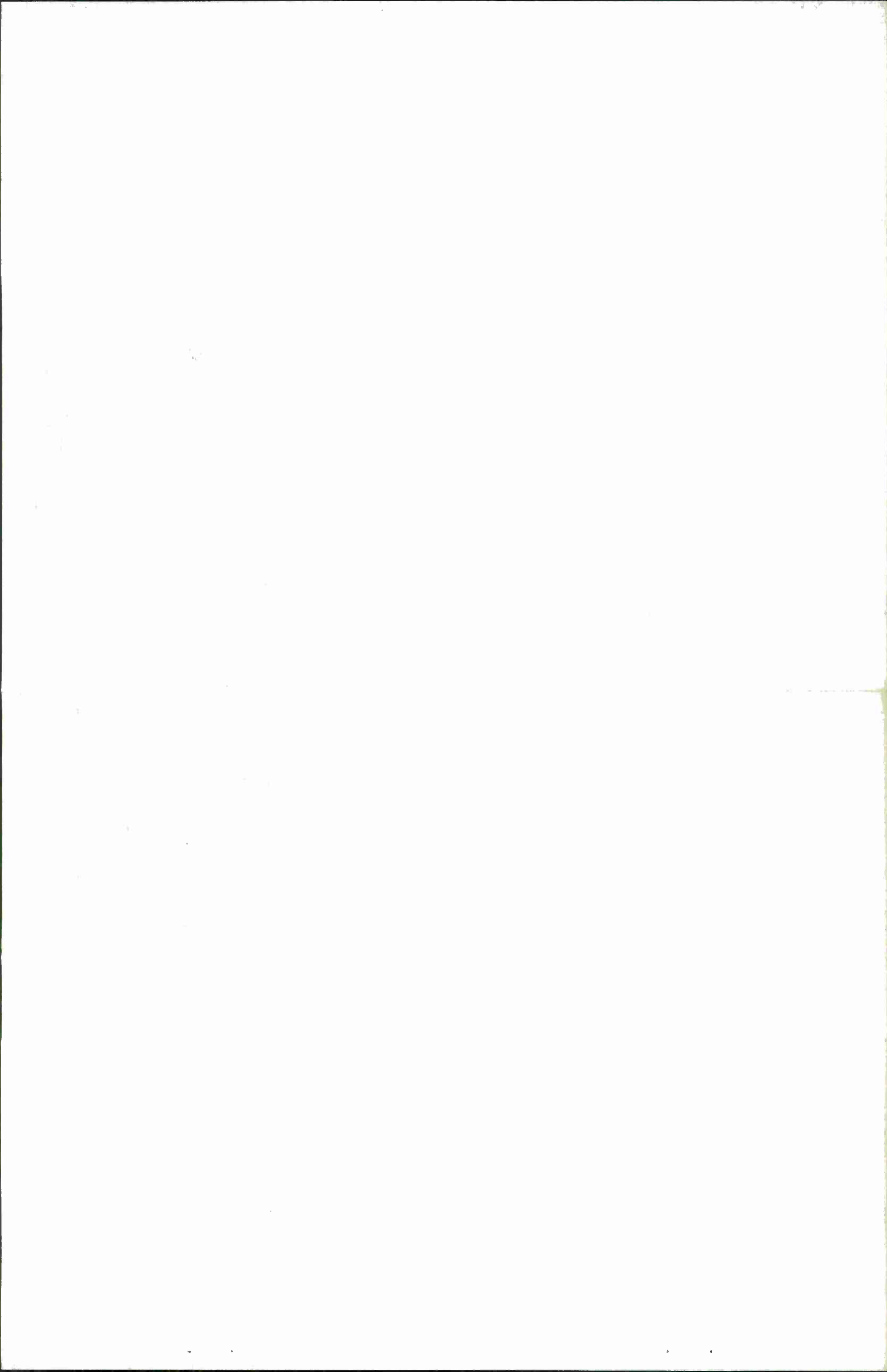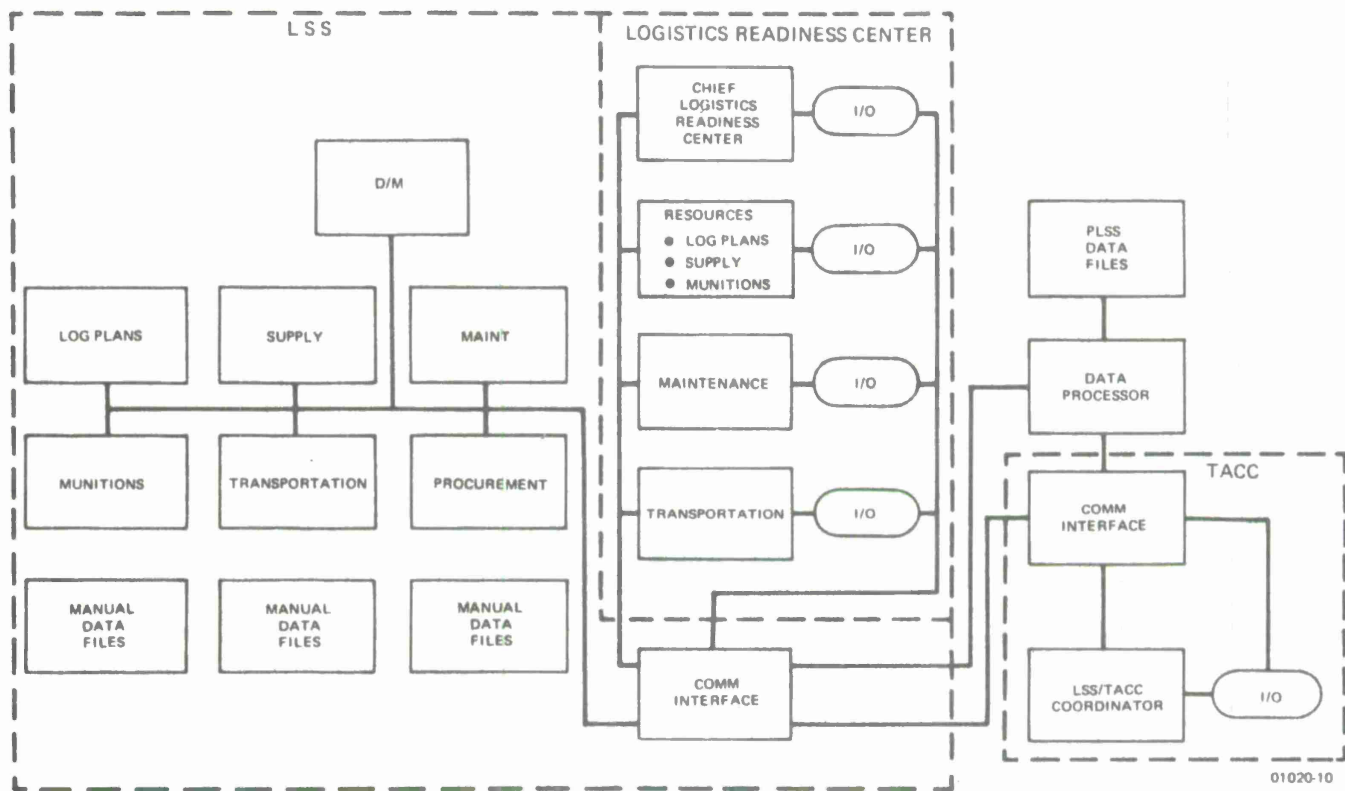
Figure 3.3.2-1. Automated LRC Subsystem Block Diagram

system and simultaneously view status boards etc., then a suitable shelter(s) would be advisable. If the processing facility is a consolidated AFCCP facility such ancillary services as reproduction facilities are also appropriate. Integration or coordination of functions and/or services with operations and communications facilities may also prove to be a viable concept to aid support and to provide backup.

The LRC Section Chief assigned by the D/M manages and controls the operation of the section and is supported by the three materiel and logistics operating areas (resource availability, maintenance and transportation). The Section Chiefs in each of these materiel areas have I/O terminals available for utilizing the ADP system. The primary objective will be to support the D/M in providing him with current materiel status information regarding all maintenance, supply, transportation, ammunition activities, and events that occur as combat air operations are completed. The LRC Section Chief will support any immediate requests from the LSS/TACC coordinator in the TACC. For example, the Chief of Combat Operations wants to know the pylon configuration for fighter aircraft at wing base ALPHA. The Log/TACC Coordinator could initiate a request to the LRC Section Chief to obtain this information from Wing/Base ALPHA materiel recording units. The LRC Section Chief would either query directly, or instruct the resource availability area

to query via the ADP system for pylon configuration data from the appropriate computer base files. The processor would interrogate the files and would sort, merge and compose a message for output to the requesting I/O terminal. Manual files as indicated in both the LRC section and the materiel operations section will be utilized to augment the computer base files.

In summary, the LSS/TACC Coordinator will be the key representative of the deputy for materiel to insure effective support to TACC operations. The Coordinator will be supported, as a prime objective, by the automated LRC section (in the logistics center) which has access to and will utilize the ADP system. The materiel operations section in the logistics center will manually complete necessary activities for the Deputy for Materiel in accomplishing his objectives for supporting AFFOR Commander and for coordinating performance of all materiel operations within the deployed area.

Figure 3.3.2-2 shows in block diagram form the PSS/PRC subsystem that is designed to effectively carry out the Deputy for Personnel's responsibilities to the AFFOR Commander. The physical grouping of personnel and equipment are illustrated in Figure 3.3.2-2 on a conceptual basis to illustrate the degree of ADP support provided in supporting TACC operations

and in supporting the coordination and control of all personnel operations in the combat area.

A PSS/TACC Coordinator will be located in the TACC with an I/O terminal for direct access to and utilization of the Logistics and Personnel Data Processing System. The personnel center located or housed in a small shelter located within the AFCCP complex includes a PRC section and a personnel operations section. The PRC section with a section chief, as designated by the Deputy for personnel, provides access to and utilization of the data processing system through the indicated I/O data terminals. The personnel operations section will conduct and complete the necessary activities for performing all required personnel status, availability reporting, and analysis functions.

The housing requirements will vary from a small shelter required to house 2 members of the personnel staff in the personnel center at a minimum force level employment. The number of personnel required in this center will increase to approximately 3 for a medium force level deployment. At the maximum force level deployment the number of personnel required to be housed in the personnel center are increased to 5. The corresponding M-1948 type shelters should be no more than one for maximum deployments.

The general operations of this subsystem will revolve

about or around the PSS/TACC Coordinator, on both planning and current operations requests in support of the TACC. The PRC section supports the PSS/TACC Coordinator, and provides the deputy of personnel with current status personnel status availability and data. All digital and teletype data from the deployed wing bases and communications and tactical air control and air support groups will be entered via their input/output terminals into the ADP System. There will be automated file maintenance with screening and monitoring capabilities within the readiness section to insure that all file updating conflicts are resolved. A more detailed description of how this subsection operates in meeting the requirements as stated in Section 2 of this report, and in resolving or solving or minimizing problem areas and deficiencies are described in the following paragraphs.

3.3.3 Summary of Functional and Performance Capabilities

Table 3.3.3-1 presents a summary of the automated LRC and automated PRC functional capabilities. The functions performed in this concept are defined in the table by the checks. The specific type of processing support rendered by the ADP facilities is also shown. The details of the ADP processes represented are described in section 3.1.

The numerical references to PLSS functions reflect
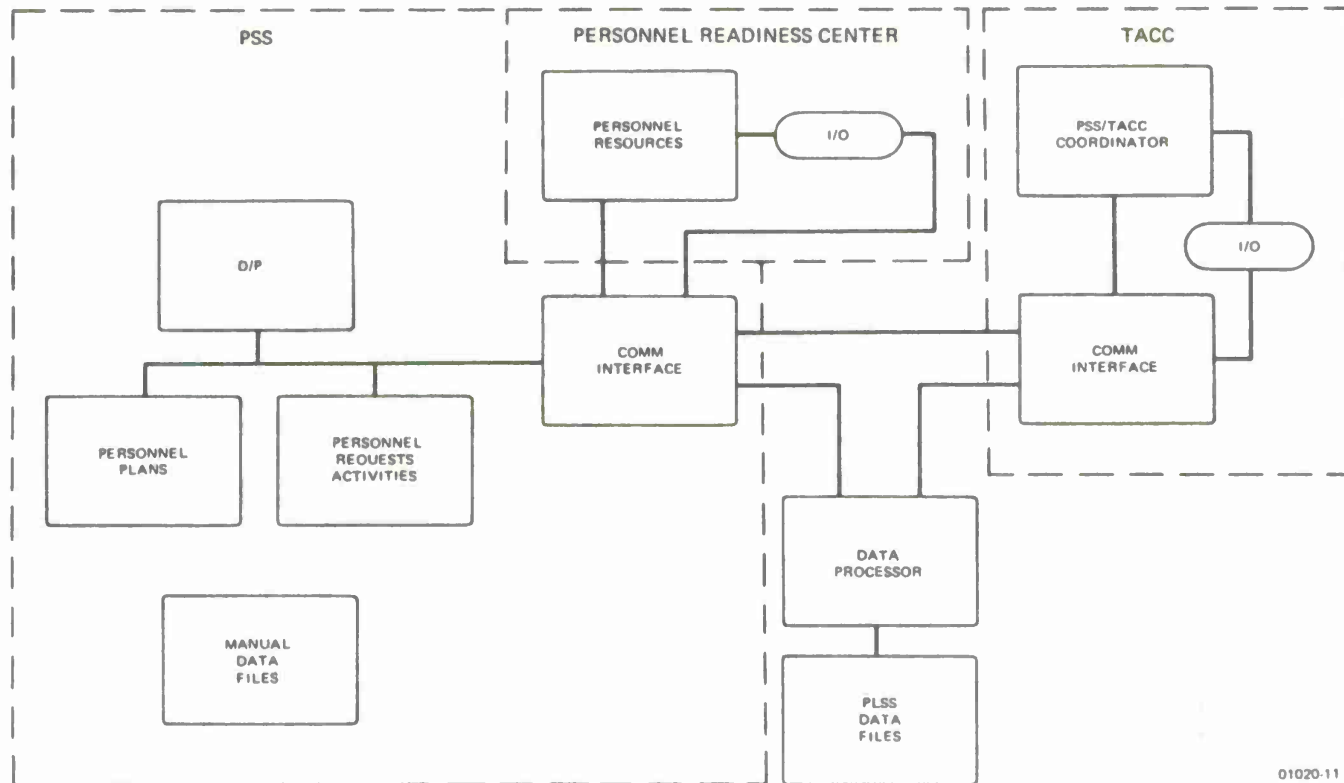
Figure 3.3.2-2. Automated PRC Subsystem Diagram

01020-11

Table 3.3.3-1. Functional Capabilities Summary of the Automated PRC and the LRC Concept (Sheet 1 of 2)

LSS Functions \ ADP Support	Input Mgmt	Message Processing	File Updating	Data Reduction	Data Retrieval	Report Generation	Monitor/ Evaluate
a. PLANS Element Functions:							
1. Monitor and summarize activity rates	X	X	X		X		X
2. Monitor and summarize consumption rates	X	X	X		X		X
3. Monitor and summarize End Item usage	X	X	X		X		X
4. Develop and modify Usage Planning Factors				X	X		
5. Evaluate Operations Plans feasibility				X	X	X	
6. Coordinate procedures for depot support					X		
7. Maintain and Operate an LRC	X	X	X	X	X	X	X
b. SUPPLY Element Functions:							
1. Monitor current status of supply	X	X	X		X		X
2. Coordinate pipeline levels for resupply							
3. Monitor and expedite NORS, ANORS	X	X	X		X		X
4. Maintain master schedule of entering assets	X		X		X		
5. Maintain master financial status							
6. Supervise supply control procedures of AFLOR							
7. Supervise operations of Forward Support							
8. Coordinate with procurement on acquisition							
c. MUNITIONS Element Functions:							
1. Monitor current status of munitions	X	X	X		X		X
2. Integrate and evaluate scheduled resupply			X	X	X		
3. Process Munitions redistribution requirements			X	X	X		
4. Coordinate Munitions items problems							
5. Generate Munitions transport requirements							
d. TRANSPORT Element Functions:							
1. Arrange/coordinate on all transport							
2. Integrate and establish priorities on transport			X		X		
3. Maintain general status of transport resources	X	X	X	X	X		X
4. Follow movement of critical items	X	X	X		X	X	
5. Integrate transport schedules for materiel					X		

01020-14 (1 of 2)

Table 3.3.3-1. Functional Capabilities Summary of the Automated PRC and the LRC Concept (Sheet 2 of 2)

ADP Support / LSS Functions	Input Mgmt	Message Processing	File Updating	Data Reduction	Data Retrieval	Report Generation	Monitor/ Evaluate
e. MAINTENANCE Element Functions:							
1. Supervise subordinate maintenance elements							
2. Monitor current status of maintenance	X	X	X		X		X
3. Monitor repairables flow, DIFMs, NORMs	X	X	X		X		X
4. Evaluate requirements for additional support			X	X	X		
5. Establish/coordinate depot support							
6. Coordinate with Supply, Munitions					X		
7. Integrate End Item maintenance schedules							
f. PROCUREMENT Element Functions:							
1. Identify local sources of supply							
2. Develop local procurement plans and budgets							
3. Select sources and administer procurement							
4. Coordinate transport from sources to users							
5. Arrange materiel receipt and quality control							
6. Supervise and coordinate Base procurement							
PSS Functions							
a. PLANS Element Functions:							
1. Monitor and summarize personnel status	X	X	X		X		X
2. Evaluate personnel non-availability rates				X	X		
3. Develop personnel status planning factors				X	X		
4. Prepare personnel annexes to Ops Plans				X	X	X	
5. Support special task unit formation planning				X	X		
b. PERSONNEL REQUIREMENTS Element Functions:							
1. Maintain and provide inquiry service	X	X	X		X	X	
2. Maintain requirements for replacement, aug.	X		X		X		
3. Maintain scheduled transfer data					X		
4. Maintain key personnel data file	X	X	X		X	X	

the Functional analysis notation of the Functional Analysis Report and are correlated with staff actions and data files in the Interface Report. In receiving requirements for materiel and personnel services (PLSS Function 1.1), the LSS/TACC coordinator and the PSS/TACC coordinator located in the TACC will make maximum use of their ADP capabilities via their own I/O terminals to respond to TACC planning and current operations requests. Most of the TACC requests will be verbal, in the form of actual face to face discussion of the request between the coordinators and the TACC personnel involved. Some of the planning requests may well be initiated by the TACC via the ADP system. For example, an immediate request could involve the question of what Alert aircraft at base Alpha or Bravo would be available to fly an extended fighter escort mission? The LSS/TACC coordinator would compose the query message and initiate the data processor retrieval activity. The data processor for example, could query files such as the Aircraft Performance (range), Configuration Status (Tip/Belly Tanks), and upon finding and retrieving the data, the processor would then perform the necessary data reduction tasks, and present the desired information in CRT display format, and/or hard copy printout at the coordinator's input/output terminal. In performing the PLSS Function 1.1, requirements for support of materiel and personnel operations, the LRC or the PRC chief or his designated staff would receive the request or requirement for services. Service requests for staff elements of the AFCCP would come either verbally or by telephone. The requests from the higher and lateral commands would originate and be received primarily by digital or teletype media via the ADP system or by mail. Most of the automated logistic elements or the automated personnel elements of the deployed force elements in the combat area send their requests by digital and teletype communications using the ADP System or I/O processing and transmission. Voice will be used as a backup capability.

The collection, recording and storing of materiel and personnel data (PLSS function 1.2) will be performed primarily with the LRC-PRC procesor based system, with adequate allowance for manual interaction and augmentation. Most of the TACC requests, being in a voice or manually prepared text, will require the LSS/TACC or the PSS/TACC coordinator to analyze and formulate the query message for the processor system. Nearly all file updating messages will be sent digitally or by teletype, and will be processed and entered into the ADP System automatically, with a manually operating control and conflict resolution capability. The processor will error check, acknowledge, and route non-computer-based file updating messages and operations messages to the addressee's I/O terminal for manual review and disposition.

Maximum utilization was made of the ADP capability in performing the retrieval of materiel and personnel data (PLSS Function 1.3), and in the performance of statistical analysis, evaluations and summaries of materiel and personnel data (PLSS Function 1.4). All retrieval tasks performed by the data processor will be monitored by the LSS/TACC or the PSS/TACC coordinator via their I/O terminals in the case of air operations oriented activities. In the case of supporting other interfacing elements or supporting the logistics and personnel operations requirements, the LRC or PRC chief or his designated staff individual would be involved in monitoring the processor performance of the retrieval requirements and adjusting the processors instructions via the Cathode-Ray Tube (CRT) display with a light pen capability, for example, to insure that the desired data is retrieved. Data in manual files of the logistics and personnel facilities at the AFCCP will be retrieved and combined with the ADP generated data. Data not available in the computer base files will be requested via the automated I/O processing and communications capability to the data source, such as the automated logistic element, via his I/O terminal at a deployed tactical wing base. The data processor will call upon the existing library routines of statistical and mathematical routines in performing the necessary analysis tasks required to project the materiel and personnel resource availability.

The LRC and PRC conceptual configuration will utilize automated data retrieval, reduction and report generation capabilities extensively in supporting extended planning (PLSS Function 1.5). The primary user of the data processing system will be the LSS/TACC and the PSS/TACC coordinators located in the TACC with support from the LRC and PRC as required. The ability of the data processor to query files such as the operations plans, projected status, projected capabilities, etc., and perform subsequent data analysis reduction and report generation tasks will enable effective and accurate materiel and personnel inputs to be provided to the TACC. Both the D/P and the D/M will make maximum use of this ADP capability through the LRC and the PRC chiefs' active coordination and participation with the Coordinators in the TACC as the extended planning inputs are being generated. Additional data reduction of the materiel and personnel planning inputs may be required, or be capable of being provided, to meet the requirements of the D/M and D/P to brief and advise AFFOR commander.

The benefits of the ADP capabilities defined for this conceptual configuration will be the greatest in performing of the functions, support frag order planning (PLSS Function 1.6), and in the performance of the function, support current operations (PLSS Function 1.7). In particular, the capability provided by the ADP system in supporting the TACC requests will be exploited by primarily the LSS/TACC coordinator and

the PSS/TACC coordinators in the TACC via their respective I/O terminals. The data currency and validity required of materiel and personnel resources availability data in the frag order preparation can now be provided on a daily basis within the few hours involved. Furthermore, alternative resource availability projections for the next days operations can be formulated and retrieved by an ADP system on a near real-time basis. Current Operations adjustments requiring additional sorties can now be responded to within a matter of minutes. For example the LSS/TACC Coordinator could instruct the data processor to query the Available Aircraft and Configuration data files, and identify the Bases and number of aircraft that would be suitable. A processor would perform the retrieval data reduction and report generation tasks with the coordinator receiving his output via the CRT display and/or printout by the printer at his I/O terminal.

The remaining five major PLSS functions (PLSS Functions 1.8, 1.9, 1.10, 2.0 and 3.0) all directly support the logistics and personnel operations and interfacing force element requests other than the TACC. ADP support will be of major benefit in the performance of these functions in this conceptual configuration by facilitating the manipulation of the masses of data involved. However, many of the coordination and administrative activities will continue to be performed effectively via the telephone, teletype or mail.

The automated LRC and the automated PRC, in performing or providing the functional capabilities discussed, have the following performance characteristics:

a. An available data processor in the AFCCP area with data base storage capability for 23 logistics data files and 3 personnel data files which occupy 7, 10, and 15 million characters or bytes of storage for minimum, medium and maximum force levels respectively.

b. Two I/O terminals connected to the TACC communications interface and installed at the LSS/TACC Coordinator and the PSS/TACC Coordinator positions. The terminals are connected to the data processor and I/O terminals in the LRC and PRC by appropriate communications interface control/buffering equipment. Each I/O terminal has both keyboard and light pen type data entry devices. The terminal has output devices such as CRT type display and a high speed printer.

c. A transportable shelter which will house an estimated total of 5, 9, and 14 I/O terminals installed in the LRC and 1, 1 and 2 I/O terminals installed in the PRC for minimum, medium, and maximum force level deployments respectively.

d. The LRC input processing capabilities will be

capable of accepting at least 300, 800 and 1300 digital and teletype incoming messages per day for minimum, medium and maximum force levels respectively. The PRC input processing capabilities will be capable of accepting at least 100, 200, and 400 digital and teletype incoming messages per day for minimum, medium and maximum force levels respectively. Each message will be error checked, acknowledged and routed to predesignated addressee(s) such as the processor for file maintenance and I/O terminals for display and/or printout.

e. The LRC output processing capability will be capable of accepting at least 100, 100, and 200 digital and teletype outgoing messages per day for minimum, medium and maximum deployments respectively. The PRC output processing will be capable of accepting at least 20, 30, 50 digital and teletype outgoing messages per day for minimum, medium, and maximum force levels respectively.

f. The communication interfaces at the LRC and the PRC should be capable of handling maximum digital traffic at rates of 320,000, 680,000, and 1,200,000 characters per day and 190,000, 440,000, and 750,000 characters per day for minimum, medium, and maximum force levels respectively. The communication interfaces at the TACC relative to the LSS/TACC Coordinator and the PSS/TACC Coordinator; the communication interface at the LRC and the communications interface at the PRC will enable the LRC/PRC I/O terminals and the TACC I/O terminals at the Coordinator positions to be connected to the data processing system.

3.3.4 Interface Compatibility

The LRC/PRC conceptual configuration will be capable of interfacing with all applicable deployed AF-FOR elements, and the TACC, other AFCCP staff elements, lateral commands deployed in the combat area, and higher CONUS BASED COMMANDS. The LRC/PRC concept will be compatible with current and planned communications systems capabilities employed by both tactical command and control systems and the defense communications systems. Compatibility with communications standards as specified in JCS PUB 10 and reporting requirements of JCS PUB 6 are provided for. Normal maintenance and personnel card reporting system requirements of the CONUS based major air force commands will be complied with. The required resource status and operation data reporting by the lower echelon materiel and personnel elements will not interfere with either the TACS operations, reporting requirements or the administrative traffic requirements in the deployed area. ADPE and software compatibility with the other interfacing systems

of the LRC and PRC concept are an inherent part of its subsequent design objectives.

3.3.5 Backup Capability

The LRC/PRC conceptual configuration allows for degrated modes of operation. Partial failure of the data processor or the lower data files will be augmented by manual data files and reporting capabilities. The loss of the use of the data processor at the deployed tactical wing/bases will require manual source data retrieval analysis and transmittal to the LRC and PRC at the AFCCP. I/O terminal failures will have a slight impact especially for those in the TACC and terminals located at remote materiel and personnel elements. The use of voice backup to PRC duty personnel will support the functions but will introduce substantial time penalties.

3.3.6 Growth Implications

The LRC and PRC concept can readily accommodate growth of requirements both internal to the system and external. Potential changes in the deployed force level configuration and the emergence of new command and control, communications, and weapons systems can be readily accommodated by entering appropriate category information and reporting codes into the system files and translation tables. The contingency involvement of the information management and decision making capabilities of this ADP System configuration will be of increasingly beneficial value to the Deputy for Personnel and Deputy for Materiel in performing their responsibilities to the AFFOR Commander.

3.3.7 Advantages and Disadvantages

The LRC and the PRC have been conceptually developed to meet the requirements as specified for the PLSS, and as an integral part in meeting these requirements, to solve or minimize the problem areas or deficiencies of detailed and timely information handling for the materiel and personnel systems in the deployed AFFOR. The advantages of this conceptual configuration are:

a. The location and ADP accessibility of the LSS/ TACC Coordinator and the PSS/TACC Coordinator will enable the TACC staff to obtain answers to their materiel and personnel data requirements in the time and with the currency and validity required.

b. The ADP capability provided to the two Coordinators in the TACC and with backup from the LRC and the PRC, has the capability of providing the necessary data analysis, materiel and personnel resource trends and the identification of limiting factors within the time constraints that can vary from as little as a few minutes to not more than a few hours (relative to extended

planning), and be assured that the data are valid, current and complete.

c. The combined Coordinator and LRC and the PRC ADP capability will enable a near real-time monitoring of this status of all AFFOR resources.

d. This ADP based concept supports TACC decision making activities in their planning and conduct of air operations by being able to show alternative allocations of forces and resources, the ability to provide visibility of all materiel and personnel resources and constraints, and the ability to reflect consistent use of command guidance and directives.

e. This conceptual configuration will more effectively support the TACC staff in their extended planning activities by providing valid and current materiel and personnel use rates and trends by flagging unusual consumption/cost developments, and by alerting TACC to materiel and personnel problems in the requirements.

f. The concept will enable the D/P and the D/M to carry out their assigned responsibilities using fewer staff personnel than required in a manual system.

The disadvantages of this ALC and APC concept include:

a. The LRC and the PRC concepts will require the exchange of key (sensitive) data between the TACC and the LRC and PRC in supporting the TACC operations and between the PRC/LRC and tactical bases.

b. A substantial amount of equipment is required, including a central communications terminal equipment, I/O terminals and data processing support, and storage media devices for the data files.

3.4 DESCRIPTION AND EVALUATION OF THE TACC SUPPORT ELEMENT

An automated personnel and logistics support center concept, described in this subsection, provides ADP support in performing those materiel and personnel tasks which directly aid the TACC in extended planning, current operations and current planning. This concept defines an integrated Personnel and Logistic Support Center (PLSC) which is collocated with the TACC. The PLSC is supported by a manual facility which houses the D/M and his staff, and a manual facility housing the D/P and his staff. The D/M will utilize a manually supported LRC to enable efficient and effective operations, both in coordinating with the support center and in directing, coordinating, and supervising the materiel operations of the deployed elements in the combat area. In a similar manner the

D/P and his staff will utilize a manually based PRC to support the personnel operations relative to the automated PLSC, as well as the coordination and supervision of the personnel activities in the deployed area.

3.4.1 System Description

Figure 3.4.1-1 shows in block diagram form the overall system in which the automated personnel and logistics support center is employed. On Figure 3.4.1-1, the personnel and logistics support center (PLSC) is tied to the data processor and data files via I/O terminals and hardcopy output terminals as required. The PLSC is tailored to provide integrated personnel and logistics support to the TACC and their performance of extended planning, current planning and current operations. The D/M and his remaining staff will use manual means of data processing and input/output processing to support the PLSC, as well as the materiel operations within the deployed area. In a similar manner the deputy for personnel and his remaining staff elements will operate on a manual basis, supporting both the PLSC as required and their own personnel operations or activities. Automatic data processing (ADP) facilities will be associated with the PLSc and will consolidate the processing needs of both areas.

At the deployed wing bases, there will be a personnel and logistic support element (PLSE) employing remote data terminals connected via communications to the PLSC processor, to provide the focal point for the receipt of data requests from the PLSC, and to acquire source data inputs from the various base elements dealing with materiel and personnel activities. Specifically, the different squadron MCCs will be tasked to provide detail maintenance input data, and also summary type data, to the PLSE via telephone, TTY or hardcopy. The centralized base personnel office (CBPO) or the PERSCO unit attached to each base will support the PLSE on personnel status and availability data, again on a manual basis using their own manual files. If automation is used in the CBPO or in PERSCO they may be directly tied to the PLSC via data links.

The Mobile Communications Groups which are deployed in the deployment environment will employ a PLSE to coordinate and consolidate the incoming and outgoing maintenance and personnel data. The Group PLSE will be tied to the PLSC data processing system. However, PLSE terminals will not be capable of entering the central or the PLSC data files except under strict PLSC processor control. Operationally a PLSE at a mobile communications group could enter or will enter, for example, the group's reporting message on an item. This message would report for example, the running hours, downtime, wait time and report time which have been received from the appropriate maintenance control center with a detached maintenance control center at a remote communications center. The PLSE would enter the data for transmittal to the processing system at AFCCP. The processor at AFCCP would provide the necessary input processing, in the case of this message, for updating the major and item history file.

Personnel and logistics support elements are also provided for the Tactical Control Group and the Tactical Air Support Group. In both groups there will be a PLSE with I/O tie-in to the PLSC data processor for I/O processing only. The PLSE will again act as the central response coordinator for all materiel and personnel reporting to the PLSC and to the D/M and staffs through their logistics readiness centers, or the D/P and their personnel readiness centers as the data may require.

The CONUS based MAJCOMs, including the AFLC and USAFMPC organizations, will receive the appropriate messages from the PLSC or more specifically from the D/M or D/P staffs via the PLSC. For example, messages such as the consolidated materiel status report for the AFFOR will be entered through the appropriate output terminal for relay via communications interface to the CONUS base commands.

A direct tie-in with the PLSC processor base system is indicated also for the joint task force/JOC deployed in the combat area and the Army Corps Division Headquarters/TOS. At both the higher and the lateral force elements the J1 or J4 Deputy for Materiel Air Liaison Officer will be the focal point for entering coordination type data and resending it via the PLSC processor base system. In the Army Corp. or Division TOS element the J1 or J4 Air Liaison Officer would receive and provide inputs by means of the processor base system as required.

3.4.2 Description of the Automated PLSC

Figure 3.3.2-1 presents a block diagram of the automated PLSC and the supporting elements of the D/M and of D/P. The physical arrangements as shown in Figure 3.4.2-1 includes the automated PLSC collocated with the TACC. Two other huts or transportable shelters such as the S-80 or the M-1948 type shelters would be used to house separately, the remaining portions of the Deputy for Materiel and his staff, and the D/P and staff. Within the logistics unit, the D/M will utilize a logistics readiness center to provide them with current status of all maintenance and supply. Within the personnel unit, another small shelter, the D/P will utilize a PRC to provide him with a centralized capability for assessing the status of all personnel activities and events.

The transportable shelter requirements vary as the size of the employed force. The PLSC which is collocated with the TACC houses approximately 7 personnel plus associated I/O equipment and communications interface equipment. It is expandable to a total of approximately 24 at the maximum force level. A shelter which will house a D/M and the remaining portion of his staff including the readiness center will have
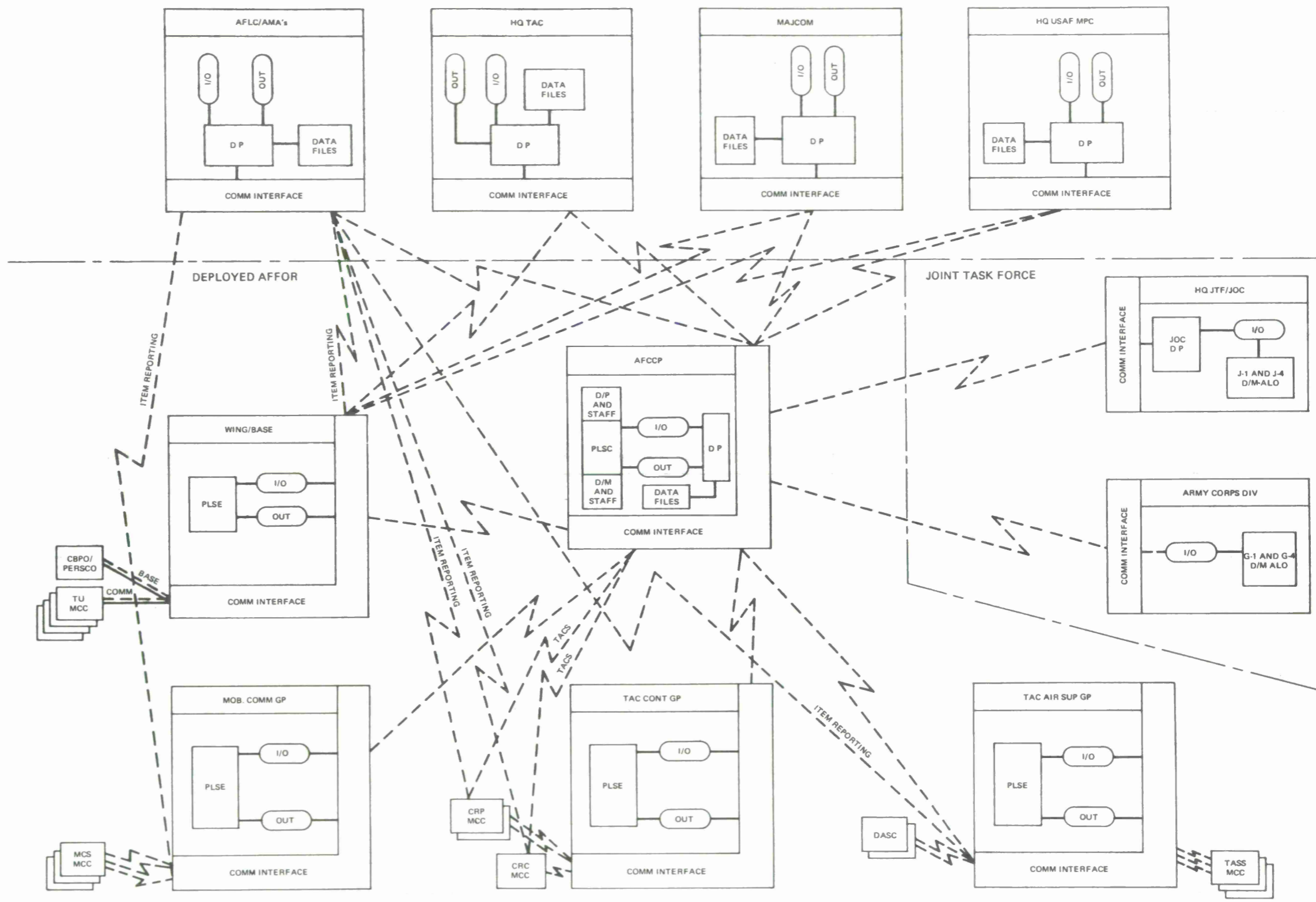
Figure 3.4.1-1. Automated Personnel Logistics Support Center

MATERIEL OPERATIONS

MAINT | D/M

PROCUREMENT | SUPPLY

TRANSPORT | LOG PLANS

MUNITIONS

MANUAL DATA FILES

MANUAL DATA FILES | MANUAL DATA FILES

LOGISTICS READINESS SECTION

MANUAL DATA FILES | MANUAL DATA FILES

RESOURCES | MANUAL DATA FILES

MAINT | MANUAL DATA FILES

CHIEF CRC | I/O

COMM INTERFACE

PSS/LSS SUPPORT CENTER

PERSONNEL RESOURCES | I/O

LOGISTICS RESOURCES | I/O

MAINT | I/O

TRANSPORT | I/O

COMM INTERFACE

DATA PROCESSOR

PLSS DATA FILES

TACC

COMM INTERFACE

OUT

SENIOR DUTY OFFICER

PERSONNEL OPERATIONS

D/P | PERSONNEL PLANS

PERSONNEL REQUESTS ACTIVITIES

COMM INTERFACE

MANUAL DATA FILES | MANUAL DATA FILES

PERSONNEL RESOURCES | I/O

PERSONNEL READINESS SECTION

01020-13

Figure 3.4.2-1. Automated Personnel and Logistics Support Center Subsystem Block Diagram

approximately 13 personnel at a minimum force level increasing to 40 people at the maximum force level. The comparable housing for the D/P and his remaining staff will be quite small; requirements of the D/P are for 2 people at minimum and 7 personnel at maximum force levels. As indicated in Figure 3.4.2-1, the PLSC is organized into four main functional areas of materiel and personnel. Specifically, the logistics materiel area will include the resource availability, the maintenance and transportation. The single personnel area will accommodate both plans and requirements.

The main location for the D/M and his staff will include a readiness center with access to an I/O terminal. The remaining functional areas of logistics will coordinate with the readiness center in performing the

necessary materiel resource evaluation, operations management, and coordination of support activities. The personnel logistics center will have a small readiness section capability with an I/O terminal tied to the PLSC processor and files. Backup is also indicated by the remaining individuals of the Deputy for Personnel staff to assist in management control and coordination of personnel operations in the combat area. The data processor and the computer based data files are tailored to provide the necessary data storage, retrieval, analysis, and report generation which will directly support the PLSC personnel as they interface and respond to the TACC requirements. The I/O terminals located in the logistics center and the personnel center provide both with ADP support in performing those

functions and activities associated with the materiel and personnel operations themselves. Each of the logistics and personnel centers will have manual data files to augment the computer based files as required.

3.4.3 Summary of Functional and Performance Capabilities

Table 3.4-1 presents a summary of the automated personnel and logistics support center functional capabilities. The functional capabilities of this concept are described in terms of data processing provided to support the activities of the staff elements having representation in the PLSC. Data processing and input/output processing is also described for those activities required to support the materiel and personnel operations within a combat environment, and to accomplish all interface requirements with other lower and higher force elements. Data processing characteristics are further described in 3.1.

The receipt of requirements for materiel and personnel services (PLSS Function 1.1) will be handled primarily by voice (Manually), and to some extent digitally entered via the data processing system. The capability is provided to receive most of the requests for materiel and personnel service requirements from other force elements besides the TACC via digital and teletype messages which can be entered via the ADP System. Another exception to this would be the other AFCCP staff elements which like the TACC would use primarily voice and/or hard copy messages transmitted by a courier or actually handed to the logistics readiness center chief or the PRC chief as the case or requirement would be. Those incoming messages entered by the ADP System would be error checked, acknowledged, and routed to the designated I/O terminal in the PLSC or the logistics facility or the personnel facility located in the AFCCP complex.

The I/O processing capability for supporting the performance of collecting, recording, and storing materiel and personnel data (PLSS Function 1.2) will be primarily computer scheduled, executed, and controlled. Automated I/O processing enables direct input of digital and teletype file updating messages to be routed directly to the processor for automatically maintaining the personnel and logistic data files. A file maintenance monitoring capability is provided through display and printout of conflicts. All non-computer-based file maintenance messages and operations type messages will be error checked, acknowledged and routed to the addressed I/O terminal in the PLSC or the close-by logistics readiness center and facility, or the personnel center readiness center. Manual files located in both the logistics readiness center and the personnel readiness center will be updated manually from incoming messages. Collection of data will also use voice and/or hard copy delivery through courier or mail service when required.

The PLSC's capability to retrieve materiel and personnel data (PLSS Function 1.3) will make maximum use of the ADP capabilities and those activities required to support the TACC. The Chief of Current Operations in the TACC, for example, could ask the PLSC Chief to get a technician who could repair the Antenna at the (CRC) site Alpha by three o'clock. The PLSC Chief or his designated maintenance and personnel resources staff would jointly compose a query message for the data processor. When queried, the processor would retrieve data from files such as the critical skills, the personnel locator, the special skills locator, the maintenance resource data, etc. When the processor had retrieved the data, with monitoring by the PLSC Chief or designated personnel, the necessary reduction and report generation would be performed, with the output transmitted to the I/O terminals. The PLSC Chief then could provide the reply either verbally or by the printout of the hardcopy. The processor will notify the requestor if data are not available in files, so that subsequent requests via the ADP System can be initiated. The particular source would then be interrogated for the data, and would send it back via the automated I/O processing and communications interfaces to the PLSC Chief or his designated staff requestor.

The performance of statistical analysis, evaluations and summarization of materiel and personnel data (PLSS Function 1.4) to a large extent will be performed by the data processor based system for those data required to support the TACC. Although data files which are directly and only applicable to the materiel and personnel operations support will be manual, a large amount of the data necessary in performing this function can be obtained from the TACC operations oriented data files stored in the ADP system. Operator interaction via his I/O terminal with the ADP system will take place to permit modification, entry of manually retrieved data, and control of the automated performance of the statistical analysis, evaluations, and data reduction of the desired personnel and materiel data.

The automated data storage, retrieval, reduction, and report generation capability of the PLSC will substantially improve the materiel and personnel support of extended planning (PLSS Function 1.5). The PLSC Chief or his designated representative in the PLSC can respond in real time to TACC near term or extended Planning requests. The PLSC Chief would formulate the query message for the data processor. Such a request might be, 'will our LOX supplies sustain an increased sortie rate from 0.8 to 1.1?' The data processor upon receiving the PLSCs query retrieves data from files such as LOX usage, projected LOX replenishments, etc. The processor would then perform the necessary data reduction and report generation tasks. The PLSC Chief would then provide the planning

Table 3.4-1. Functions in Automated Personnel and Logistics Support Center Concept (Sheet 1 of 2)

ADP Support / LSS Functions	Input Mgmt	Message Processing	File Updating	Data Reduction	Data Retrieval	Report Generation	Monitor/ Evaluate
a. PLANS Element Functions:							
1. Monitor and summarize activity rates	X	X	X		X		
2. Monitor and summarize consumption rates	X	X	X		X		
3. Monitor and summarize End Item usage	X	X	X		X		
4. Develop and modify Usage Planning Factors			X	X	X	X	
5. Evaluate Operations Plans feasibility				X	X	X	
6. Coordinate procedures for depot support							
7. Maintain and Operate an LRC							
b. SUPPLY Element Functions:							
1. Monitor current status of supply	X	X	X		X		
2. Coordinate pipeline levels for resupply							
3. Monitor and expedite NORS, ANORS	X	X	X		X		
4. Maintain master schedule of entering assets			X		X		
5. Maintain master financial status							
6. Supervise supply control procedures of AFFOR							
7. Supervise operations of Forward Support	X		X		X		
8. Coordinate with procurement on acquisition							
c. MUNITIONS Element Functions:							
1. Monitor current status of munitions	X	X	X		X		
2. Integrate and evaluate scheduled resupply				X	X		
3. Process Munitions redistribution requirements					X		
4. Coordinate Munitions items problems							
5. Generate Munitions transport requirements							
d. TRANSPORT Element Functions:							
1. Arrange/coordinate on all transport							
2. Integrate and establish priorities on transport			X	X	X		
3. Maintain general status of transport resources	X	X	X		X		
4. Follow movement of critical items	X		X		X		
5. Integrate transport schedules for materiel							

01020-36 (1 of 2)

Table 3.4-1. Functions in Automated Personnel and Logistics Support Center Concept (Sheet 2 of 2)

ADP Support / LSS Functions	Input Mgmt	Message Processing	File Updating	Data Reduction	Data Retrieval	Report Generation	Monitor/ Evaluate
e. MAINTENANCE Element Functions:							
1. Supervise subordinate maintenance elements							
2. Monitor current status of maintenance	X	X	X		X		
3. Monitor repairables flow, DIFMs, NORMs	X	X	X		X		
4. Evaluate requirements for additional support				X	X		
5. Establish/coordinate depot support							
6. Coordinate with Supply, Munitions							
7. Integrate End Item maintenance schedules	X		X		X		
f. PROCUREMENT Element Functions:							
1. Identify local sources of supply							
2. Develop local procurement plans and budgets							
3. Select sources and administer procurement							
4. Coordinate transport from sources to users							
5. Arrange materiel receipt and quality control							
6. Supervise and coordinate Base procurement							
PSS Functions							
a. PLANS Element Functions:							
1. Monitor and summarize personnel status	X	X	X		X		
2. Evaluate personnel non-availability rates				X	X		
3. Develop personnel status planning factors			X	X	X	X	
4. Prepare personnel annexes to Ops Plans					X		
5. Support special task unit formation planning					X		
b. PERSONNEL REQUIREMENTS Element Functions:							
1. Maintain and provide inquiry service	X		X		X	X	
2. Maintain requirements for replacement, aug.					X		
3. Maintain scheduled transfer data					X		
4. Maintain key personnel data file	X	X	X		X	X	

01020-36 (2 of 2)

input to this TACC from output of data via his I/O terminal.

The readiness section chiefs in both the logistics readiness section and the personnel readiness section coordinate and participate with the PLSC Chief in the generation of planning inputs. Both the logistics and the personnel readiness section chiefs may utilize the data processing in performing further data development tasks which will be necessary for utilization by both the D/M and D/P at their briefing of the AF-FOR commander.

The major benefit which a TACC will derive from the PLSC concept will be realized in the performance of the functions supporting the frag order planning (PLSS Function 1.6), and in the performance of the function of supporting current operations (PLSS Function 1.7). The PLSC Chief or his designated staff will make maximum utilization of the available ADP capabilities in the support of both functions. The data processor will perform most of the data retrieval analysis, reduction and report generation functions per task. The Chief of Current Plans for example, might ask the PLSC chief, 'can I have four of the NORM aircraft from air base Bravo at 1400 tomorrow?' The PLSC Chief would then formulate the ADP query and initiate the retrieval actions and response preparation.

The data processor when instructed by the PLSC chief would query files such as the NORMS, the aircraft history, etc., and perform the subsequent data reduction and report generation tasks. The processor would then schedule and instruct the I/O terminal at the PLSC Chief's position to display and/or printout the answer to the request. The PLSC chief would be capable of monitoring the processor task performance through his I/O terminal. Data not available in the computer based files or in the manual files at the PLSC or the logistics and personnel centers at the AFCCP will be requested via the ADP and communications interface facilities to the source by means of his own I/O terminal. Once the source data is found, it is retransmitted back via the source I/O terminal to the PLSC Chief's terminal for his requirement.

Performance of the remaining major PLSS functions (PLSS Functions 1.8, 1.9, 1.10, 2.0 and 3.0) will be dependent to a large extent on manual data processing utilized in the automated I/O capabilities to send and receive the digital and teletype messages. The one major exception involves performance of the dissemination of materiel and personnel data (PLSS Function 1.9). In performing this function it is expected that maximum utilization will be made of the automated and I/O processing capability of this conceptual configuration.

The PLSC in providing the functional capabilities specified has the following performance characteristics and requirement capabilities:

a. An available data processor collocated with the PLSC with data base storage capacity sufficient for 21 number of logistic data files and 9 number of personnel data files which will occupy 4, 10 and 19 million bytes of storage for minimum, medium and maximum force levels, respectively.

b. 4, 6 and 11 I/O terminals are installed in the PLSC at minimum, medium, and maximum force levels. Each I/O terminal will be connected to the data processor via the appropriate communication interfaces and controls/buffering equipment. Each I/O terminal will have a keyboard or light pen type data entry device with the output devices in the form of CRT display and high speed printer type printers.

c. The estimated total of one I/O terminal installed in the logistic readiness sections chief position. One I/O terminal installed at the personnel readiness section chief operating position. These I/O terminals will be connected to the PLSC data processor and files.

d. The PLSC input processing capabilities will enable the acceptance up to a maximum of at least 419, 953 and 1665 digital and teletype incoming messages per day for minimum, medium and maximum force levels, respectively. Each message will be error checked, acknowledged and routed to the addresses given in the message.

e. The PLSC output processing capabilities will enable the acceptance of at least 73, 132 and 214 digital and teletype outgoing messages per day for minimum, medium and maximum force levels, respectively.

f. The communication interfaces at PLSC will be capable of accepting digital, teletype and voice traffic at the rates of 510,000; 1,100,000 and 2,000,000 characters per day for minimum, medium and maximum force levels. The communications interface at both the PLSC and the TACC will enable the PLSC I/O terminals and the TACC to be connected.

3.4.4 Interface Compatibility

The PLSC conceptual configuration is capable of interfacing with the TACC, both now and for the post 1975 (SEEK FLEX) time period, with other AFCCP staff elements, with the lower echelon force elements, and with other higher and lateral command organizations. This interface compatibility will include both voice and data interfaces in terms of format and media. The PLSC will be compatible with current and planned communications equipment capabilities to be provided by the tactical command and control systems, as well as the AUTODIN/AUTOVON defense communication systems. The PLSC concept will also account for data link standards as specified in DCA PUB

10 as well as reporting requirements as stated in JCS PUB 6. The AFLC reporting requirements and the Manpower Personnel System requirements will be maintained by this conceptual configuration. The additional resource status and operations data reporting from the lower echelon elements will not interfere with the administrative materiel and personnel data reporting to CONUS-based commands. The reporting requirements placed or utilized by this concept will also not interfere with or restrict the present or planned air operations reporting requirements of the TACS as they now exist, or are planned for the post 1975 period. The PLSC concept is or will be capable of accommodating (being compatible with) new systems that are planned for the post 1975 time period such as AWACS.

3.4.5 Backup Capabilities

The PLSC conceptual configuration which includes the manual logistics and personnel facilities has inherent manual backup capability. Temporary loss of the data processor should not significantly impact the PLSC support of the TACC. Both the logistics readiness section within the logistics center and the personnel readiness section within the personnel center will be capable of supporting the PLSC, so that the degradation in support performance to the TACC will not be large. In general, the maintenance and personnel data reporting via manual, voice and teletype, administrative circuits, will enable the PLSC to operate in a degraded mode until the data processor or auxiliary memory devices have been repaired and returned to operational status. In general, this conceptual configuration incorporates adequate manual backup both in message reporting and in data files and data processing capabilities.

3.4.6 Growth Implications

The PLSC concept has been defined to readily adapt to both internal as well as external growth requirements. The data storage, reduction and retrieval capabilities that are subsequently developed, will require a continual evolution and compatibility of standardization constraints both at internal as well as external interfacing system.

3.4.7 Advantages and Disadvantages

The PLSC concept formulated in this study to meet the materiel and personnel requirements of the LSS and the PSS, and to inherently solve or minimize the problem areas that presently exist in the current system, has the following advantages:

a. With a PLCS collocated with a TACC, TACC personnel will not be tasked with additional responsibilities of data collection, collation and preliminary evaluation of materiel and personnel data.

b. The PLSC utilizing the support of the ADP system will be capable of responding to the TACC requests in essentially real time.

c. The proposed PLSC concept includes aircraft external configuration (tanks, pylons) reporting capability via dedicated materiel channels.

d. A more complete data reporting system is provided with respect to supporting the TACC. For example certain resource status data reports such as the LOX reports currently provided yearly in CONUS will be reported weekly in the conceptual system to enable a closer monitoring of the current support level.

e. The concept of providing ADP capabilities in terms of I/O terminals at the lower echelon force elements will improve data completeness and data currency.

f. The PLSC will provide real time or close to real time answers to the materiel and personnel TACC operations support requirements, as they are required in the monitoring and adjustment of current operations in the TACC.

g. The PLSC concept permits the implementation of improving visibility of the special skills (personnel) for real-time assignment to special operations support and equipment maintenance problems.

h. The PLSC in utilizing ADP support will be able to perform rapid planning and assessment of alternatives in support of TACC operations.

The disadvantages of the PLSC are defined as follows:

a. Since only part of the PSS and LSS are provided automated support, (PLSC), the manual processing and reporting capabilities associated with the logistics center and the personnel center in support of their respective operations may reduce effectiveness of this operation, and therefore will tend to impact the value of the PLSC capabilities.

b. Although the personnel and logistics functions are integrated in the PLSC to support the TACC, the remaining Deputy for Materiel and Deputy for Personnel operations take place in two physically separated shelters and will therefore tend to make coordination between the two staff agencies more difficult.

c. The essentially manual logistics and personnel centers which support both the PLSC and their own operations will not realize a decrease in manpower requirements.

3.5 DESCRIPTION AND EVALUATION OF AUTOMATED SUPPORT TO D/M AND D/P STAFFS

An automated PLSS concept, described in this subsection provides an ADP data storage, reduction and retrieval capability to the D/P and the D/M staffs. This candidate concept provides comprehensive ADP support to all elements of the D/M and D/P staffs to realize the maximum in staff capabilities and effectiveness. Because of the widespread access to current information within the staffs the LRC and PRC organizations are virtually eliminated. Special support actions would be handled by a varying number of liaison or contact officers within the general staff area as required by the needs of the situation. Extensive wing/base automation is also included in the concept. The automated PLSS provides the capability of meeting requirements specified previously in Section 2 of this report, and the capabilities to solve or minimize the problem areas and/or deficiencies.

3.5.1 System Description

Figure 3.5.1-1 shows, in block diagram form, typical CONUS-based and deployed organizations which would be supported by an automated PLSS as a part of the AFCCP. The automated PLSS utilizes a data processor and auxiliary memory devices for storing the required PLSS data files. I/O terminals which have the capability for both CRT display of data and for hard copy message printout provide the D/P and D/M and their staffs with direct access to the data files and processing of the data. The staff at the PLSS can enter materiel and personnel requirements requests for routing via output processing to lower echelon I/O terminals. Direct access to the wing/base data files is a growth item or capability.

Materiel and personnel operating elements at the deployed wing/base have access to a wing/base processor for storing, reducing, and retrieving materiel data. The Wing/Base materiel and personnel elements with this source data automation capability can effectively provide the large outgoing message requirements in direct support of the PLSS at the AFCCP. For example, the real-time requirement for providing the aircraft configuration report can be accomplished from the wing/base level with direct input to the AFCCP data processing system or to the TUOC for reporting on the operations channel. This latter course of action would tend to burden operations elements at either the TACC or the TUOC with considerable information which might or might not be used. An immediate request by the TACC (Chief of Current Operations) for a specific weapons configuration availability requires only that the designated materiel operator at the PLSS query the processor-based files and obtain the information through his own I/O terminal. The alternative method would be for the TACC to query the

TUOC which would consult with the Unit Materiel/Munitions element to establish an answer.

The Wing/Base materiel and personnel staff will continue to provide the necessary maintenance cards and personnel status cards for transmittal via the DCS AUTODIN circuits to their respective CONUS based higher commands. The command post PLSS capability has dedicated communications circuits to meet the PLSS message reporting requirements in the contingency area without conflicting with either the operational reporting or administrative reporting requirements. The Wing/Base ADP capabilities with input/output access and utilization by the materiel and personnel components enables the data reduction of the detailed maintenance and personnel data to meet the requirements of the AFCCP-based PLSS center. The direct input/output tie-in with the AFCCP/PLSS processing system will be on a time-shared basis. However, the specific timing requirements should impose no serious constraints on the processor and software system. The Wing/Base installed I/O terminals will tie-in with the AFCCP/PLSS processing system, however, it will not have direct access to the AFCCP/PLSS data files. The AFCCP/PLSS I/O processing will accept, edit, acknowledge and route the incoming messages. The deployed mobile communications group will also have input/output terminals for maintenance status reporting. These detached maintenance and personnel staffs are provided with ADP I/O processing capabilities to satisfy their AFCCP/PLSS reporting requirements. Input terminals are also indicated for the maintenance personnel that may be deployed with MCCs away from an occupied base. For example, a digital message entry device could be utilized for satisfying the input requirements of the maintenance data from a remote communications center. I/O terminals tied-in with the AFCCP/PLSS center provide data service for the maintenance and personnel members attached to the Tactical Air Control group. This remote I/O ADP capability provides the AFCCP/PLSS center with current and complete resource status information for the TACC. This automated input capability enables the reported digital data to enter the AFCCP/TACC processor and relayed to his (D/M) I/O terminal for monitoring and subsequent supervisory activities. Materiel and personnel staff attached with the Tactical Air Support Group (TASG) also have available input/output terminals tied to the AFCCP/PLSS processing system for input and output processing support. In a similar manner, the maintenance personnel attached to the various elements of the air support group (e.g., DASC, TACP, etc.) have a direct digital input capability for composing and sending the required TACS status data to the AFCCP/PLSS center. Maintenance personnel deployed with mobile units such as the Tactical Air Control Party (TACP) will be provided with an input terminal such as the digital message

entry device for reporting on a real-time basis, important maintenance information concerned with these remote TACS units/equipments. This direct digital entry capability will help to resolve one of the problem areas found in the current system. Specifically, the D/M at the supporting base will know of the existence of any maintenance problems, and can thus initiate timely corrective actions.

A direct I/O tie-in with the AFCCP/PLSS center is also provided for both the contingency-based JTF/JOC facility and the deployed Army Command Post. In both cases, the I/O terminals would be utilized by a detached Air Force maintenance liaison officer to facilitate the coordination and materiel and personnel requests and queries. A digital tie-in is also indicated for the CONUS-based logistics and personnel systems. The Wing/Base will still maintain and be responsive to the Air Force Logistics and the Personnel system reporting requirements. The integrated AFCCP/PLSS center can be more responsive in providing materiel and personnel resource status and availability information to the appropriate CONUS-based command.

3.5.2 Description of the Automated PLSS

Figure 3.5.2-1 presents a block diagram of the automated PLSS conceptual configuration which would be deployed with the AFCCP. The physical grouping of personnel and equipment is illustrated on a conceptual basis in the diagram. A PLSS/TACC coordinator with an operating position in the TACC is the focal point for all materiel and personnel support activities required by the TACC. The Deputy for Personnel and Deputy for Materiel and other members of their staff are located in another transportable shelter such as the S-80 or M-1948 type shelters. As a function of the size of the deployed force, shelter requirements will vary from an M-1948 type housing approximately 14 people at the minimum force level, to two M-1948 types for medium force level deployment, and finally to an S-80 type shelter adequate for housing approximately 43 personnel and their I/O terminals.

The automated PLSS is organized into a readiness section which directly supports TACC operations through the PLSS/TACC Coordinator(s), and an operations section which has a primary responsibility for supporting the materiel and personnel operations. The readiness section of the PLSS will be managed and controlled on a day to day basis by section chief designated jointly by the D/M and D/P. The readiness section chief will be supported by three materiel operating areas (resource availability, maintenance and transportation) and two personnel area (personnel plans and requirements). I/O terminals are available for use by the assigned materiel and personnel staff in this readiness section. Also, output terminals are available for use by the D/M and D/P. Each I/O terminal ties directly to the AFCCP/PLSS processor and the PLSS data files. The readiness section chief through his

I/O terminal is capable of rapidly responding to requests from the TACC either directly or through the PLSS/TACC Coordinator. For example, the PLSS Readiness Chief in receiving a request for a determination of the current limiting factor and materiel trends report would task the resource availability operator to produce this required report. The resource availability operator would formulate and input the inquiry request to the AFCCP/PLSS data processor. The processor then performs the necessary data retrieval, manipulation and analysis tasks. The processor upon completion of the data retrieval and analysis tasks, generates and outputs the report at the readiness section chief's I/O terminal for transmittal to the TACC.

The remaining part of the PLSS center is utilized by the operations section. The operations section chief manages the day to day operations of the section. This section is provided the necessary I/O terminals for all operations areas of both materiel and personnel required to assist/advise and adjust the operations of all deployed materiel/personnel. The operations section personnel have available data files which are accessed with the processor such as the personnel background file, the supply items source index file and the purchase log file for performing materiel/personnel operations-oriented functions and tasks. In summary, the operations section will have data retrieval, analysis or reduction, and report generation capabilities to effectively conduct the operations of all materiel and personnel staff activities in the contingency area. The operations personnel will coordinate with the readiness sections personnel both via the input/output terminals as well as by voice. The determination and solution of current and predicted resource status and critical skills problem areas are dependent upon the effective and cooperative activities of the complete PLSS personnel and materiel system.

3.5.3 Summary of Functional and Performance Capabilities

Table 3.5-1 presents a summary of the functional capabilities of the automated PLSS conceptual configuration. The basic PLSS functions cover the entire range of staff responsibilities and are related to the data processing capability provided with this operational concept. The requirement for materiel and personnel services (PLSS Function No. 1.1) generated by the TACC is directed to the PLSS/TACC coordinator who in turn can refer the service request to the PLSS Readiness Section Chief if for example an extended planning input is required. The capability in this concept configuration permits the designated Operations personnel (e.g., the Deputy for Operations, the TACC Current Plans Chief, etc.) to initiate this service request directly from the PLSS/TACC coordinator located in the TACC.

The ADP capabilities also support materiel and
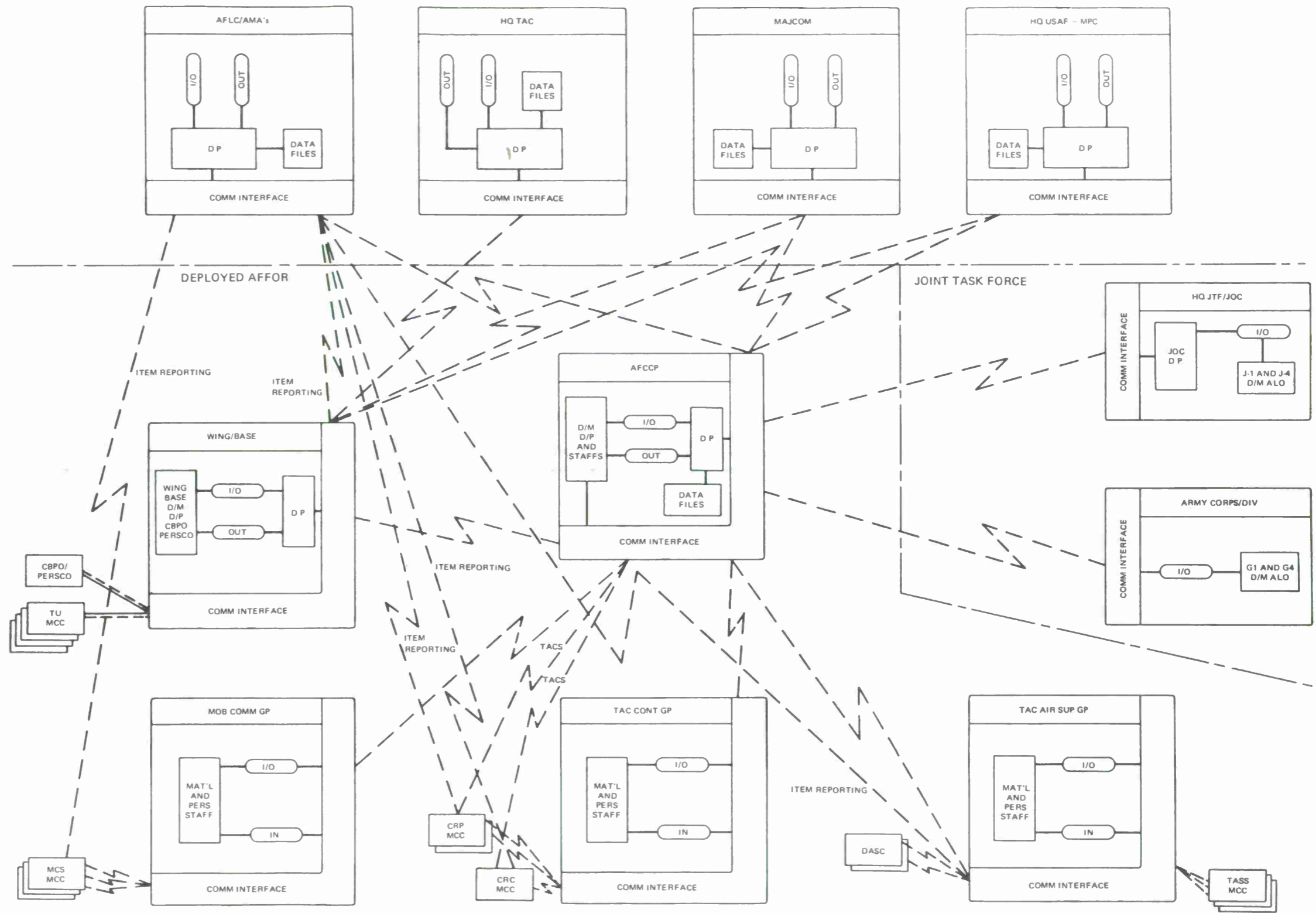
Figure 3.5.1-1. Automated Personnel and Logistics Subsystem
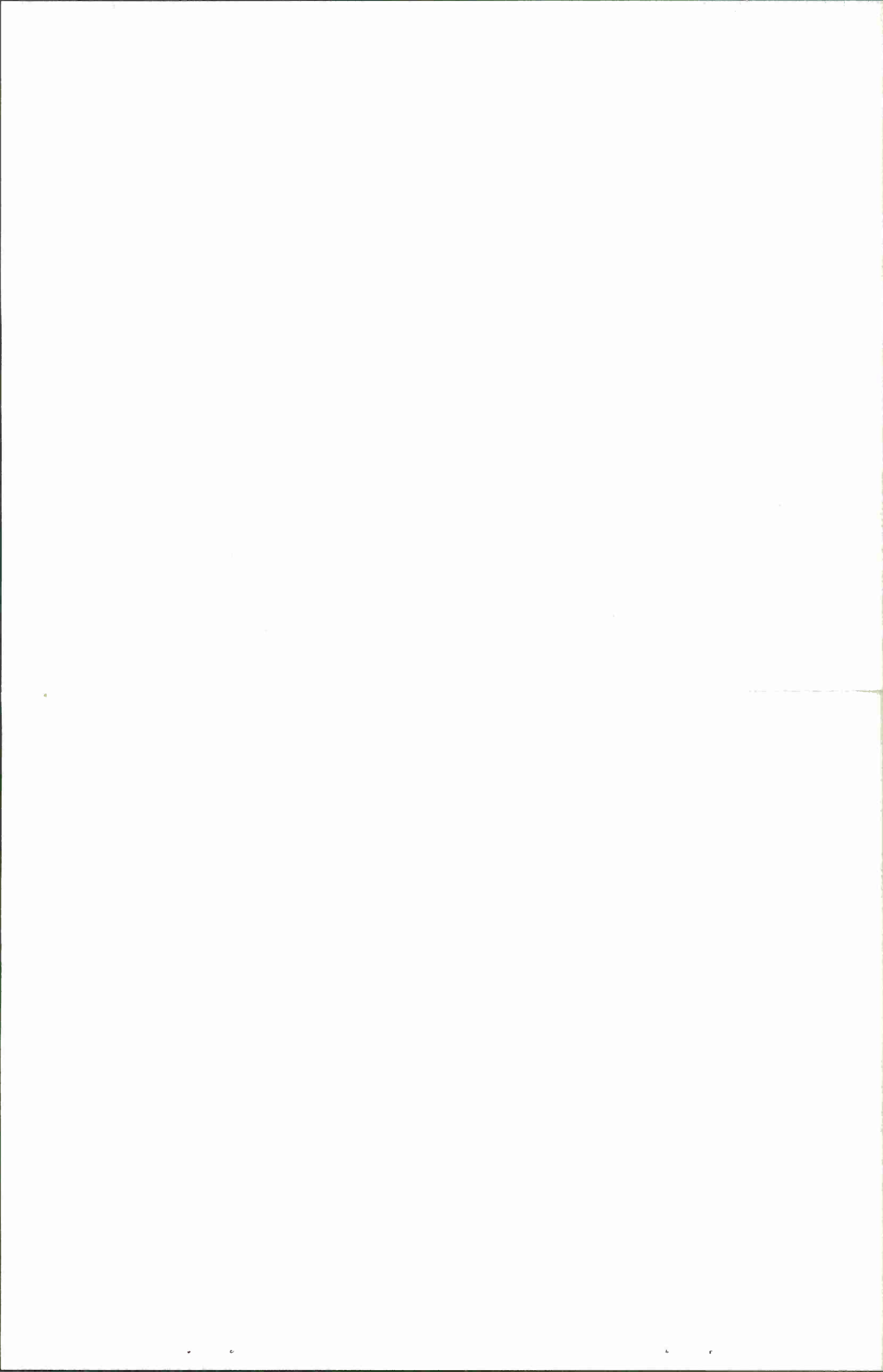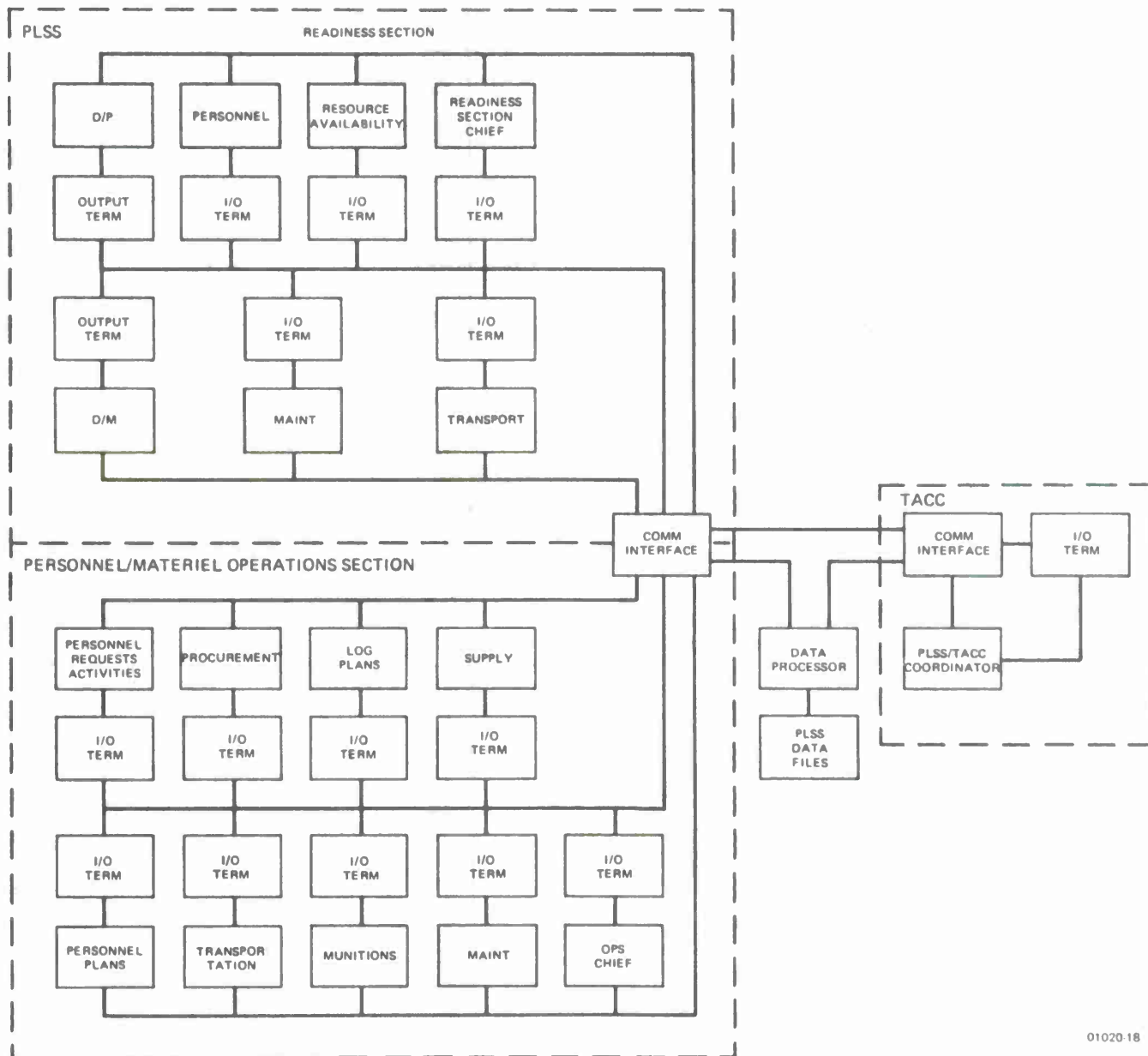
01020-17

Figure 3.5.2-1. Automated PLSS Subsystem Block Diagram

personnel operations. The request for materiel or personnel services in this area would come via the ADP system to the operations sections chiefs I/O terminal for subsequent assignment of the tasks to one of the section functional categories (e.g., supply, munitions, personnel requirements, etc.). The collecting, recording and storing of material and personnel data (PLSS Function 1.2) which supports both the TACC and the materiel and personnel operations is handled for the most part through the input/output terminals via the communications interfaces to the processor for subsequent file maintenance and I/O processing. Normal voice and mail exchange, which will be reduced to a minimum, still exists. This manual activity will be greatly reduced compared to the current system. Data processing involves the initialization and/or updating

of the designated PLSS files and controlling the I/O processing tasks such as message error checking, acknowledging and routing to designated I/O terminal. The processor also instructs and controls printout of the hard copy or the display of the required data at the designated output terminal display or printers.

Use of ADP support in performing the retrieval of materiel and personnel data (PLSS Function 1.3), will substantially improve the support provided to the TACC. The materiel/logistics remedial/corrective action report, for example, will be rapidly composed utilizing the processor to retrieve data from files such as the file maintenance/critical action list and the current status files. The processor then performs sort, merge, data reduction and message generation tasks. In

Table 3.5-1. Functions in Automated PLSS Concept (Sheet 1 of 2)

ADP Support / LSS Functions	Input Mgmt	Message Processing	File Updating	Data Reduction	Data Retrieval	Report Generation	Monitor/ Evaluate
a. PLANS Element Functions:							
1. Monitor and summarize activity rates	X	X	X	X	X	X	X
2. Monitor and summarize consumption rates	X	X	X	X	X	X	X
3. Monitor and summarize End Item usage	X	X	X	X	X	X	X
4. Develop and modify Usage Planning Factors			X	X	X	X	
5. Evaluate Operations Plans feasibility				X	X	X	
6. Coordinate procedures for depot support					X		
7. Maintain and Operate on LRC	X	X	X	X	X	X	X
b. SUPPLY Element Functions:							
1. Monitor current status of supply	X	X	X	X	X	X	X
2. Coordinate pipeline levels for resupply							
3. Monitor and expedite NORS,ANORS	X	X	X	X	X	X	X
4. Maintain master schedule of entering assets	X		X		X		
5. Maintain master financial status	X		X		X		
6. Supervise supply control procedures of AFFOR				X	X	X	X
7. Supervise operations of Forward Support				X	X	X	X
8. Coordinate with procurement on acquisition					X	X	
c. MUNITIONS Element Functions:							
1. Monitor current status of munitions	X	X	X	X	X	X	X
2. Integrate and evaluate scheduled resupply	X		X	X	X	X	X
3. Process Munitions redistribution requirements	X		X	X	X	X	
4. Coordinate Munitions items problems							
5. Generate Munitions transport requirements					X		
d. TRANSPORT Element Functions:							
1. Arrange/coordinate on all transport							
2. Integrate and establish priorities on transport	X		X	X	X	X	X
3. Maintain general status of transport resources	X	X	X	X	X	X	X
4. Follow movement of critical items					X	X	X
5. Integrate transport schedules for materiel					X	X	

01020-35 (1 of 2)

Table 3.5-1. Functions in Automated PLSS Concept (Sheet 2 of 2)

ADP Support / LSS Functions	Input Mgmt	Message Processing	File Updating	Data Reduction	Data Retrieval	Report Generation	Monitor/ Evaluate
e. MAINTENANCE Element Functions:							
1. Supervise subordinate maintenance elements	X	X	X		X		X
2. Monitor current status of maintenance	X	X	X	X	X	X	
3. Monitor repairables flow, DIFMs, NORMs	X	X	X		X		X
4. Evaluate requirements for additional support				X	X		
5. Establish/coordinate depot support				X	X	X	
6. Coordinate with Supply, Munitions					X		
7. Integrate End Item maintenance schedules				X	X	X	
f. PROCUREMENT Element Functions:							
1. Identify local sources of supply							
2. Develop local procurement plans and budgets	X		X	X	X	X	
3. Select sources and administer procurement					X		
4. Coordinate transport from sources to users					X		
5. Arrange material receipt and quality control							
6. Supervise and coordinate Base procurement							
PSS Functions							
a. PLANS Element Functions:							
1. Monitor and summarize personnel status	X	X	X	X	X	X	X
2. Evaluate personnel non-availability rates				X	X	X	
3. Develop personnel status planning factors				X	X	X	
4. Prepare personnel annexes to Ops Plans				X	X	X	
5. Support special task unit formation planning				X	X		
b. PERSONNEL REQUIREMENTS Element Functions:							
1. Maintain and provide inquiry service	X	X	X		X	X	
2. Maintain requirements for replacement, aug.	X	X	X		X	X	
3. Maintain scheduled transfer data	X	X	X	X	X	X	
4. Maintain key personnel data file	X	X	X		X	X	

01020-35 (2 of 2)

the event that data is not in the PLSS files at the AFCCP the processor will alert the PLSS/TACC coordinator and/or the readiness section chief of the PLSS center. The section chief then requests the data from a wing/base materiel/personnel element via the ADP System. The cognizant material or personnel staff individual receiving this request via his own I/O terminal, then searches, retrieves and reduces the required data using the wing/base ADP capabilities. The base processor then performs the I/O processing tasks in sending the reply back to the coordinator or readiness section chief at the AFCCP. The TACC receives his answer from the PLSS center in near real-time with a high degree of confidence that the data is current, complete and correct. In performing this function, some data may not be in the processor-based files. For example, the operations plan will be in manual files. This means that there will be some manual data retrieval and data reduction. However, this data can be retrieved manually and integrated with the processor based capabilities to greatly improve the response time developing the answers to TACC or materiel/personnel operations requests. The PLSS ADP storage, retrieval, data analysis and merging capabilities in performing statistical analysis, evaluation, and summary of materiel and personnel data (PLSS Function 1.4) will greatly improve the timeliness, accuracy and currency of the results required by both TACC operations and plans and materiel/personnel operations. Manual initiation is provided through readiness section personnel interacting via their I/O terminals with the processor based files. For example, the TACC may request that projected trends of LOX usage as a direct function of the combat mission activity be determined for the next week. PLSS/TACC coordinator and/or the readiness section chief composes the request and enters the request through his own I/O terminal. The processor queries the critical item list and the critical item movement file, retrieves the necessary LOX data, performs the necessary statistical analysis, and generates the report for output to the requestor at his I/O terminal.

The primary utility of the automated PLSS is in performing the functions of supporting extended planning (PLSS Function 1.5), supporting frag order planning (PLSS Function 1.6), and supporting current operations (PLSS Function 1.7). The PLSS center provides the largest amount of support to the TACC in extended planning activities. Time is not as critical as in the support of current operations, however, data accuracy and currency are the major criteria. The PLSS/TACC coordinator and/or the PLSS readiness section personnel will utilize the processor in performing a majority of the data storage, retrieval, data reduction tasks. For example, the preparation of materiel and personnel limiting factors and trend reports will be implemented through the processor-based files with appropriate instructions from the PLSS/TACC coordinator or a designated individual in the readiness

section. The processor can query several files such as the projected status file, the critical time list file and the consumption rates on expendables files in performing the data retrieval task. When the processor has obtained the necessary data from the files, it performs the necessary sort, merge and data analysis tasks as monitored by the PLSS/TACC coordinator at his I/O terminal. The processor then composes and instructs printout of the reports. The report is then reviewed by the PLSS/TACC coordinator or the appropriate readiness section operator prior to submission to the requesting TACC staff officer. The PLSS Center data processing and input/output processing capabilities have a high utility in providing resource status and availability data in support of frag order preparation. The inherent capability of this ADP support ensures that the data currency and near real time resource availability/commitment requirements are met.

The real-time benefits of the PLSS center's processor-based information management capability are realized in supporting the TACC in current operations monitoring, adjustment and control (PLSS Function 1.7).

Performance of personnel and materiel operations (PLSS Function 1.8), coordination of materiel and personnel staff activities with other materiel and personnel agencies (PLSS Function 2.0), and performance of materiel and personnel office administration (PLSS Function 3.0) will utilize the processor-based I/O capabilties in meeting the message reporting requirments and the data retrieval, analysis and generation capabilities to meet resource status and availability monitoring, adjustment, and control requirements. The integrated PLSS, in providing the functional capabilities discussed above, has the following equipment, software and personnel characteristics:

a. An available data processor in the AFCCP area with data base storage for 45 logistics data files and 12 personnel files which occupy 10, 20 and 31 million bytes of storage for minimum, medium and maximum force levels respectively.

b. An I/O terminal installed at the PLSS/TACC coordinator's position in the TACC. The terminal is connected to the AFCCP processor and I/O terminals via appropriate communication interfaces and control/buffering equipment. The terminal has both keyboard and light pen type data entry devices; output devices include a CRT display and a printer.

c. An estimated total of 13, 17 and 26 I/O terminals connected to the data processor with access to the PLSS data files will be in the collocated PLSS Center for minimum, medium and maximum force levels respectively. Each I/O terminal will have the same I/O devices as defined above for the PLSS/TACC coordinator. Two output

terminals are in the Readiness Section for use by the D/M and the D/P.

d. The PLSS Center input processing capabilities will be capable of accepting at least 400, 1000 and 1700 digital and TTY incoming messages per day for minimum, medium and maximum force levels respectively. Each message is error checked, acknowledged and routed to the predesignated addressee (Processor for file maintenance and I/O terminals for display and/or printout).

e. The PLSS center output processing capabilities will be capable of accepting in excess of 100, 150, and 240 digital and TTY outgoing messages per day for minimum, medium and maximum force levels respectively.

f. The communication interfaces at the PLSS Center will be capable of accepting digital, TTY and voice traffic of 510,000; 1,100,000 and 2,000,000 characters per day for minimum, medium and maximum force levels respectively. The communications interface at both the PLSS center and the TACC will enable the center I/O terminals and the TACC I/O terminals to be connected to the AFCCP processor.

3.5.4 Interface Compatibility

The automated PLSS conceptual configuration will interface with both the deployed AFFOR force elements, the TACC and other AFCCP staff elements and higher and lateral commands. The PLSS system will be compatible with the current and planned communications equipment capabilities provided by both the tactical air control system and the defense communications systems. This automated PLSS concept will be compatible with data link standards as specified in JCS PUB 10. The normal card system reporting requirements of the CONUS-based Major and Logistics Commands and Air Materiel Area agencies will continue to be provided. The required resource status and operations data reporting by the lower echelon elements will not interfere with the air operations communications net. The intergrated PLSS concept of using dedicated logistics/personnel circuits will minimize any conflicts in the tactical or administrative traffic load requirements. The major interface compatibility requirement is defined by the requirement that ADP capabilities be provided for materiel and personnel elements detached at the wing/bases and with the Tactical Air Support and Tactical Control Groups. The extent of this ADP capability has been defined through the tie-in of I/O terminals to the integrated PLSS processor at the AFCCP. Each wing/base is also assumed to have a processor available for use by the materiel and personnel. A manual capability will reduce the effectiveness of the integrated PLSS concept. Design of this ADP based-PLSS system has been considered both on a horizontal and vertical basis.

3.5.5 Backup Capabilities

The integrated PLSS conception configuration allows for degraded modes of operation. Memory protect features in the processor will safeguard the PLSS data files. Access to file information can be assured by periodic prepositioning of hard copy versions of the files. Modularity of the file structures will enable the processor to utilize certain files in the event of a failure or down time of a portion of the memory system (disc, tape or drum). Maintenance and personnel data reporting via manual, voice and teletype through the existing administrative circuits will enable the integrated PLSS concept to operate in the degraded mode until the AFCCP processor becomes operational. Failure of a wing/base processor will only impact the data and analysis and reduction tasks required for the lower echelon resources status and availability reporting. I/O processing and communications capabilities will still be available. I/O terminal down time within the PLSS center collocated with the TACC should not appreciably influence the normal operational capability. Failure of a remote I/O terminal such as one deployed with a TACS element would be handled by manual voice or teletype backup through administrative circuits until the terminal is repaired or replaced.

3.5.6 Growth Implications

The integrated PLSS conceptual configuration can readily accommodate the growth requirements both internal to the system as well as external relative to interfacing systems. The data storage, reduction and retrieval capability will accommodate in a continued evolutionary growth in automating PLSS functions, subfunctions and tasks, especially those required for decision making. The planned development of improved Air Force logistics and personnel systems will further improve the deployed PLSS capability. The primary growth requirement involves the coordinated development and operation of system improvements of both CONUS based and deployed materiel and personnel support systems.

3.5.7 Advantages and Disadvantages

The integrated PLSS concept developed here to solve or minimize the current materiel and personnel support problems in the contingency area has the following advantages:

a. The D/M and the D/P at the AFCCP will be in the complete maintenance and personnel resource status reporting loop from the tactical units through the automated PLSS data processing capabilities and the Wing/Base ADP support. The CONUS-based higher command requirements for maintenance and supply data via their computer based systems will remain the same, however, the automated PLSS will now have the ADP capability for receiving a reduced version of this data from the bases on a timely basis.

b. The proposed PLSS concept includes aircraft configuration reporting capability via dedicated materiel/personnel channels.

c. Provision of I/O terminals with the Tactical Air Support Groups and Tactical Control Groups will enable the attached maintenance and personnel elements to provide TACS maintenance and personnel (critical skills) status and requirements on a real time basis.

d. By providing the tactical air support group with a tie-in to the PLSS ADP System, the detached maintenance personnel can provide and receive maintenance data and requirements in real time to eliminate the deficiency of not being able to support the forward and highly mobile elements of these groups.

e. A wing/base ADP capability with an I/O tie-in with the AFCCP based processor enables the attached materiel and personnel staff to meet both the PLSS center (at the AFCCP) reporting requirements as well as those of the CONUS-based commands.

f. An increased reporting capability is provided for certain resource status data reports such as the LOX reports currently provided yearly in the CONUS.

g. The deficiency of the present military personnel management information system will be resolved by providing the appropriate PERSCOs or CBPOs at the deployed bases with the ADP capability for reporting mission essential data to the AFCCP-based PLSS center while still maintaining CONUS-based command reporting.

h. The concept of providing ADP capabilities at all deployed materiel and personnel element levels will reduce data redundancy and data currency will be improved.

i. The automated PLSS system concept can be implemented modularly, permitting the addition, removal or reduction of data file capacity and I/O terminals as a function of the force level being employed.

j. The system configuration permits access capabilities at all deployed levels for real time or near real-time updating of the PLSS data base.

k. The integrated PLSS concept enables maximum advantage to be taken of the data storage, retrieval, data reduction and report generation capabilities for supporting both the TACC and materiel/personnel operations.

l. This integrated PLSS concept has the capability of providing resource services to the TACC.

m. The automated PLSS can provide real-time re-

plies to materiel, personnel and service support requirements as they are required during the monitoring and adjustment of current operations.

n. The automated PLSS concept can implement a pooling of special skills capability for real time assignment to special low density equipment maintenance problems.

o. A few additional data files, modification of the AFCCP operating/monitoring system software and a few additional input/output and input terminals provide complete ADP support to both TACC support and materiel/personnel operations for only a small increment in the total system cost over that for the support center concept described previously in 3.4 of this report.

The disadvantages of this integrated PLSS or automated PLSS concept are as follows:

a. The requirement of additional data files and additional I/O terminals for operations personnel will increase the cost of the integrated PLSS compared to the Personnel and Logistics Support Center concept discussed in 3.4.

b. Failure of the data processor will reduce the capability of the PLSS to support the TACC operations.

3.6 COMPARATIVE SUMMARY OF CANDIDATE SYSTEM CONFIGURATIONS

3.6.1 Conceptual Approaches

The four conceptual approaches described in the previous sections of this report have been selected to ensure that adequate qualitative consideration be given to procedural, communications and data processing technology as applied to the PLSS requirements for the post 1975 time period. The four approaches represent graduated degrees of sophistication of Personnel and Logistics support and provide a corresponding progression of benefits. The system evaluation criteria defined previously in section 3.1 were considered in selecting the features of the conceptual configurations and were used to perform the comparative analysis. Table 3.6-1 presents a qualitative comparison of the conceptual systems. An assessment of the current system is included for purposes of establishing an existing baseline for comparison. The current systems capability was found to be marginal in nearly every performance area. The improved manual system concept provides some improvement by being able to provide at least a limited capability in all but one of the eleven performance areas, i.e.. data completeness.

The automated LRC and PRC concept provides a significant improvement in meeting the performance parameters used as criteria. Only the ability to provide rapid planning support to the TACC in terms of frag

Table 3.6-1. Evaluation Summary of Candidate System Concepts

System Evaluation Criteria	Current System	Improved Manual System	Automated LRC/PRC	Personnel Logistics Support Center	Automated PLSS
Data Currency	M	L	A	A	E
Data Validity	M	L	A	A	E
Data Reduction Time	Hrs	Hrs	Sec	Sec	Sec
Data Reduction Efficiency	M	L	A	A	E
Ease of Access to Data Base Files	M	L	A	A	E
Time Required to Update Files	Hrs	Hrs	Sec	Sec	Sec
Time Required to Perform Maintenance Evaluation Analysis	Days	Days	Min	Min	Min
Time Required to Perform Statistical Analysis	Hrs	Hrs	Min	Min	Min
Real-Time Data Completeness	M	M	A	A	E
Interface Response Time	M	M	A	A	E
Real-Time Support to AFFOR Commander and Higher Commands	L	L	A	E	E
Real-Time Support to TACC (Current Operations)	M	M	L	A	E
Rapid Planning Support to TACC (Frag Order & Extended Planning)	M	M	L	A	E
Source Data Reporting	M	L	A	A	E
Compatibility	L	L	A	A	E
Staff Personnel Productivity	M	L	AE	AE	E
Magnitude of Relative Cost	None	Small	Large	Large	Largest
Responsiveness to Force Level Changes	M	L	A	A	E
Identification of Source Deficiencies	Days	Hrs	Min	Min	Min
Technical Skills Required	Lowest	Low	High	High	Highest
Special Training Required	Lowest	Low	High	High	Highest

LEGEND: M – Marginal
L – Limited
A – Adequate
E – Excellent

order and extended planning was considered to be limited. The price paid for the improvement in performance includes a larger cost and higher required personnel technical skills and special training. The personnel and logistics support center concept was found to have a substantially better capability for supporting the TACC relative to performing current operations and to providing rapid planning support in preparing frag orders and extended plans than the automated LRC and PRC concept. Additionally, the personnel and logistics support center concept will cost less than the automated LRC and PRC and require only a little larger manning organization.

The automated PLSS's conceptual capabilities were found to be excellent as measured against all evaluation criteria. In addition to providing high performance information handling capabilities to readiness and TACC support elements of the staffs all elements of the D/P and D/M staff were supported. This broadly based support permits virtual elimination of the PRC and LRC as a distinct staff element since any staff member has the information access needed to support LRC and PRC type functions. The price paid for achieving this optimal capability included the largest cost of any of the four conceptual configurations. The automated PLSS concept has the additional advantage of requiring the smallest manning organization.

Selection considerations tend to rule out the improved manual system as conceived for this study because of the existence of too many limited performance aspects. The personnel and logistics support center concept involves the greatest intimacy of contact with the TACC but is not necessarily more responsive than the automated staff concept with its TACC liaison personnel. The automated LRC and PRC concept was comparable to the personnel and logistics support concept with the important exception of rapid planning support to the TACC. The automated LRC and PRC had a limited performance rating for this capability.

3.6.2 Summary

Although the automated PLSS was found to have the best performance rating the practical problems of developing and implementing this concept to replace the current system would be great. The same can be said for the PLSC concept which has slightly lower performance. A key factor in the effectiveness of all the system concepts considered is the interaction with bases and units to collect the necessary information. Considering the state of knowledge of the detailed requirements and current automation efforts in the USAF a modest beginning on the road to the PLSS concept in the form of the automated PRC and LRC with substantial base automation support is the preferred solution.

DOCUMENT CONTROL DATA - R & D

(Security classification of title, body of abstract and indexing annotation must be entered when the overall report is classified)

1. ORIGINATING ACTIVITY (Corporate author)	2a. REPORT SECURITY CLASSIFICATION
Litton Systems, Inc., Data Systems Division, 8000 Woodley Avenue, Van Nuys, California 91409	UNCLASSIFIED
	2b. GROUP N/A

3. REPORT TITLE

REQUIREMENTS ANALYSIS OF THE PERSONNEL AND LOGISTICS SUBSYSTEM OF THE POST 1975 AIR FORCE COMPONENT COMMAND POST (FINAL REPORT)

4. DESCRIPTIVE NOTES *(Type of report and inclusive dates)*
None

5. AUTHOR(S) *(First name, middle initial, last name)*
None

6. REPORT DATE	7a. TOTAL NO. OF PAGES	7b. NO. OF REFS
October 1971		

8a. CONTRACT OR GRANT NO.	9a. ORIGINATOR'S REPORT NUMBER(S)
F19628-70-C-0233	
b. PROJECT NO.	ESD-TR-71-366, Vol. II
c.	9b. OTHER REPORT NO(S) *(Any other numbers that may be assigned this report)*
d.	

10. DISTRIBUTION STATEMENT

Approved for public release; distribution unlimited.

11. SUPPLEMENTARY NOTES	12. SPONSORING MILITARY ACTIVITY
	Deputy for Planning and Technology, Hq Electronic Systems Division (AFSC), L G Hanscom Field, Bedford, Mass. 01730

13. ABSTRACT

DD FORM 1473 (1 NOV 65)

14

KEY WORDS	LINK A		LINK B		LINK C	
	ROLE	WT	ROLE	WT	ROLE	WT