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NAVAL AIR STATION LEMOORE (OPERATIONS): NETWORK INFRASTRUCTURE DOCUMENTATION AND RECOMMENDATIONS

by

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The findings of this thesis are the result of of literature review, user interviews, process evaluations and observations, and uniting inventories from scattered sources into a unified document. Coordination between the author and NAVWAN project officials provided guidance on the content of the information consolidated in the appendices.

The Navy needs to pay more attention to its aging infrastructure and provide billets for information system professionals at fleet and field unit levels. Alternative upgrades to current hardware could increase the benefits received while lessening the budgetary impacts of procuring entirely new information systems. An effort to demystify networking technology and clarify policies regarding ADP related areas will provide the Services with a personnel base who are better able to utilize information technology innovations and increase the efficiency of military communications.

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NAVAL AIR STATION LEMOORE (OPERATIONS): NETWORK INFRASTRUCTURE DOCUMENTATION AND RECOMMENDATIONS

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I. INTRODUCTION

A. ORGANIZATION

Naval Air Station (NAS) Lemoore is a relatively isolated facility located approximately 35 miles south of Fresno, California in the central San Joaquin Valley. The base consists of two "sub-parts", an administrative side and a operations side. The two parts are separated by a single six and a half mile stretch of two lane road. The operations side requires added entry requirements so not all personnel assigned to NAS Lemoore have access to the facilities on the operations side. The two sides do, however, have a great need to share information and this is currently done by messengers in government vehicles making runs to the respective sides of the base. The operations side will be the focus of this work. A listing of the buildings on the Operations side of the base is given in Appendix A.

B. THESIS BACKGROUND

Local and wide area network technology has been in place, both in government and industry, for quite some time. LANs (Local Area Networks) have become quite popular in recent years and the networking concept is not a new one to the government, who led in the development of the Internet and TCP/IP. With the networking of computers and their peripherals come some very unique challenges that continue even after the network is installed.

NAS Lemoore is considered by many (including those who work there) to be the Jurassic Park of computer resources and networking capabilities. Infrastructure age can be seen by the amount of Zenith 248's from the Desktop 2 contract, a broadband backbone, and no system of LAN management. NAS Lemoore has been discovered by those who wish to bring the Navy's capabilities in these areas up to par with other military facilities and civilian industries. This discovery is forcing users, management, developers and all those affected by the facelift to live through many growing pains that

are not suffered by many computer and network savvy installations simply because that is part of their history as opposed to NAS Lemoore introducing these technologies for the first time into host, tenant, and its own commands.

NAS Lemoore is considered to be the air station of the future on the West Coast. The entire contingent of the Navy's front-line aircraft, the F/A-18 Hornet, is based at NAS Lemoore. Its remote location makes noise abatement a non-factor, its expansion capabilities are far greater than most established military facilities, and it is one of the few bases that most agree should not be considered by the Base Realignment and Closure Committee for closure.

NAS Lemoore's established and promising future deserves and requires a united, coordinated, and well planned effort to update its information technology infrastructure. The benefit of designing a easily updatable communications infrastructure is in the best interest of both the personnel assigned to NAS Lemoore and the Navy as a whole with regard to productivity and future costs associated with communications upgrades.

C. PURPOSE

This thesis' purpose is to document the networkable infrastructure currently in place at NAS Lemoore. There are many projects underway that seek to update the Navy's communication infrastructure. With the Navy's aging infrastructure and decentralization of ADP fiscal responsibilities it is not hard to see why many of these projects do not know about others that are seeking to do similar things. The duplication of effort and splintered approach to planning and implementing systems can be directly linked to costs and compatibility problems that hopefully would not occur if the Navy were to attack these system upgrades in a coordinated fashion. NAS Lemoore is a target of many of these projects because its minimal infrastructure and need for information technology update make it an excellent testbed and "proof-of-concept" site for projects seeking funding for larger scale implementations.

This paper will also attempt to recommend certain changes in response to problems identified in operating procedures pertinent to the area of study. In some cases

networking resources will result in problems arising that up until that time did not exist. Early identification and preemptive planning can help minimize disturbances associated with the implementation of new technologies. It is hoped that this work can aid in these risk minimizing activities.

Budget reductions, personnel drawdowns, shortened decision cycles, and a general "do more with less" atmosphere within the Department of Defense, will allow continued funding and existence only to those projects that are well planned, justified, and provide a noticeable return on investment. This thesis is written to be the first step in a well planned network implementation. The first step in utilizing an existing infrastructure and formulating a plan to add to it, is to know what the existing infrastructure is and to utilize documentation from those resources to plan the second step. That is the purpose of this thesis, the documentation of NAS Lemoore's (Operations) existing infrastructure.

D. THESIS SCOPE

This thesis will provide wiring diagrams of existing networks and hardware inventories for all units on NAS Lemoore's operations side. General comments will be made concerning NAS Lemoore's software inventory but a formal documentation of that inventory will be left to follow on study.

A problem identification chapter will address sources which may add to the difficulty in implementing desired changes to the current infrastructure. Problems in current operating procedures which may restrict timely implementation of a solution will also be addressed in this chapter.

A recommendations chapter will address identified problems and provide a summarized product listing of some of the more capable network management utilities available on the market.

E. METHODOLOGY

The methodologies used in writing this thesis will vary with the content of the thesis itself. A combination of literature review, personal interviews with base personnel and Commander Naval Air Forces Pacific (AIRPAC) personnel, review of base instructions, conversations with users, telephone/e-mail interviews with industry experts, and the use of a computerized drawing tool will be used to gather and capture the most complete information possible. Abbreviated System Decision Papers (ASDP's) will be reviewed to gain insight into plans that are currently being proposed for NAS Lemoore. Industry journals and current periodicals will be used to form a summarized product listing of network management utilities and to present some lessons learned in network implementation from other organizations attempting to do similar things. Expertise local to the Naval Postgraduate school will be used as a sounding board and to aid in the expansion of ideas for solutions to recognized problems.

The existing infrastructure at NAS Lemoore is largely due to the Naval Aviation Logistics Command Management Information System (NALCOMIS). Extensive study and correspondence with the NALCOMIS program office and the NALCOMIS phase III implementation team will give this report a grasp of the upgradability of existing hardware and plans for any upgrades by the NALCOMIS program office.

II. BACKGROUND

This chapter's goal is to describe the information technology environment of NAS Lemoore (Operations) and describe some of the policies that govern ADP assets. The summarized policies and environment descriptions given in this chapter will be directly linked to problem areas identified in the next chapter. This chapter will attempt to point out similarities and differences between standard operating procedures of the commands dominating the operations side of NAS Lemoore. A descriptive foundation will be laid to show standard operating procedures as they are now, in the hopes that when problems are identified in the next chapter, the magnitude of process changes required will guide change strategy formulation.

The background information presented in this chapter will give the reader the required knowledge of standard business practice, resource distribution, current system infrastructure, user culture, and procurement possibilities needed to form an opinion on the solutions, conclusions, and recommendations of following chapters.

Readily available Air Wing asset information is used to map resource distribution. Because they make up a majority of the Operations side, air wing policies and operating procedures are indicative of ADP policies and procedures in place at other station departments. General observations made in the presentation of this background material may aid in macro level policy reformulation or refinement.

A. NAS LEMOORE'S (OPERATIONS) COMPUTING ENVIRONMENT

NAS Lemoore's (Operations) computing environment can currently, as stated in the previous chapter, be labeled a Jurassic Park of computing resources. Though there are many plans underway to update NAS Lemoore's infrastructure, a snapshot in time reveals an inventory filled with Zenith 248's (286 based machines), low memory 386 based personal computers, and scattered dial up electronic mail capabilities. There are no general purpose networks that allow users to access the Internet, use file transfer, or utilize other capabilities associated with a common TCP/IP protocol suite (there are some

aircraft maintenance application networks in place using thicknet Ethernet technology. These will be discussed in following chapters).

1. NAS Lemoore's AIS Department

Within the last year and a half a department was established within the base organization to "support current station, wing, and squadron computer and networking equipment; provide Uniform Automated Data Processing Systems (UADPS - a Naval Supply system to support requisition processing, inventory control, financial transactions, etc.) support; plan and coordinate future AIS implementations; develop standards for networks and AIS equipment (hardware and software); optimize usage of AIS through Electronic Data Interface; provide PC hardware and software maintenance support; plan, configure, install, and maintain station Local, Metropolitan, and Wide Area Networks; and to protect station AIS assets through inventory accountability and the management of the station ADP security plan[Ref. 1]." The department, formed February 22, 1994, to handle this undertaking was given the title of NAS Lemoore's Automated Information Systems (AIS) Department.

Prior to the formation of the AIS department, each separate unit was responsible for the inventory, planning, administration, and upgrade of its own computer systems. To acquire computer services and network installations, each station department would contract out to the Naval Data Automation Facility (NAVDAF). NAVDAF was consolidated into NCTS half way through 1994 and transferred to San Diego due to the Alameda base closure. On October 1, 1994 NCTS transferred the NAVDAF responsibility, with regard to NAS Lemoore's assets, to NAS Lemoore, and the NCTS/NAVDAF organization was dissolved. All NCTS/NAVDAF personnel and assets were transferred to NAS Lemoore's AIS Department, now encompassing the combined assets and responsibilities of both of the previous organizations with respect to station computer assets.[Ref. 2]

NAS Lemoore's AIS department responsibilities appear to be rather daunting when the numbers of assets that apparently fall within their sphere of influence are

considered. This task is eased somewhat by the system of ADP acquisition and tracking the Navy has developed over the years and superimposed on top of a base's ADP organization. The system currently in place has inventory, administrative, and acquisition authority residing with the various program offices that are, in turn, scattered throughout various commands within the Navy. For example: A large percentage of the business buildings on the operations side of NAS Lemoore are associated with the day to day business of the Air Wing (Commander Strike Fighter Wing Pacific - CSFWP). The Air Wing's NAS Lemoore assets consist of the Wing Administrative building, the Strike Fighter Weapons School Pacific (SFWSP) building, and five hangar buildings that house the Fleet Reserve Squadron (FRS) and ten Fleet squadrons. The inventory and acquisition of hardware and software for all these assets is not a responsibility of the station AIS department, but rather that of the office within Commander Naval Air Force, U.S. Pacific Fleet (COMNAVAIRPAC) that controls COMNAVAIRPAC's ADP assets. Though not responsible for knowing the content of CSFWP inventories, AIS, through an agreement with COMNAVAIRPAC, is responsible for repair and maintenance of CSFWP's hardware and software. This same situation applies, with different parent commands, to the Operations side Intelligence center, student training/flight simulator building (BLDG 43), the Naval Hospital Annex, various FASO buildings, and the Operations side Navy Exchange gas station.

2. Air Wing baselines and inventories

CSFWP assets are given hardware baselines to guide the dispersal of hardware assets as they are acquired from COMNAVAIRPAC. These baselines are used to ensure some equity in the inventories of Air Wing units. These baselines have been recently adjusted to reflect the Navy's commitment to an automated work environment. The old baseline figures, current unit inventories, and new CSFWP baselines are shown in Table 1 to highlight the computer resources of CSFWP units.

	Desktop Computers	Laptop Computers	Dot Matrix Printers	Laser Printers	Modems	CD ROM Drives	Presentation System
Old Squadron Baselines	11	4		2	2	2	0
Unit Inventory:							
VFA-22							0
VFA-25	16	3	9	3	1	5	0
VFA-27	16	4	12	3	0	6	0
VFA-94							0
VFA-97	15	4	8	3	2	3	0
VFA-113	10	3	6	2	0	2	0
VFA-137							0
VFA-146	13	3	7	4	2	0	0
VFA-147	14	3	9	3	1	2	0
VFA-151	18	3	17	3	2	4	0
New Squadron Baseline	20	6		6	4	6	1
Old FRS* Baseline	25	4		2	2	2	0
FRS Inventory	24	4	22	2	3	0	0
New FRS Baseline	30	6		6	4	6	1
Old SFWSP Baseline**	6	2		2	0	0	0
New SFWSP Baseline	8	4		4	2	2	0
Old VFA Wing Baseline	25	6		2	2	2	0
New VFA Wing Baseline	50	6		8	6	8	1

Table 1. CSFWP Old Baselines, Unit inventories, and New Baselines. From Ref. [3]

Other Operations side units have similar allocations but those baselines could not be found for non-CSFWP units. For those units that did not have a readily available baseline allocation, an inventory listing in the appendices is sufficient for this thesis.

It is important to note that these baselines are set for the Wing allocated assets. Wing units receive assets from other sources that are independent of the Wing and are tracked by other parent commands and program offices. Examples of these sources will

be discussed in the next section on ADP acquisition policies. The inventories of equipment of this nature will be included in the CSFWP unit inventories listed in the appendices so as to form a consolidated list of a units' assets regardless of the procurement source.

3. The user and local expertise

NAS Lemoore personnel fall into one of three levels with regard to computer familiarity: application expert in an application residing on an established special purpose system, administrative user adept in the use of a word processing application, and non-user. Non-users greatly exceed users. Any networking attempt will require an extensive training program in order to ensure acceptance and a smooth transition from the current state of NAS Lemoore's information infrastructure.

Much of the networked hardware in use at NAS Lemoore was not networked by on-station personnel or was networked by personnel who will soon be rotating to their next tour. The result is a lack of local continuity with respect to design, administration, maintenance and documentation of existing networks.

For this work to be useful to a project that is using it as a foundation on which to build and expand NAS Lemoore's information technology infrastructure, it is important to know who the client is. Assets enter an Air Wing unit with a destination user already specified. Though this pre-defined distribution plan is often seen as something to deviate from, it is a plan nonetheless and can be a starting point from which to formulate a networking strategy. The published COMNAVAIRPAC asset distribution plan for new baseline figures for Air Wing units can be seen in Tables 2, 3, and 4.

B. NAS LEMOORE'S (OPERATIONS) ADP ACQUISITION POLICIES

The policies regarding acquisition of ADP hardware are as varied as the commands that make up the Operations side of the air station. Procurement of hardware becomes a strategy rather than policy. By this it is meant, that in the current budget shortfall faced by the Department of Defense, finding sources of funds to purchase the

Department	Desktops	Laptops	CD-ROM Drives	Laser Printers	Modems	Presentation Systems
C.O.		1				
X.O.		1				
Admin	4		1	2	1	
Operations	3		1	1		
Safety/NATOPS	1		1			
Maintenance						
Admin	2		2	2	1	
Training	1					
Logs & Records	1					
Control	1					
QA	1					
Supply	1		1			
Training	1					
CMC	1					
NCC	1				1	
Communication	1			1	1	
Aviation Medicine	1					
Equipment Pool		4				1

Table 2. Fleet Squadron New Baseline Equipment Distributions. From Ref.[4]

Department	Desktops	Laptops	CD-ROM Drives	Laser Printers	Modems	Presentation Systems
C.O.		1				
X.O.		1				
Admin	6		1	2	1	
Operations	4		1	1		
Safety/NATOPS	1		1			
Maintenance						
Admin	4		2	2	1	
Training	1					
Logs & Records	1					
Control	1					
QA	1					
Supply	1		1			
Training	5					
CMC	1					
NCC	1				1	
Communication	2			1	1	
Aviation Medicine	1					
Equipment Pool		4				1

Table 3. FRS Squadron New Baseline Equipment Distributions. From Ref.[5]

Department	Desktops	Laptops	CD-ROM Drives	Laser Printers	Modems	Presentation Systems
Commander		1				
COS		1				
Admin	8		1	3	1	
Operations	8		1	2		
Safety/NATOPS	2		1			
Maintenance	8		4	2	2	
Training	8					
CMC	1					
NCC	1				1	
Tactics	4		1	1		
Aviation Medicine	1					
Legal	1					
Logistics	8			1	2	
Equipment Pool		4				1

Table 4. VFA Wing New Baseline Equipment Distributions. From Ref. [6]

hardware required to upgrade systems is a well studied process of knowing where to look rather than relying on published command procurement policy.

1. CSFWP

Air Wing hardware acquisition for administrative computing resources is handled by COMNAVAIRPAC in San Diego. The NAS Lemoore Air Wing has a ADP officer who acts as a representative for the wing to COMNAVAIRPAC with respect to hardware acquisition and inventories. Requests for computer hardware are sent to the Air Wing ADP Officer who in turn forwards them to COMNAVAIRPAC if the item requested is new, or local pool hardware is then delivered to the requesting command if it is available.

An information system request from an Air Wing unit follows a similar but different chain of command. First, an Abbreviated System Decision Paper (ASDP) must be drafted by the requesting unit covering the personnel costs, services, facilities, information technology, and data communication aspects of the requested system. The ASDP is then routed to the station AIS department, who reviews and approves it or amends it and sends it back for resubmittal. If approved, it is then routed to COMNAVAIRPAC, who is the final approval and procurement authority. This system

brings the station AIS department into Air Wing procurements even tough they are not in their chain of command.

Within CSFWP procurement money is available to some units and not others. The FRS (VFA-125) and the Strike Fighter Weapons School (SFWSP) each have training money available to them which has been able to be used for non-standard systems which have been successfully shown to support the training charter of those two commands. Hardware acquired through this channel is typically special purpose and not bought from the same desktop contracts or GSA schedules as the administrative systems bought by COMNAVAIRPAC. An example of this is the acquisition of multiple Macintosh desktop and Laptop computers by SFWSP for their presentation capabilities and courseware development ease. Another example is the acquisition of a 3 workstation Apple LocalTalk network for the Commodore of the Air Wing, his Chief of Staff, and Air Wing Operations Officer.

2. Hospital Annex

A tenant command on the base, the Naval Hospital receives the majority of its computer hardware from the Bureau of Medicine (BUMED) and the program office for the Composite Health Care System (CHCS). Not required to submit paperwork for information systems to the station AIS department, its extensive networks are run by a combined office of civil service workers and contract employees from Science Applications International Corporation (SAIC).

It is interesting to note that the BUMED hardware is on a separate inventory than the CHCS hardware even though they coexist within the same buildings/rooms. The Annex's only networked infrastructure is that implemented by the CHCS and is linked to the administrative side's main hospital via a T1 line. At the main hospital, CHCS, the Expense Assignment System (EAS III), and the Medical Office Automation (MEDOA) system join at a Cisco router for access to the Internet.

3. Aircraft Intermediate Maintenance Department (AIMD)

AIMD falls under the air station and their procurement policies are based on an open purchase type of system. Money for office supplies is used to acquire hardware using the *Computer Shopper*.[Ref. 7]

AIMD's need for a networked environment led to them using expertise they had within their command to build the most extensive, next to the Naval Hospital's, network on the Air Station. An individual interested in networking technology was taken from his primary billet and on his own time designed and built a system that integrates broadband, Ethernet, and ARCnet technologies. This individual's knowledge of the system in place has put him into the procurement chain within his command. He reviews proposed acquisitions for his command to ensure they comply with the strategy AIMD has formed for their future networking plans and, using the *Computer Shopper*, finds hardware meeting the proposed requirements. This hardware is then acquired by open purchase through the company in the *Computer Shopper*.[Ref. 8]

4. NALCOMIS

NALCOMIS is an automated management information system for aircraft maintenance and material management activities throughout the Navy and Marine Corps. Its objectives are to automate record keeping and reporting requirements for shipboard and land based aircraft repair, maintenance, and supply functions. For example, NALCOMIS will maintain a repair history for each aircraft, track inventory levels at supply centers, and automate Naval aviation repair and maintenance manuals.[Ref. 9]

NALCOMIS is being developed and deployed in three phases. NAS Lemoore was not an implementation site for Phase I but Phase II and Phase III have already been put in place.

Phase II of NALCOMIS fully automates aviation maintenance data collection, supply requisition, and inventory processes, as well as other ancillary functions. Phase II will be implemented at 103 intermediate maintenance activities and supply support

centers. Intermediate maintenance activities perform maintenance and repairs on parts removed from aircraft at Naval and Marine air stations as well as aircraft-bearing ships.[Ref. 10] The Phase II part of NALCOMIS is resides on the broadband cabling of NAS Lemoore's networking.

Phase III is designed to extend automation to 400 organizational maintenance activities that perform maintenance and repairs on parts that remain on the aircraft at Naval and Marine air stations and aboard aircraft-bearing ships[Ref. 11]. Phase III is implemented through individual squadron Ethernet LANs with a connection to the Phase II or broadband connection capability on one of the Ethernet nodes.

NALCOMIS is responsible for a majority of the networking assets on the operations side of the base. All acquisition and tracking of NALCOMIS assets is done by the COMNAVAIRPAC NALCOMIS project office. This is significant when it is pointed out that while making up the majority of NAS Lemoore's (Operations) infrastructure, no acquisition or inventory responsibility resides locally on the base.

C. NAS LEMOORE'S CONFIGURATION MANAGEMENT PLAN

There currently is no system of configuration management in place, for any of the researched LANs, local to NAS Lemoore. Any drawings of cable runs, information on nodes attached, or functionality of NAS Lemoore LANs, was acquired from individuals who took it upon themselves to become familiar with their command specific systems, or project offices external to the air station.

The LANs found on the operations side of the base, though many times related or interconnected, have no requirement for a local system administrator to keep system administration statistics or hardware/software inventories for the entire air station. In all cases, units only know what they have, and the ability to go to a single source for information on networkable assets or currently functioning networks, is non-existent.

III. PROBLEM STATEMENT

This chapter will present some of the problem areas in the operations side computing/networking environment. Many or the areas identified will be gleaned directly from the background and descriptive data concerning operations side policies and processes while others, may be presented here for the first time. This chapter's purpose is to question current procedures, present what has already been done to improve the information technology infrastructure at NAS Lemoore (Operations), and identify other areas that could be candidates for change. In some cases, the problems presented may require new or updated hardware and it is noted that, in the fiscal policies within the Department of Defense, those solutions may not be completely possible. Some of the more non-simplistic solutions, and solution alternatives, to the problems introduced will be offered in the next chapter.

As stated in the previous paragraph, fiscal policy today may limit some of the suggestions offered in this chapter but, many of the problems areas covered in this chapter are organizational in nature and may not require a great deal of capital investment. The impacts of organizational change, with respect to networking and hardware acquisition, would be as great, if not more so, than the impact of the procurement of all new equipment at NAS Lemoore. The meaning of this will become apparent as the problems are presented in this chapter and then elaborated upon in the next chapter.

A. LACK OF INFRASTRUCTURE/OLD HARDWARE

NAS Lemoore's operations side has more of a networking infrastructure than it was believed to have prior to this research. There are personnel, both military and civilian, who have the expertise and desire to update NAS Lemoore's information technology but the available resources severely limit what can be done in this area. Innovation is one of the main ingredients in some of the "home-grown" networks implemented up until now.

Some of the "new" systems implemented at NAS Lemoore are built on technology that industry has long since updated or abandoned. Even the newest system (NALCOMIS Phase III), that just finished installation, uses technology that is failing to keep up with growing user information demands and concurrent to its installation, proposals for major hardware updates were being engineered that would completely change the technology that this newly acquired network was built upon.

1. Broadband

The only existing network cabling that links a majority of the business buildings on the operations side is a broadband backbone. Technology today is moving away from the 2Mbps capacity of NAS Lemoore's backbone making it harder to find support for the underutilized NAS Lemoore network foundation.

Characteristic descriptive terms referring to broadband are installation complexity, maintenance intensive, and high propagation delay, when compared to baseband technology available [Ref. 12]. Broadband is based on a mature cable TV technology and does not reflect the technological improvements in the data communication industry relating to personal computers because, as mentioned previously, industry has moved away from broadband technology research and development. The multimedia capabilities are a plus for the broadband cabling but that capability is not utilized in any of the nodes tied together by the operations side broadband. Longer signal distances for a given signal strength using broadband technology are also a plus, but the close proximity of the buildings would make baseband technology a viable alternative for less cost. Last but not least, industry has virtually abandoned broadband as a means to cable their networks so product support and new developments in broadband hardware are getting harder and harder to justify. Aviation Intermediate Maintenance Department's (AIMD's) network builder recently purchased a broadband network interface card from a company, used up until now to acquire all AIMD's broadband hardware, and was told that there were only three left in their inventory and they were not going to restock [Ref. 13].

The broadband cabling was installed to support NALCOMIS Phase II which is an aircraft maintenance system for intermediate maintenance facilities and supply centers. The NALCOMIS host is a mainframe computer located in Hangar 5 whose purpose is to produce maintenance reports from information fed to it by the scattered Phase II terminals. A single computer in each Phase III LAN was given access to the broadband but the user must leave the operating environment of Phase III on the workstation and go into a Phase II operating environment. There is no seamless integration between Phase II and Phase III, access to the Phase II broadband is tightly controlled, and capacity is underutilized due to its complexity and rather restricted access.

AIMD has a "home-grown" system that they have tapped into the broadband in order to tie some of its own personnel to a common communication environment (e-mail), but, though most of the business buildings are cabled for broadband access, they are the sole users of the broadband for other than NALCOMIS related information. AIMD has a single server integrating the NALCOMIS broadband, an ARCnet segment, and an Ethernet segment. The system AIMD has developed has reached the point that other base departments (AIS included) have asked to be part of the dial up connectivity to the Internet afforded its system. There is a single source of corporate knowledge and system administration for this system, a system that a growing number of people have come to rely on, and that individual leaves the Navy in October of this year. Drawings, inventory knowledge, network administration specifics, and the billet to fill his job will leave with that individual, and, considering he has single-handedly built this network on his own time, the likelihood of someone stepping in and understanding its intricacies is relatively small.

2. Zenith 248s

The Zenith Z-248 computer is the life blood of NAS Lemoore. The AIS department of NAS Lemoore has a very active "recycling" program by which commands can turn in their Z-248s when they receive machines with later model CPUs. The market for these machines on the air station is still strong illustrated by the fact that as soon as a

command turns in a Z-248 to the recycling program there is a request from another command for its services. In the research done for this paper it was common to get a response like "it's better than the alternative" when looking at disdain at the age of the hardware on that user's desk.

The Z-248 is built around an Intel 80286/8MHz main processor, an Intel 80287 math CO-processor, has 1024KB of extended memory, and a 4.5MHz CPU speed [Ref. 14]. A machine meeting those specifications is unsatisfactory to a computer user of even moderate capabilities in industry, and yet that is the desktop computing power that NAS Lemoore, the Navy's west coast home for its newest tactical aircraft, is built around.

Of the inventoried desktop computers (excluding NALCOMIS Phase III machines) making up the Aviation Intermediate Maintenance Department (AIMD), the Air Operations Department, the Naval Hospital Annex, and the Commander Strike Fighter Wing Pacific (CSFWP), 48.8% of the 426 CPUs were built around the 286 chip or lower. Some of the model descriptions on the inventory did not reveal the Intel CPU designation so they were put into an unknown category that comprised 29.6% of the 426 CPUs. The chip closest to the 286 and below category were 486 CPUs which made up 11.9% of the sample (Note: if all of the unknown CPUs were 486 chips, which is unlikely, the 486 category still falls short of the percentage of 286 and below machines). 4.2% were Macintosh machines.

3. Low memory 386s

Those machines that could readily be identified as being based on the 386 chip comprised 5.4% of the 426 machines inventoried on the operations side. It is suspected that a majority of the machines that fell into the unknown category are 386 based.

The users that were operating 386 based desktops were doing so with 1MB of memory. The resulting Windows 3.1 incompatibility due to memory restrictions will be elaborated on in the acquisition subsection of this chapter.

4. DOS versions

No data was acquired on the versions of the DOS operating system being used on machines on the operations side, but none of those asked had experienced a version later than DOS 6.0 and some had experienced earlier releases than that.

5. Existing modems

Much like the situation with the Z-248s, low transmission rate modems (1200 and 2400 bps) are being recycled as commands seek to expand the capabilities of unit desktop computers to include dial up capabilities (many are not fax modems). Requests for high speed modems are going into a queue at COMNAVAIRPAC ADP acquisition offices. Until the higher speed modems start arriving, the CSFWP ADP Officer reissues old modems turned in as commands receive newer ones.

B. DECENTRALIZATION

Centralization, when referring to computing, carries a connotation of being an old philosophy of mainframe domination. Whitten, Bentley, and Barlow describe centralized computing as "an old, reasonably successful, but increasingly expensive, computing technology" [Ref. 15]. The trend today is toward distributed processing and client/server computing, or decentralization, due to its flexibility and efficiency in passing data.

The computing analogy above also applies to administrative processes and organizational reengineering. This section will point to examples that will show that NAS Lemoore's procedures regarding the acquisition, maintenance, and upgrade of its ADP infrastructure is so decentralized, from the base point of view, that it is disorganized. Local acquisitions have become increasingly difficult because there are so many program offices, funding sources, and acquisition authorities controlling a unit's assets. Programs are not hesitant to put restrictions on the use of their equipment, thereby precluding the use of its general purpose equipment for other than its specified purpose. It has become relatively impossible to get a consolidated report on the health of an air

station's ADP infrastructure due to the degree of decentralization in the procurement of ADP equipment.

1. Host/tenant relationship

An air station is made up of its own departments and structures that all fall under its administrative control. For it to function as an air station however, it must have air assets, service record administration capabilities, a pay distribution system, medical facilities, and dental facilities, all of which are their own commands and do not fall under the administrative control of the air station but rather "pay rent" for the use of its facilities. This landlord/renter situation describes what is known as a host/tenant relationship and it exists on every military installation.

This relationship scatters responsibility and accountability to the point that an air station Commanding Officer literally can not give an estimate, let alone an accurate accounting of ADP assets on his/her air station given a reasonable amount of lead time. This situation makes the update or installation of new systems extremely difficult.

2. ADP acquisition

The frailties of the host/tenant relationship can be seen in a look at the various responsibilities involved with the purchase of a piece of hardware by a tenant command. For the purposes of illustration, an example using the air station's AIS department and CSFWP will be provided.

CSFWP units acquire hardware form various sources such as: the NALCOMIS offices at COMNAVAIRPAC, the Air Wing ADP Officer's recycling program, the office at COMNAVAIRPAC that controls a squadron's administrative systems, the use of training money (in the case of the FRS and SFWSP), and there are probably more that a committed and innovative prospective purchaser could uncover.

The flexibility of being able to acquire hardware from various sources is a nice feature but consider the fact that the AIS department does not maintain an inventory of air wing assets, the Air Wing ADP Officer maintains that inventory as the representative of

the office at COMNAVAIRPAC responsible for CSFWP administrative systems. The Air Wing ADP Officer does not maintain an inventory of hardware associated with a Phase III implementation; that hardware was provided by the NALCOMIS program office and they keep that inventory. The office at COMNAVAIRPAC that maintains the inventory of a CSFWP unit's administrative systems does not keep an inventory of systems bought with training money. Lastly the squadrons themselves are not required to keep an all inclusive inventory of their own assets (NALCOMIS Phase III hardware is not required to be inventoried by squadron ADP officers). On top of this "distributed inventory", add the fact that hardware inventories are annual and the accuracy of it decreases the further one gets from that latest cataloging.

Though not responsible for acquisition of air wing ADP assets, AIS is responsible for the maintenance of those assets and, at the end of its useful life with that respective command, the disposal or recycling of an asset. AIS is currently attempting to design a fiber optic backbone that will link all networkable assets on the base but they do not have the responsibility of knowing what or where those networkable assets are that are outside the air station's asset realm. This situation is akin to giving a business task without divulging the necessities required to determine personnel strength, supply requirements, and other vital business information.

C. CURRENT ORGANIZATION

As explained in the previous section, the current organization of ADP asset tracking, maintenance and acquisition is not sufficient to provide the upgradability required and expected of a master jet base. Accountability for inefficiency in a information system organization is relatively self-imposed when the populace it serves is relatively computer handicapped. NAS Lemoore's organization makes stagnation possible by the lack of enterprise wide computing knowledge held by the masses (providing new ideas, direction and innovative ideas to the vision of a station wide network with outside connectivity), the lack of designated billets for support of local systems, and the locally decentralized nature of asset tracking.

1. AIS oversight of unit activities

The lines of authority are somewhat blurred as far as AIS's role in tenant ADP equipment procurement. As stated earlier, the air wing has programs funneling hardware into its units that they are not required to maintain or inventory and AIS has no control over its acquisition. NAS Lemoore Instruction 5230.2B states however, that all organizations shall "submit ASDPs to the Automated Information System Department for review". It goes on to say that "after the ASDP has been approved, the unit shall prepare requisitions and copies of documentation for submission to the Automated Information System Department". This instruction puts AIS into a reviewing authority position over a procurement that it really has no control over.

The same NAS Lemoore Instruction specifically states that "the Automated Information System Department is responsible for maintaining a master inventory of NAS Lemoore's information systems, equipment and software". This continues not to be enforced as AIS is content to let the individual departments and tenants administer their own systems. The following section on Acquisition Policy and Procedures, taken from NAS Lemoore Instruction 5230.2B, is the stated policy for the acquisition of information systems:

> a. All procurement requests for information systems, including equipment and software, must be submitted to the Station AIS Department for review and approval. Procurement will be based upon technical evaluation of the requirements delineated in the ASDP. Each request must include the following:
>
> (1) An ASDP prepared as outlined....
>
> (2) A requisition (DD Form 1348-6) indicating the description, Navy Contract Number, cost, etc., of an item (or DD Form 1348-1 for stock numbered items).
>
> b. All AIS equipment (hardware and software) will be procured from Navy standard contracts or approved GSA contracts, and microcomputer requirements must meet the standards and specifications

outlined.... Requests to purchase from sources outside these contracts must be endorsed by the station AIS department.

c. All incoming AIS equipment will be received, bar-coded, inventoried and issued by the Station AIS Department. Conversely, all AIS equipment no longer required by the department, overage and/or beyond economical repair, will be turned over to the AIS Department for disposition. The AIS department will also handle all excess of AIS equipment.

This base instruction is not followed in every case however, as evidenced by open purchases that the AIS department is unaware of, hardware on station that it cannot account for, and dispositions that it does not handle.

Without compliance to published AIS policies, the disarray experienced in NAS Lemoore's infrastructure will continue. Their fiber optic update plans will become more expensive as they pay contractors to survey networkable equipment that they should already know about, interoperability among components will always be a problem, and it will be impossible for hardware and software upgrades to reach the personal computers they are meant to enhance.

2. COMNAVAIRPAC as squadron ADP acquisition authority

A squadron has no real acquisition authority when it comes to ADP equipment. If a hardware item is needed, the request goes to the Air Wing ADP Officer who reviews it and forwards it to the COMNAVAIRPAC office in charge of administrative ADP equipment procurement. Purchases seem to be based on the baselines presented in chapter II and distribution of the items is kept as even among the squadrons as possible but, hardware deliveries are random and communication between the Air Wing units and COMNAVAIRPAC regarding future deliveries is questionable at times.

On a thesis related trip to NAS Lemoore the Air Wing ADP Officer related examples of hardware request, acquisition and delivery. In one case, the Air Wing was notified of the pending arrival of 21 486 based PCs two days before their arrival and

without any submitted request for the equipment by the Air Wing. In another case, a squadron wanted to trade in a 1200 bps modem in return for a 14400 bps modem, and was told that there wasn't any money to purchase the 14400 bps modem. The two cases were within weeks of one another and within the same fiscal quarter. In another case, multiple copies of Microsoft Windows 3.1 and Microsoft Office Standard arrived, again with no request by the Air Wing. There were no machines to put these applications on because of the characteristics of the Z-248. The Air Wing's frustration with hardware and software items, that were not requested, arriving with no previous announcement, but the inability to get requested items, is apparent in talking with CSFWP ADP officers.[Ref. 16]

D. SUPPORT FOR CURRENT INFRASTRUCTURE

The system administrators of the local area networks identified on the Operations side are not consistent in training, experience, or background. The NALCOMIS Phase II broadband network has one experienced civilian administrator, who is self taught. The "home-grown" AIMD network is administered by a First Class Petty Officer, who built the network himself working outside his billet description and on his own time. There are two enlisted system administrators per NALCOMIS Phase III network who are given a three week training course on system administration techniques specific to the NALCOMIS LAN. An E2-C Hawkeye Naval Flight Officer administers a home-grown Macintosh network as a collateral duty for the SFWSP. And lastly, a squadron pilot, who is his squadron's ADP Officer, administers his squadron's home-grown Microsoft Windows for Workgroups local area network.

All the personnel listed above, except the civilian, are on a typical military assignment rotation and will eventually leave their positions for other assignments. The outlook for a replacement for these individuals (except the Phase III administrators because they are ordered in for that purpose) is not good because a majority of them built the networks they oversee themselves.

Networking expertise in personnel ordered into a command is found accidentally, there is no billet that assigns someone with that expertise to a unit. With this being the case, when that individual leaves the command, the unit's networking knowledge does also. The best case scenario is that the command is lucky enough to find another adept in networking technologies only to find that there is no documentation or corporate knowledge repository for that individual to refer to in assuming responsibility for that network.

E. RIGHTSIZING FISCAL/BUDGETARY POLICIES

The "rightsizing" within the Department of Defense today is causing a shrinking budget climate. It is worth noting because in the absence of adequate funding immediate fixes to many of the problems presented in this chapter are impossible. Correction of the stated problems, monetary policies will require a long term strategy that is well planned, extremely well justified, and updated continuously to reflect current needs required to achieve the stated goals. NAS Lemoore could be helped by seeking project offices such as the NAVWAN project out of the Naval Aviation Maintenance Organization, or the "Network Village" proponents out of NAVAIR who are seeking to invest in networking ideas for proof of concept opportunities.

Money issues will be a factor for a long time to come so the ideas that are born will have to work with these problems as a given entity. The Navy's decentralized acquisition policies have led to multiple acquisition sources, which only succeeds in making the shares of an already decreased budget even smaller. If the Navy were to unify some of the acquisition sources that do exist, those units would enjoy greater buying power and it could possibly get more for its money.

F. HARDWARE/SOFTWARE COMPATIBILITY

There are examples, given in the ADP acquisition subsection of this paper, where applications and graphical user interface applications were sent in quantities that could not be used due to hardware incompatibilities. These needless purchases were not caused

by technical incompatibilities of standardized applications, they were organizational in nature and need to be addressed at very high levels.

1. Operating systems

NAS Lemoore Instruction 5230.2B lists as a general specification that a procured small system computer "be capable of operating MS-DOS, OS/2, Windows, and Novell Netware software". No mention is given to UNIX based machines or Macintosh even though both systems exist on the air station (NALCOMIS Phase III , a major part of NAS Lemoore's infrastructure, is a UNIX based system with a DOS partition and SFWSP works almost entirely on Macintosh machines). Are these machines outside general specifications as they are stated in the base instruction? And if so, is the stated specification too narrow? "It must be fully compatible with systems previously procured by NAS Lemoore...." This instruction, also from NASLEMINST 5230.2B, is violated as often as the instruction regarding MS-DOS, OS/2....

2. Standards

The U.S. Marine Corps has stated that Lotus Smart Suite is its standard. NAS Lemoore has listed its standards in NAS Lemoore Instruction 5230.2B. The hardware standards are reasonable in that they are fairly standard within the IBM compatible machines. The software standards are somewhat puzzling and deviation form these standards are, by this instruction, hard to come by. Referencing NASLEMINST 5230.2B, "NAS Lemoore will use/support the stated software standards on small systems. Waivers to this software list must be approved through the Station AIS Department".

No one family of general applications is found in its entirety on NAS Lemoore's standards list. Lotus 1-2-3, Lotus Organizer, and Lotus cc-mail but not Lotus AmiPro. MS-Word, MS-Powerpoint, and Excel but not MS-Access. Would standardization on one general purpose software package be more practical? COMNAVAIRPAC, has sent MS-Office to the air wing but MS-Access (the database application in MS-Office) is not on NAS Lemoore's standards list. Some applications appear on the list that raise some

questions when presented to fleet users. Some examples of obscure applications on the software standards list include: Clipper (DBMS), PC Anywhere (communications program), ACT and Polaris Packrat (personal information managers) and Facilities CAD II (computer aided design).

IV. SOLUTION APPROACH

As the West Coast home of the Navy's newest tactical aircraft, NAS Lemoore is in a good position to justify its desire to update its systems. For a long time, NAS Lemoore has been a home to deploying aircraft and the personnel required to fly and maintain them. Information technology skills outside the skill set needed to do either of the above tasks are not utilized or emphasized in furthering one's career in the light attack/strike fighter community.

The huge growth in the information industry is requiring aviators and maintainers to understand and utilize technology that is new to the NAS Lemoore populace but established within industry, as well as within other communities within the Navy.

The realization that NAS Lemoore is playing catch up, with respect to new information technology, has prompted some changes in its approach to updating its systems. The momentum behind this change has not gathered enough energy to overcome the resistance to changing traditional ways of doing things. The fact that until now, personnel have done their jobs without the aid of networking, has been a major obstacle to progress.

This chapter will attempt to offer some solutions to the major problems in NAS Lemoore's day-to-day operations that involve the integration of its resources into the networked world.

A. RESTRUCTURING OF AIS/NAVDAF ORGANIZATION

The restructuring of the AIS/NAVDAF organization has already started at NAS Lemoore and its stated goals are heroic. Care must be taken not to take on too much too fast as the newly formed AIS department attempts to resolve ADP inadequacies. Skillful integration of information systems into NAS Lemoore's computing environment will be a multifaceted task that will not to be an easy one.

The AIS department should make every attempt to earn user confidence and put itself into a position where units require its assistance rather than compelling new

reporting policies and acquisition procedures, in the name of increasing efficiency, on an already overburdened unit administrative worker .

While interviewing personnel for this thesis, references to the AIS department were continually made for information that the AIS department had previously stated it was not responsible for. Personnel in positions that should have known what the AIS department's charter included, had a misunderstanding of AIS department responsibilities.

There are many different perspectives from which to judge the effectiveness of the AIS/NAVDAF reorganization and it is unclear from AIS's mission statement as to which is the right perspective. AIS's Departmental History and Function gives the specifics of AIS responsibilities. However, ambiguity exists as to whether these responsibilities apply to just the air station, the air station and the air wing, or the air station and all tenant commands; this prevents an assessment of the effectiveness of the reorganization.

Section 5, subsection C of NAS Lemoore Instruction 5230.2B would indicate that this thesis is a duplication of effort already expended by the AIS department when, in fact, this thesis is the only consolidated documentation for the operations hardware and networking infrastructure. Section 6 of the same instruction, gives specific guidance on the acquisition of ADP equipment that numerous units are either not following or have not followed in the past.

Everyone is doing his or her best in a splintered system lacking centralized direction. The AIS department is newly formed and attempting to stamp out the hottest fires first. Its task may be made easier if everyone understood unit and AIS department responsibilities. In addition, everyone should understand the reasons behind policy changes and they should emphasize the formation of a solid customer service base.

NAS Lemoore needs a comprehensive, accurate strategic plan and inventory that encompasses all units, tenant or otherwise. The tenants must concede the need and importance for the air station to include tenant ADP information in its strategic plan.

B. UPDATED HARDWARE

The capital investment required to update old hardware is a limiting factor, but alternatives do exist. The following subsections will present some alternatives to the procurement of new computer systems.

1. Z-248s

How much longer should the Services continue to use the Z-248? Have the Services already used them too much? The Z-248 is still the workhorse of many fleet units. As fast as units turn in Z-248s for disposition, other units are using them through recycling programs, because a Z-248 is considered better than the alternative - no computer at all. The two questions asked at the beginning of this paragraph take on added significance with the availability of affordable kits that upgrade the 286 based CPU of the Z-248 to a 386 or 486 based machine.

The computer industry is a very competitive one and if there are any market niches left to be found the very aggressive companies of today's computer industry will find them as they compete for market share. This is also the case for upgrades to the Z-248. Some companies have realized the role the Z-248 has played, and is playing, in government organizations and they have developed upgrade kits which promise to bring 386 and 486 performance specifications to the old Z-248.

Dennis McGillicuddy, a systems analyst with the Army Corps of Engineers, has written three articles on the suitability of CPU upgrades to the Z-248. The July 1993, April 1994, and October 1994 issues of *Chips* contain articles that provide lessons learned, product evaluations, and installation hints for the upgrade kits reviewed.

In the July 1993 issue of *Chips,* Mr. McGillicuddy provides performance comparisons of the before conversion and after conversion variants of the Z-248. The chart is duplicated in Table 5. The conversion used a Zenith upgrade kit that, because of the Desktop IV contract, is not sold anymore, though there are other companies offering comparable CPU conversion kits. The upgrade price, at the time of the article's writing,

was $599. [Ref. 17]

C O M P A R I S O N		
Category	**286**	**486**
Computer Name	Zenith	IBM AT or Compatible
Built-in-Bios	CORP 3020F	CORP 3042
Main Processor	Intel 80286, 8MHz	Intel 80486, 25 MHz
Math Co-Processor	Intel 80287	(Built-in)
Extended Memory	1024KB	3072KB
Disk Avg. Seek Time	26.97ms	26.73ms
Track to Track Seek Time	7.12ms	6.68ms
Overall Performance Index	4	36.5

Table 5. Z-248 Conversion Comparison. From Ref.[18]

Mr. McGillicuddy's April 1994 *Chips* article looked at three methods of upgrading Z-248s. The first was a CPU replacement, the second was a single CPU, I/O, Memory (CIM) replacement board, similar to the Zenith Upgrade kit, and the third was a mother board replacement. All the products tested in this article advertised conversion from the 286 based Z-248 to a 486/66MHz based machine. The first and second methods were tested and all products provided the advertised performance. [Ref. 19]

Both the July 1993 and April 1994 articles point out that these upgrades are only recommended for needed increased performance while on a limited budget. The primary recommendation of both articles was the purchase of new equipment if budgets would allow. This ensures the built in interoperability of all components and a complete suite of hardware built to handle the applications marketed today.

The October 1994 article in *Chips* was an expansion of the July 1993 article about vendors providing upgrades to the Z-248. Mr. McGillicuddy tested a 386/25MHz upgrade with positive results. That upgrade cost was $375 and the same company offered a 486/DX2/50MHz upgrade that cost $825. This article also pointed out that there are

companies that bought some of the inventory Zenith Upgrade kits (tested in the July 1993 article) for resale and were selling them at an approximate cost of $650. [Ref. 20]

The August 22, 1994 issue of Federal Computer Week contains an article by Dan Carney that surveyed 486 upgrades for the Z-248 from two separate companies. These upgrades were performing admirably at a cost of approximately $200 when purchased in large quantities. This article states that the upgrade kits are available on Digital Equipment Corp.'s General Services Administration schedule and that there are proposals to add the product to the Navy's PC LAN contract. An analyst quoted in the article again stressed that a better alternative would be to replace systems with affordable 486 machines but concedes that that is not always possible in today's defense budget climate. [Ref. 21]

2. 386 based machines

The April 18, 1994 issue of Government Computer News has an article addressing the upgrade of the Unisys Corp. 386 based machines from the Desktop III contract. The text of the article presents a company's line of upgrade kits and provides the performance chart comparison seen in Table 6. The upgrade is a reduced size motherboard replacement. Prices for the upgrades were dependent on processor and RAM but the listed government prices were: a 486SX was, $535, a 486DX33 was $780, a 486DX/2-66 was $990, and a 486DX-50 was $1,010 (all with 4MB of RAM).[Ref. 22]

	P E R F O R M A N C E	
Benchmark	**Unisys Desktop III 16-MHz 386DX**	**Uniflex 66-Mhz 486DX2**
Norton SysInfo 7.0	12.6	132.2
PowerMeter MIPS 1.8	3	27.1
Landmark Research Speed.Com	20.1	223

Table 6. Desktop III performance before and after the Upgrade. From Ref.[23]

3. 486 based machines

Lastly, companies are producing OverDrive processor upgrades for most of the 486 lines. OverDrives work by doubling or tripling the speed of the existing chip. In the April 17, 1995 issue of Government Computer News, Cynthia Morgan lists both the pros and cons of using the OverDrive upgrade. The advantage is that the conversion of a 486 into a faster 486 is a fairly simple installation. The disadvantage is that if you must upgrade more than the processor, you are better off buying a better computer. Also, the OverDrive may not fit into some machines. [Ref. 24]

Prices for the OverDrive upgrade range from $450 to $350 on many General Services Administration schedules. Stressing that the chip speed is only part of the performance equation, Ms. Morgan also recommends that, if the funding is available, purchasing new equipment with the desired performance specifications is the best acquisition strategy. [Ref. 25]

The previous three subsections point out that there are alternatives when planning upgrades. Though possibly not an optimal strategy, these subsections have offered a relatively low cost way of making more of NAS Lemoore's existing hardware networkable. Studies would have to be done as to the cost and benefit of such an approach and through this effort the right mix of upgrades to new equipment purchases could be derived.

4. Updated base-wide backbone

NAS Lemoore (Operations) achieves its connectivity primarily through either dial-up connections or through the broadband cable laid throughout the operations side. If projects like NAVWAN bring Internet access to the desktop, the desire for information will soon outgrow the current broadband capacity as base personnel find new uses for their networking capabilities. Plans to lay two FDDI rings are currently being proposed but its installation date is uncertain. The proposed fiber optic rings are diagrammed in Appendix J.

An updated backbone should be a high priority so that future goals for the base's information infrastructure may be solidified. Building upon the broadband, with the possibility of fiber optic installation, requires contingency planning on a large scale. A plan built on broadband technology, knowing that fiber optic installation is imminent, would impede the base's effort to upgrade its networks and possibly cause cost increases associated with uncertainty about the technology required to link base assets to the different backbones.

C. BILLETS FOR SYSTEM SUPPORT

The units that make up an air station are each allotted a certain number of personnel to fill a set of job descriptions, referred to as billets. The Bureau of Naval Personnel determines the number of personnel and the billet descriptions required to fulfill a unit's mission requirements. There are currently very few units that require network administrator billets, even though they may be utilizing network technology. For units such as these, an individual will be assigned a network task as a collateral duty (a duty which is not that individual's primary duty but one that he or she is still responsible for), or that individual must be taken from his or her billet, leaving it empty, in order to further the command effort in the network area.

The squadrons at NAS Lemoore that have received Phase III of the NALCOMIS installation are given one system administrator billet per shift and an alternate to administer its NALCOMIS LAN. These NALCOMIS administrators are given a three week training course and a dedicated billet description as a NALCOMIS administrator (they will receive collateral duties just as most personnel within a unit do in order to cover administration of the various functions within a Navy unit). This administrator does not have any training in methods of networking the ADP assets of a naval unit; he or she is strictly trained in the NALCOMIS system. This is the closest thing to a billeted information system professional for the typical air station unit.

The Navy should start to train personnel in the design, administration, and maintenance of the various information technologies available and then put personnel in

that capacity within naval units. The drawdown and rightsizing within the military will prevent adding an entire workcenter to cover these duties to every unit, but one technician/administrator per unit, or one per two units, would prove invaluable in furthering the Navy's efforts to update its information infrastructure. People resist change when it involves unfamiliar concepts. An information systems professional who could inject ideas, provide technological solutions to problems, and be available to explain the information technology, would help significantly. The Navy should create a billet within naval units to provide the services described.

D. CONFIGURATION MANAGEMENT PLAN

What is configuration management? The following definition is from Fletcher J. Buckley's book Implementing Configuration Management - Hardware, Software, and Firmware and makes the reasons why it is so important to have a system in place for configuration management self-explanatory:

> Configuration management is a discipline applying technical and administrative direction and surveillance to:
>
> (a) Identify and document the functional and physical characteristics of configuration items (CIs)
>
> (b) Audit the configuration items to verify conformance to specifications, interface control documents, and other contract requirements
>
> (c) Control changes to configuration items and their related documentation
>
> (d) Record and report information needed to manage configuration items effectively, including the status of proposed changes and the implementation status of approved changes

Currently there is no configuration management plan in place at NAS Lemoore. The host/tenant relationship and the accountability policies associated with it make it virtually impossible to implement a configuration management plan for all the ADP

assets on the base. Fletcher J. Buckley writes "There is a great debt owed to the government from those in the configuration management field, as the government has led the way in the development and application of configuration management[Ref.26]." This would lead one to believe that those within the government realize the importance of knowing your system configuration status. Thus the precedence exists for NAS Lemoore to implement such a system, allowing it to monitor its ADP assets.

The information associated with a configuration management plan is seen as a system of accountability by computer users rather than a database of information that can be used to plot the course of future upgrades and implementation plans. Training to explain the benefits of a configuration management plan could break down the cultural barriers associated with imposing increased reporting requirements on an already report intensive system.

There are a multitude of products on the market that virtually automate configuration management on local area networks. There are database applications that store and organize manually acquired information on an organization's hardware, if that equipment is not on a network and reported to the network's automated inventory. The third option is a manual system of configuration management. Whichever the method, the definition of configuration management previously stated should convey the importance and usefulness of an accurate reporting of an organization's configuration items.

E. STRONG MANAGEMENT

The inaccuracies of manual inventories, hand-made drawings of cable runs, and departures from stated policy, indicate an area that is seen as unimportant in the everyday business of administering an air station.

Leadership and strong management will solve many of the problems faced by NAS Lemoore's AIS department. The user resistance they face can be overcome through innovative educational programs aimed at bringing the level of understanding of information technology up to higher levels. Insistence on even an unofficial consolidated

inventory system for the entire air station will make policy formulation easier, more efficient, and more accurate. The formation of such a system within a military culture would have to be "sold" to those affected and therein lies the requirement for strong management.

There is a growing emphasis being put on information warfare within the armed services. Our leadership will find the Military Service's ill-equipped in both understanding and resources to meet information challenges, if they do not understand its importance and act decisively to update our infrastructure.

F. UNIFIED ACQUISITION STRATEGIES

The various sources available to those attempting to acquire ADP equipment allow, flexibility in acquisition but, at the local level, tracking available assets then becomes extremely difficult. For example, the offices at COMNAVAIRPAC that are thought by air wing representatives to have complete responsibility for the procurement and tracking of all air wing ADP equipment, do not in fact have that complete responsibility. The compilation of the inventory in Appendix I was done by contacting six different sources and not all those were local to NAS Lemoore.

A unified acquisition strategy at the base level would enable construction of an infrastructure that was planned rather than an ad hoc approach that is based on acquiring equipment with various sources of ADP funding and then received on a unplanned delivery schedule. Such a strategy could be implemented by centralized program offices. The flexibility of a unit being able to purchase items, must be retained, but, it is also necessary for a base level AIS department to be aware of such purchases.

G. STRONGER STANDARDS

A commitment to hardware, software, and network standards based on functionality and merit, rather than on user familiarity, aids interoperability within a computing environment. When declared standards contain multiple applications within a category (word processors, spreadsheets, graphics, etc.), then they are not really

standards. Too many choices in standards merely succeeds in narrowing the possible interoperability problems to a smaller field and not eliminating them, as is the goal with standardization.

Initially it may be difficult to use standards, but the benefits associated with doing so will soon increase the efficiency with which business transactions are carried out. NAS Lemoore allows a wide choice in standards. A stronger commitment to a smaller set would provide a more definitive direction for base level personal computers.

H. GREATER DEGREE OF CENTRALIZATION

There can be different views of centralization depending on the organization's perspective. NAS Lemoore may be centralized when looked upon from a macro level, COMNAVAIRPAC perspective, because all the hardware project offices are represented by offices in COMNAVAIRPAC. The amount of communication between project offices however, is evident when attempting to find a consolidated inventory for an air station or speak with an acquisition office responsible for a squadron's entire suite of hardware assets. A decentralized perspective is seen from the base level as one tries to gather the same information and realizes that inventories are scattered amongst various COMNAVAIRPAC offices.

The centralization idea has been a prominent theme within this thesis. The elements of a centralized approach at the base level should consist of a combination of the unified acquisition strategy, consolidated inventory, strong management, and strong standards. The intent here is to show that current policies are too broad, and to present the benefits that could be achieved through centralized management. The intent is not to decide on the degree of centralization or on the strategy to be used to achieve it.

V. STRATEGIES AND CONCLUSIONS

A. NETWORK CONFIGURATION MANAGEMENT

With the implementation of network technology comes its extensive documentation. NAS Lemoore's (Operations) networks, except for the Building 1 network being installed currently, have no local official documentation. The linkage of the existing networks could simplify the task of network management by making it possible to use automated network management tools available on the market. The better network management tools commonly provide such functions as hardware and software inventory, server monitoring, monitoring of network traffic statistics, client monitoring, application metering, automated software distribution, and virus protection [Ref.27].

Reliance on an automated product, when there was no system of configuration management previously, could be unwise. Understanding the network management chore will provide needed background for personnel, and it is recommended that a system be implemented now, prior to the use of an automated tool. This would lessen the shock of having to manage a several hundred node, fiber optic network like the one proposed.

B. FIBER IMPLEMENTATION PLANS

NAS Lemoore is evaluating proposals for the installation of an FDDI backbone linking its business buildings. This effort is at the base AIS department level, using contractor expertise and bids. In an apparent duplication of effort, the NALCOMIS offices at COMNAVAIRPAC are engineering a fiber optic update to its Phase II and Phase III installations while still other projects are developing strategies to move the Navy toward a fiber optic infrastructure. The lack of communication between all these programs is causing a condition where there are many things happening but the benefits are not apparent. Nevertheless, NAS Lemoore will be moving forward on a fiber optic implementation soon, which will require that problem areas identified in this thesis be corrected. NAS Lemoore's proposed fiber optic plan is contained in Appendix J.

C. NAVWAN

1. What is it?

The Naval Aviation Systems Team Wide Area Network project seeks to support the wide area networking needs of the Naval Air Systems Team. The activities connected through this effort are to include NAVAIR Headquarters (including Program Executive Officers), all of the Naval Air Warfare Centers, the Naval Aviation Depots, Aviation Supply Office, Naval Air Technical Services Facility, Naval Air Engineering Support Unit, Naval Aviation Maintenance Office, Naval Aviation Depot Operations Center, and the Naval Air Pacific Repair Activity. NAVWAN's initial charter is to provide electronic mail and file transfer capabilities between these sites with the follow-on goal of providing image data transfer for CAD and video teleconferencing. [Ref. 28]

2. What is its plan?

NAVWAN is in the demonstration/validation phases of its development and it has selected sites for implementation of its prototypes for proof of concept purposes. The plan for NAS Lemoore is to provide the necessary equipment for connectivity to a wide area network including routers, servers, CSU/DSUs, leased lines, etc., and to provide enough dial-up connectivity to get feedback from its target user groups. The NAVWAN project will provide contract installation in three phases done over a three week period. The three phases are physical stand-up, mail set-up, and configuration and directory synchronization. The wide area network will then use NAS North Island as its conduit to the NAVWAN community. [Ref. 29]

3. What equipment will it provide?

The initial equipment list consists of :

1 Cisco 4500 router

1 Everex server running Windows NT

2 Everex workstations running Windows for Workgroups

2 CSU/DSUs

5 14.4 Dow modems. [Ref. 30]

That equipment list is subject to change based on the infrastructure already in place at the site of installation. NAVWAN wants to reach as many users as possible so equipment may be added to the list in order to achieve the connectivity levels desired for prototype demonstration.

4. Who will administer it?

NAVWAN will be managed from two Network Management Control Centers (NMCCs). The NMCCs will monitor the network and coordinate system operations. The two sites selected for the NMCCs are NAWCAD Patuxent River, Maryland and NAWCWD China Lake. [Ref. 31]

D. GENERAL CONCLUSIONS

NAS Lemoore cannot afford not to update its infrastructure. The increasing emphasis on the use of information and the denial of information to our enemies, requires that our military be in a position to acquire real-time information from the various sources of intelligence and communications. NAS Lemoore is unique in that, due its limited infrastructure, the system built to meet the requirements of a military communications network may be designed from the ground up, making it a very appealing site for projects requiring a testbed for proof of concept demonstrations. NAS Lemoore's infancy, with respect to its information technologies, will allow flexibility and expandability for future growth. That is the good news.

The bad news is that NAS Lemoore does not have the organizational environment to support this growth at this time. The problems mentioned in Chapter III are things that need to be addressed soon if the military is to efficiently network its fleet and field units and provide the support structure these systems require. The intricacies of reorganizing the chain-of-command overseeing our ADP equipment is beyond the scope of this thesis and is left to a follow-on study. There are currently proposals at high levels to unite the Navy's information technology under one program manager similar to the structure seen

in major procurements such as the F/A-18 and the Sea Wolf submarine. Managed correctly, this could aid in centralizing the information needed to give direction to our information infrastructure. This centralization occurs above the base level however, and if not reengineered correctly, our base level AIS departments could remain uninformed as to what resources they have at their disposal. It is obvious that AIS personnel at the base level need a consolidated inventory of all hardware and software available to its users, procurement authority, and a well staffed and trained support center.

Where will the money come from for NAS Lemoore to make the required updates? NALCOMIS has planted LAN seeds throughout the operations side with its Phase II and Phase III implementations. AIMD and the Strike Fighter Weapons School have built their own LAN infrastructure and the base is in the process of installing a LAN in Building 1. This fledgling infrastructure is a starting point for connectivity to wide area networks and yet none of these efforts are aware of the others and there is no single source of information.

All the networks mentioned earlier were built with different sources of funding and none of them interact with one another due to the empire building tendencies that lead units to look out for their own interests first rather than uniting expertise at a higher level of network strategy. A unified effort combining each unit's buying power, expertise, and hard work, could possibly get the best system for the whole rather than proprietary systems for the parts.

The support, administrative, and special commands within the Navy seem to have a larger share of modern ADP equipment than the sea-going units, that are pulling Z-248s out of base recycling programs to issue to their personnel. Industry has learned that by empowering the workers with the information they require to do their job, productivity, quality, and efficiency all go up[Ref. 32]. The Navy needs to put information in the hands of the users and this requires investment in our information infrastructure and our AIS professionals.

If this sounds like a theme published before, it is. There are a number of books on reengineering business processes. The foundations of Total Quality Leadership are built on bringing information down to the production floor rather than filtering it down through the various management layers. In the author's opinion, if the military were to invest in its networking infrastructure, especially in cases such as NAS Lemoore, the return on its investment,considering entrance into an age of information warfare, would outweigh the cost.

A substantial percentage of the investment in infrastructure would be required for training. Those with knowledge of networking are relatively few within the Navy's fleet and support units. Those units with networking expertise, at the base level, are tending to covet those individuals in an effort to protect any home-grown infrastructure they may have built up. There are no networking military billets or personnel working within the AIS department at NAS Lemoore and yet military units just now realizing what this technology can bring to them, are starting to clamor for the services delivered by AIS. With the importance of information warfare in the modern age, it stands to reason that we should form a corps of information technologists accessible to fleet and field units, and provide them with regular training.

Training and education is the key element in ensuring an infrastructure that is innovative, interoperable, efficient, maintained and built around a strong foundation of quality assurance. The more people that know how things associated with information technology are supposed to be planned, acquired, supported, and managed, the better. Credentials and experience should be stressed in our civilian hiring practices within the field. A sufficiently streamlined procurement and reporting environment should be provided in order to keep up with state-of-the-art technology changes in the field and ensure accurate and responsive information requests.

Because of the newness of information technology and its capabilities, personnel at NAS Lemoore are not always aware of the standard operating procedures, organizational level guidance and published responsibilities. More emphasis should be

put on ensuring the accuracy of, and compliance with, published responsibilities and policies so that all personnel will be aware of them.

Much like a wood sculptor visualizing the sculpture already in the wood and seeing his or her job as liberating it from the surrounding material, NAS Lemoore has the desire to uncover its undeveloped networking resources and build a prototype system providing the networking capabilities expected of a master jet base.

APPENDIX A. NAS LEMOORE (OPERATIONS) BUSINESS BUILDINGS

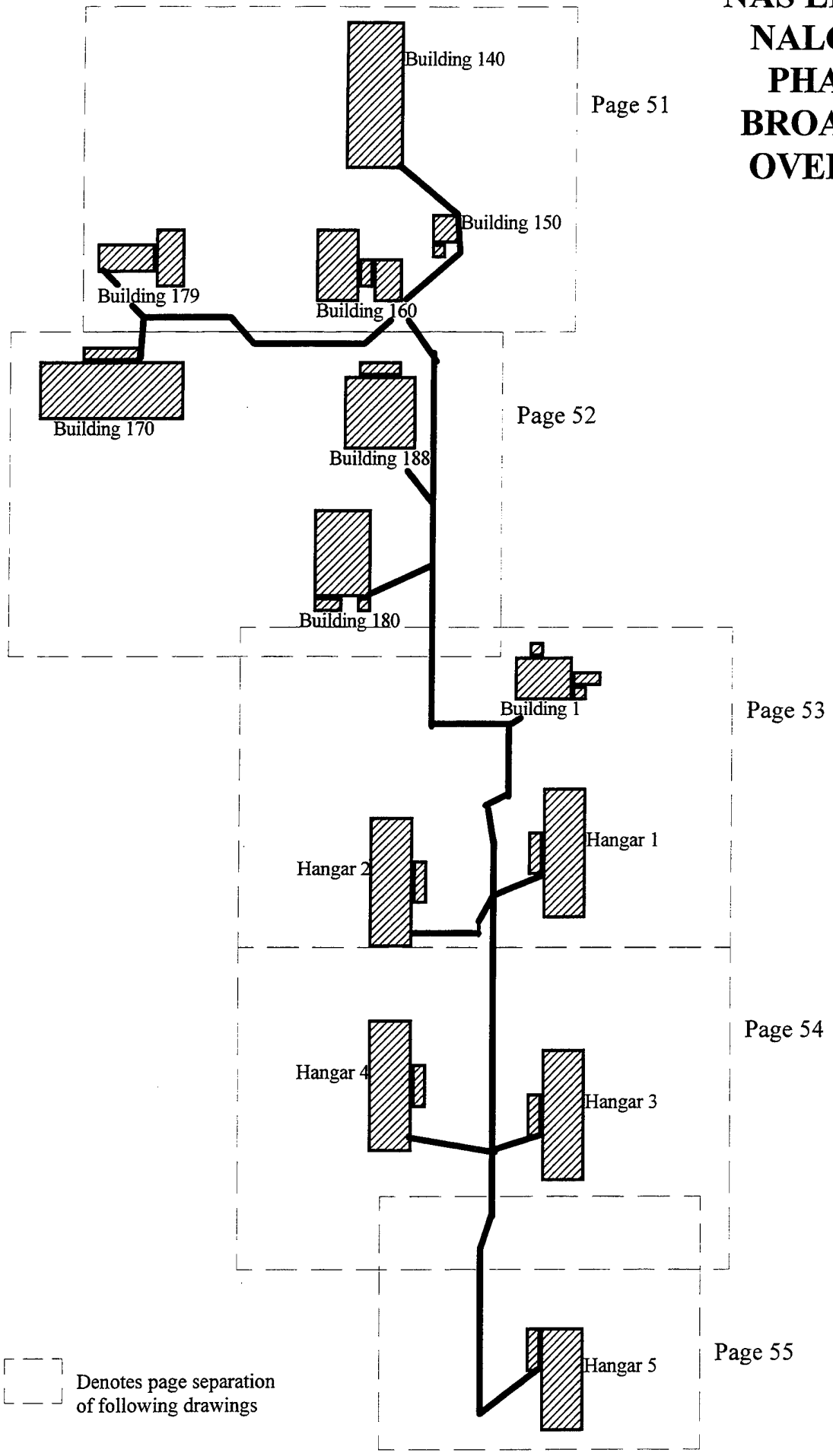
This appendix contains a list of all the business buildings that were surveyed for this report.

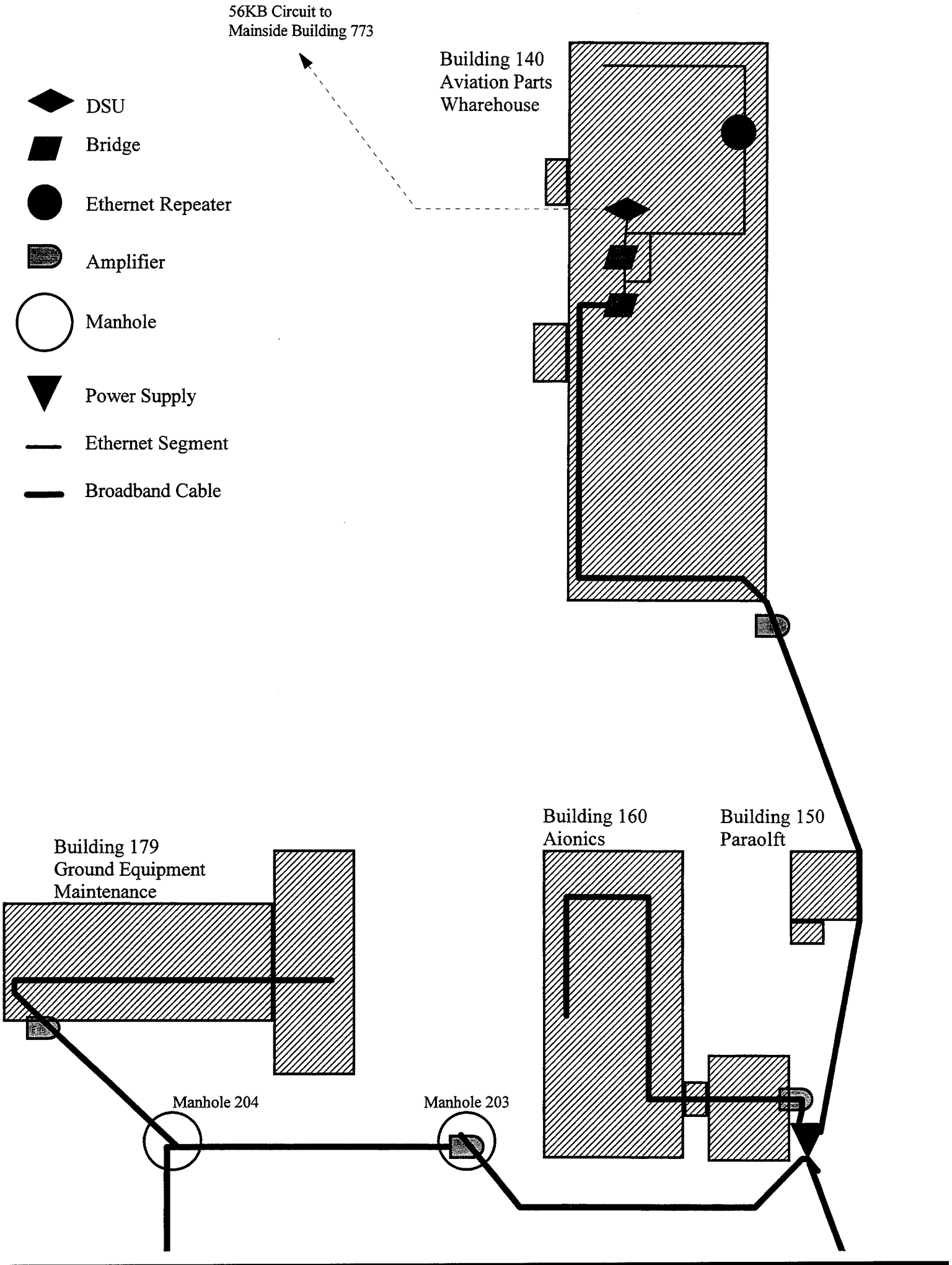
Building	Building #	Street	User
PBX Operations	80	Reeves	Tenant
Air Operations/Wing	1	Reeves	Multiple
Operations Wharehouse	140	Reeves	Supply
Avionics Support	138	Reeves	Supply
Avionics	160	Reeves	Aviation Maint.
Power Plants	170	Reeves	Aviation Maint.
Ground Support Equipment	179	Reeves	Aviation Maint.
Air Frames	188	Reeves	Aviation Maint.
Hanger 1	210	Reeves	Squadrons
Hanger 2	240	Reeves	Squadrons
Hanger 3	270	Reeves	Squadrons
Hanger 4	280	Reeves	Squadrons
Hanger 5	330	Reeves	Squadrons
Fuel Farms	90	Gateway Rd.	Supply
Weapons	472	Ordinance Rd.	Weapons
Weapons	440	Ordinance Rd.	Weapons
Paraloft	150	Reeves	Aviation Maint.
Battery Building	177	Reeves	Aviation Maint.
Passenger Terminal	184	Reeves	Supply
Aircraft Support	256	Reeves	Air Operations
Runway Maintenance	258	Reeves	Air Operations
Fire Fighting School	56	Skytrain	Air Operations
Maintenance Hanger	180	Reeves	Multiple
Strike Fighter Weapons School	4	Reeves	Tenant
Operations Fire Station	190	Reeves	Air Operations
FASO	11	Skytrain	Tenant
FASO	15	Skytrain	Tenant
FASO/ATSS	16	Skytrain	Tenant
FASO	17	Skytrain	Tenant
FASO	13	Skytrain	Tenant
FASO	12	Skytrain	Tenant
NAVAIRWARCENTRASYSDIV	43	Reeves	Tenant
Operatons Galley	10	Reeves	Supply
Operations Gas Station	54	Skytrain	Tenant

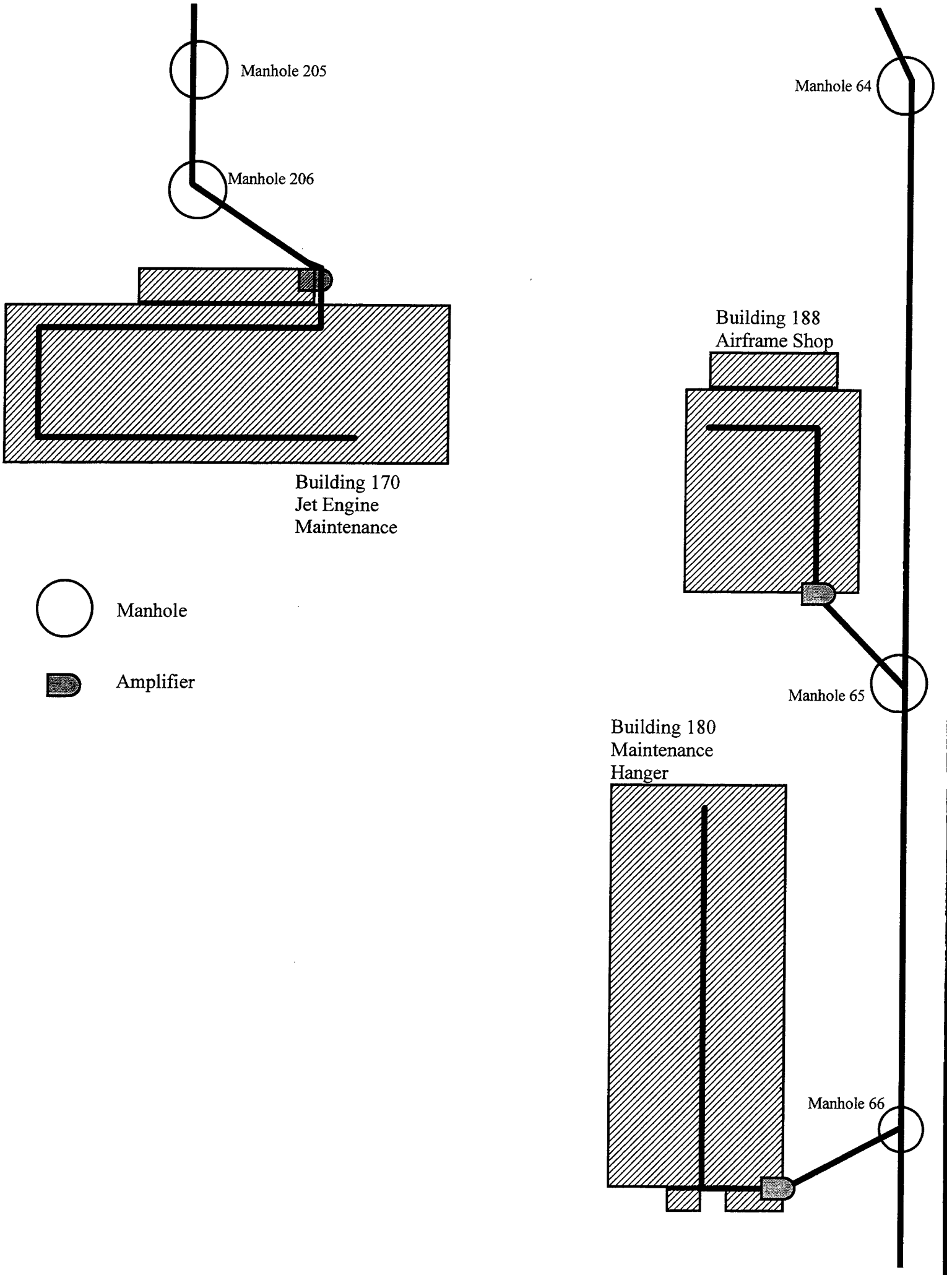
APPENDIX B. NAS LEMOORE (OPERATIONS) BROADBAND BACKBONE

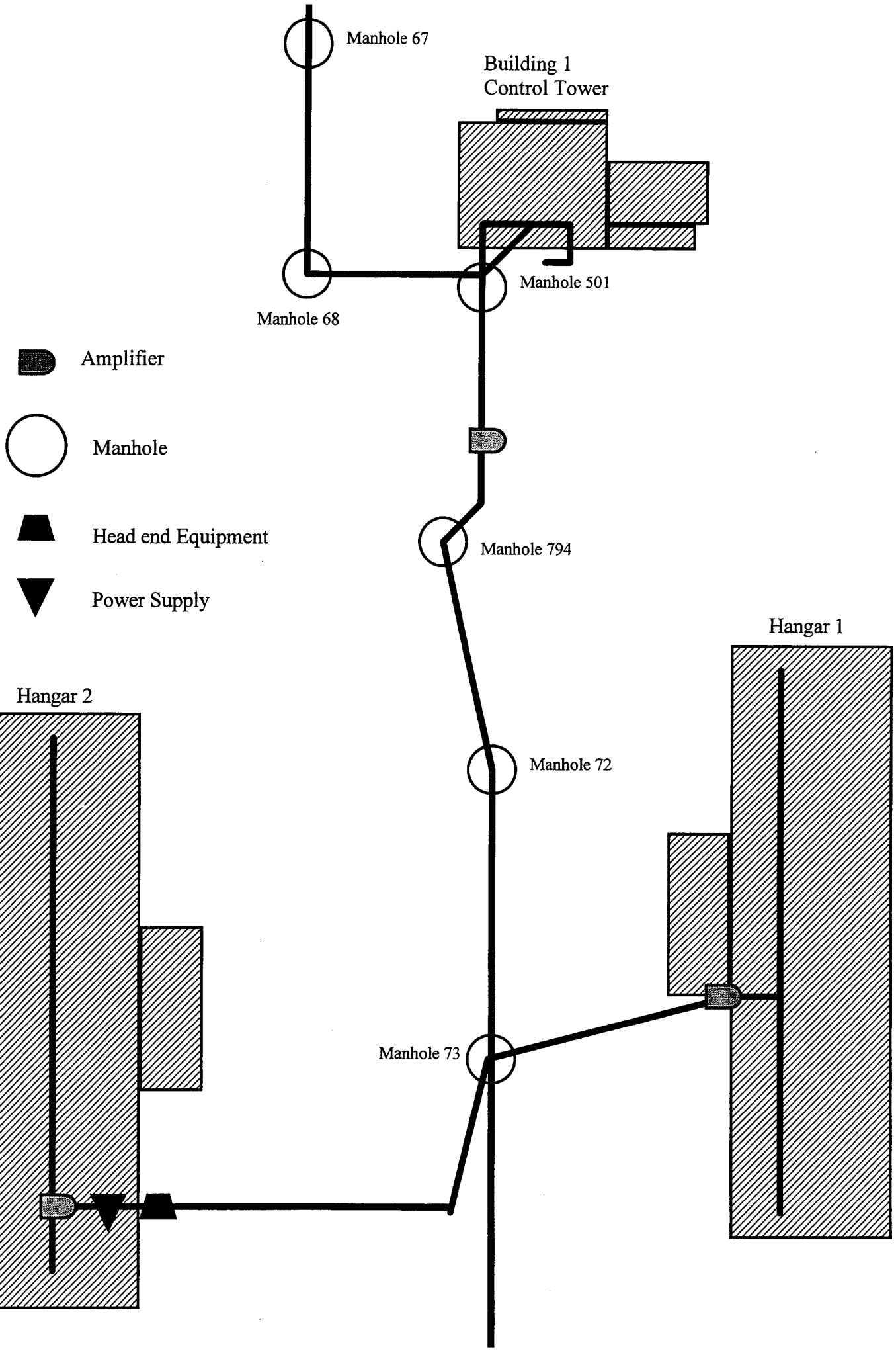
The first diagram of this appendix is an overview used to orient the reader when used in conjunction with the diagrams of the broadband that follow it. The remaining pages of this appendix are a closer look at the broadband cable and its run on NAS Lemoore's Operations side.

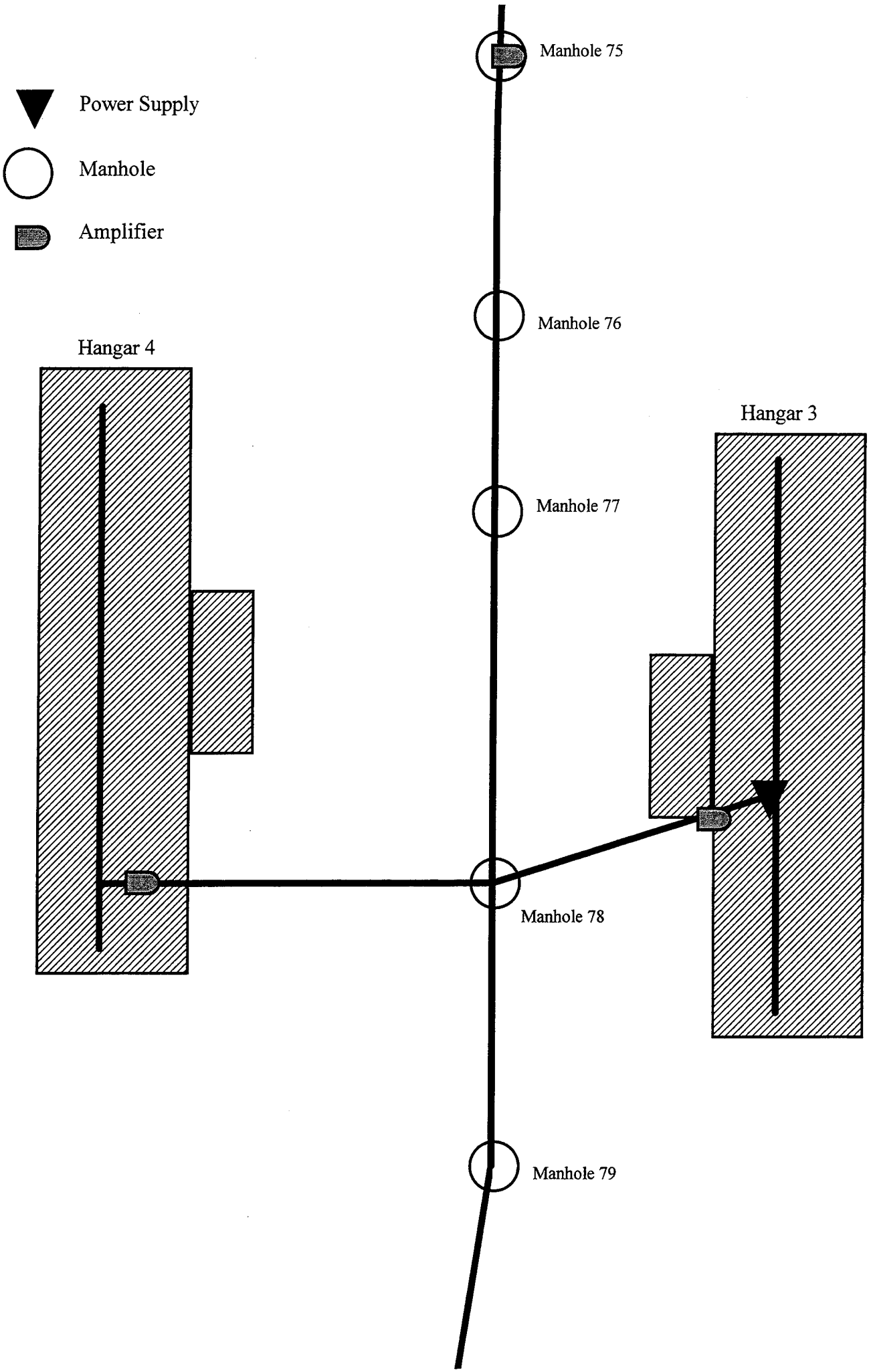
NAS LEMOORE NALCOMIS PHASE II BROADBAND OVERVIEW

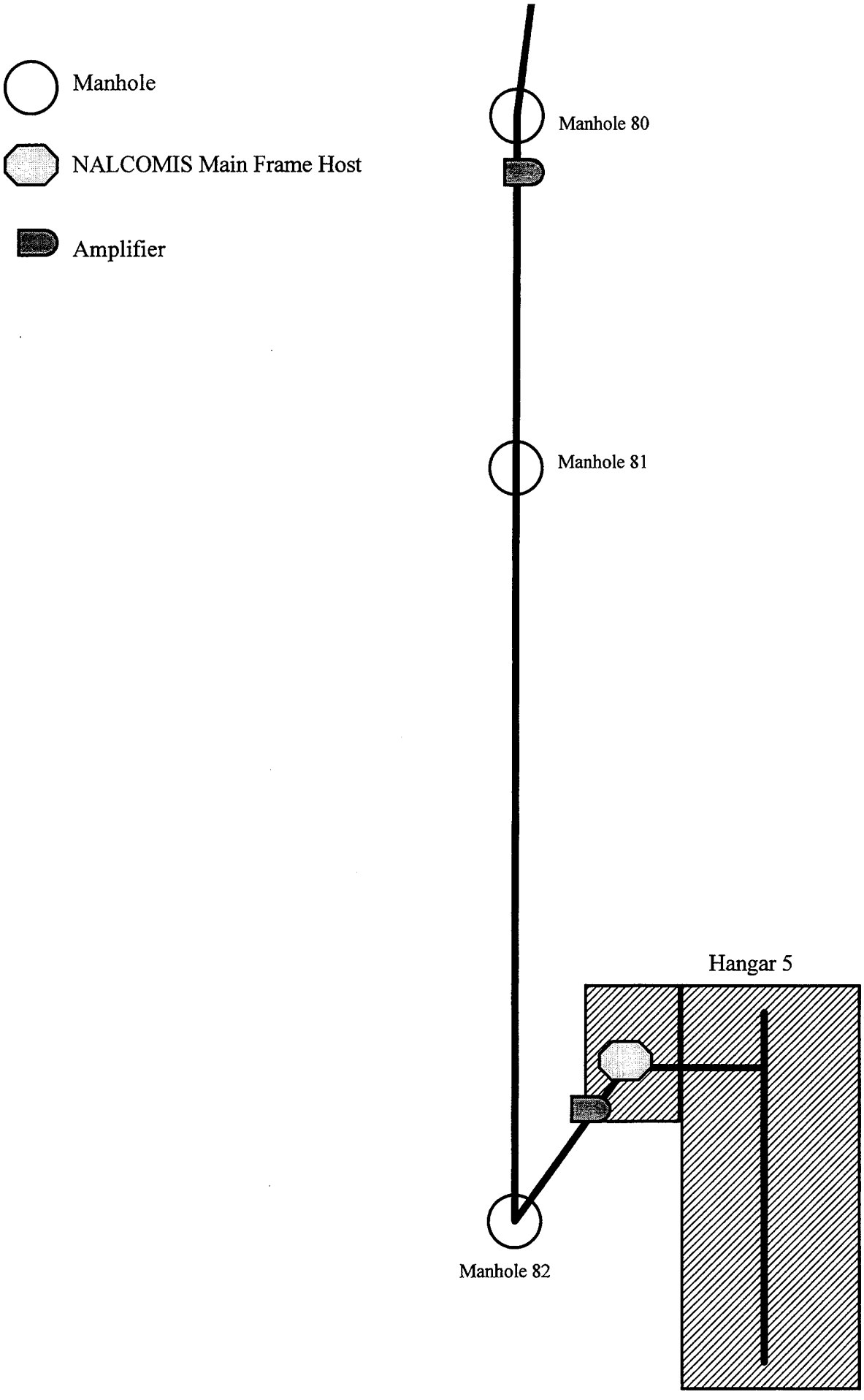



56KB Circuit to
Mainside Building 773
Building 140
Aviation Parts
Wharehouse
DSU
Bridge
Ethernet Repeater
Amplifier
Manhole
Power Supply
Ethernet Segment
Broadband Cable
Building 160
Aionics
Building 150
Paraolft
Building 179
Ground Equipment
Maintenance
Manhole 204
Manhole 203


Manhole 205
Manhole 206
Building 170
Jet Engine
Maintenance
Manhole
Amplifier
Manhole 64
Building 188
Airframe Shop
Manhole 65
Building 180
Maintenance
Hanger
Manhole 66


Manhole 67
Building 1
Control Tower
Manhole 501
Manhole 68
Amplifier
Manhole
Head end Equipment
Power Supply
Manhole 794
Hangar 1
Hangar 2
Manhole 72
Manhole 73

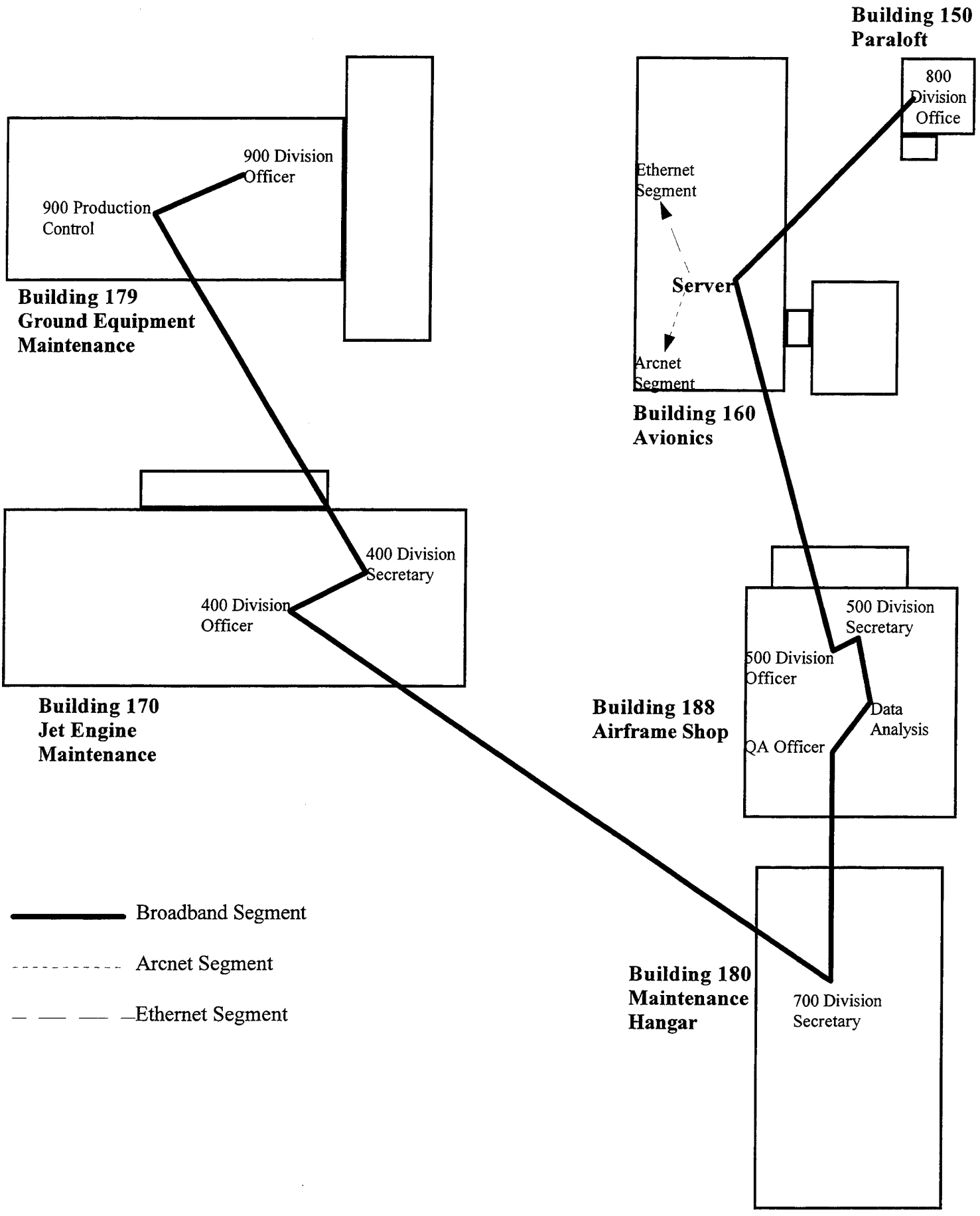

Power Supply
Manhole
Amplifier
Manhole 75
Manhole 76
Hangar 4
Hangar 3
Manhole 77
Manhole 78
Manhole 79


Manhole
NALCOMIS Main Frame Host
Amplifier
Manhole 80
Manhole 81
Hangar 5
Manhole 82

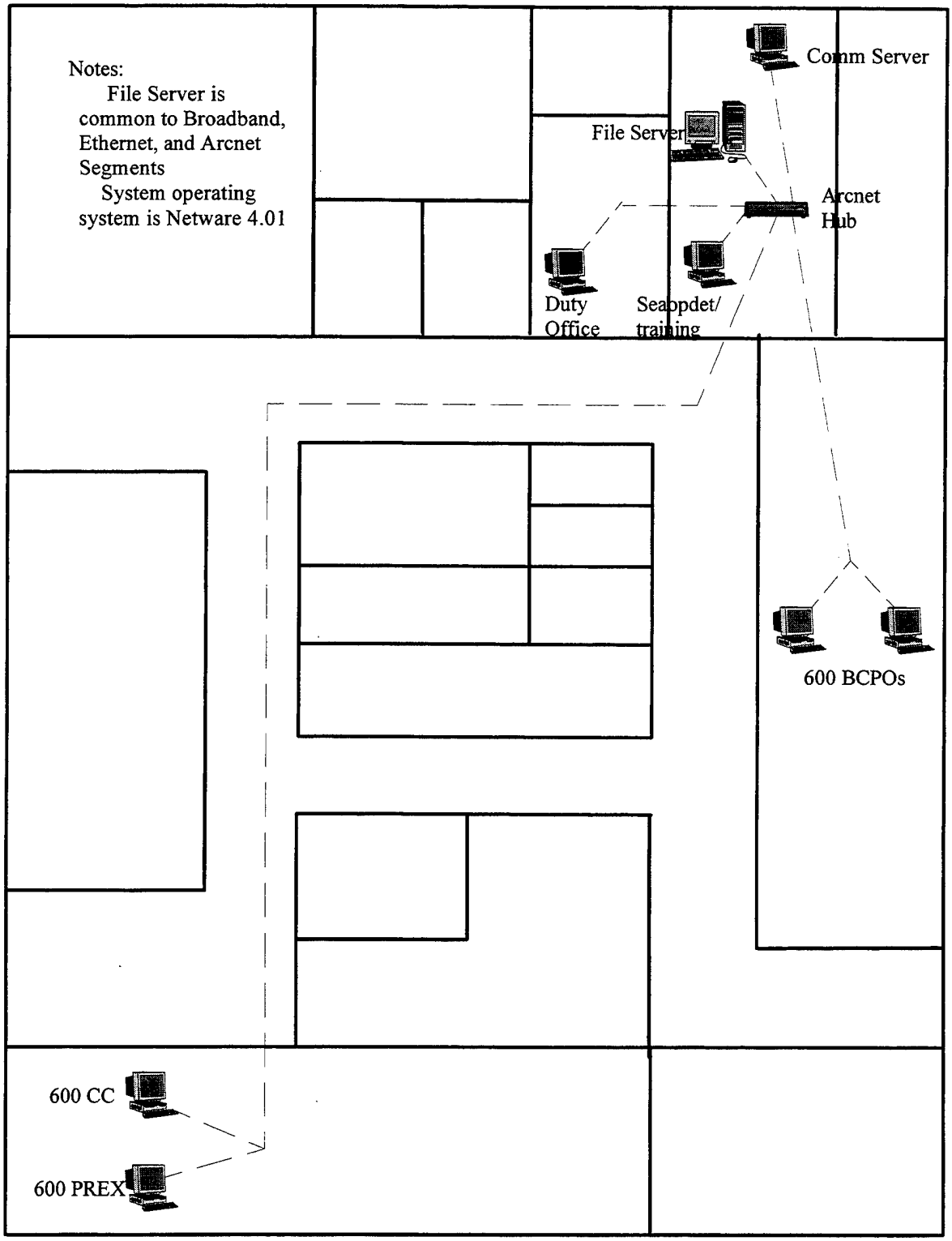
APPENDIX C. NAS LEMOORE (OPERATIONS) AIRCRAFT INTERMEDIATE MAINTENANCE DEPARTMENT'S NETWORK INFRASTRUCTURE

The Aircraft Intermediate Maintenance Department's (AIMD's) network infrastructure is a combination of broadband, Ethernet, and ARCnet segments which have a common server located in the AIMD administrative building (building 160). This appendix is a series of three diagrams. The first is a diagram of AIMD's broadband segment and its taps. The second diagram is the ARCnet segment of AIMD's LAN (the ARCnet segment is only in AIMD's administrative building, building 160). The third diagram, also completeley contained within building 160, is of the Ethernet segment of AIMD's LAN.

AIMD COMPLEX BROADBAND TAPS

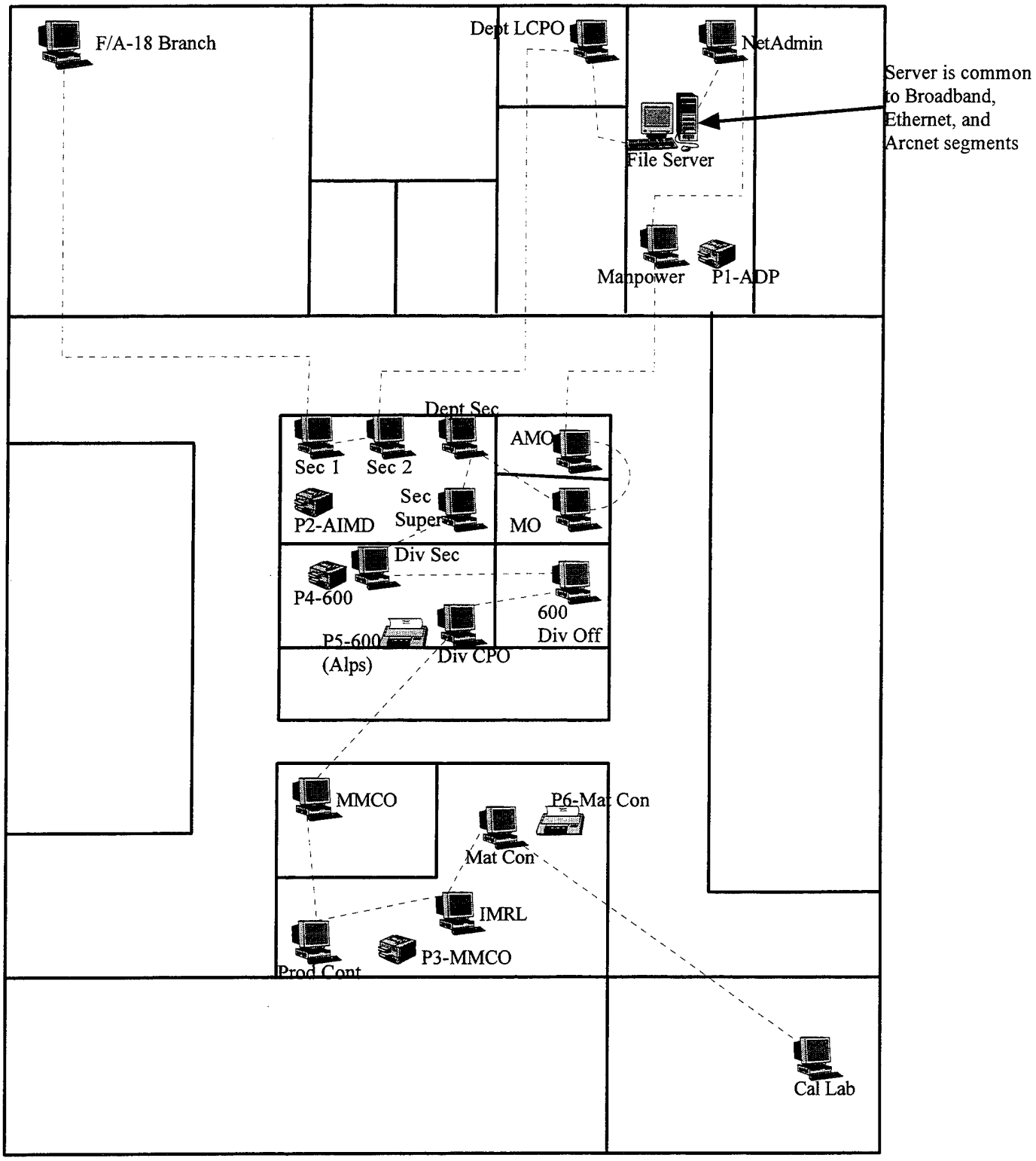


Building 160
ARCnet Network



Arcnet Segment

Building 160
Ethernet Network



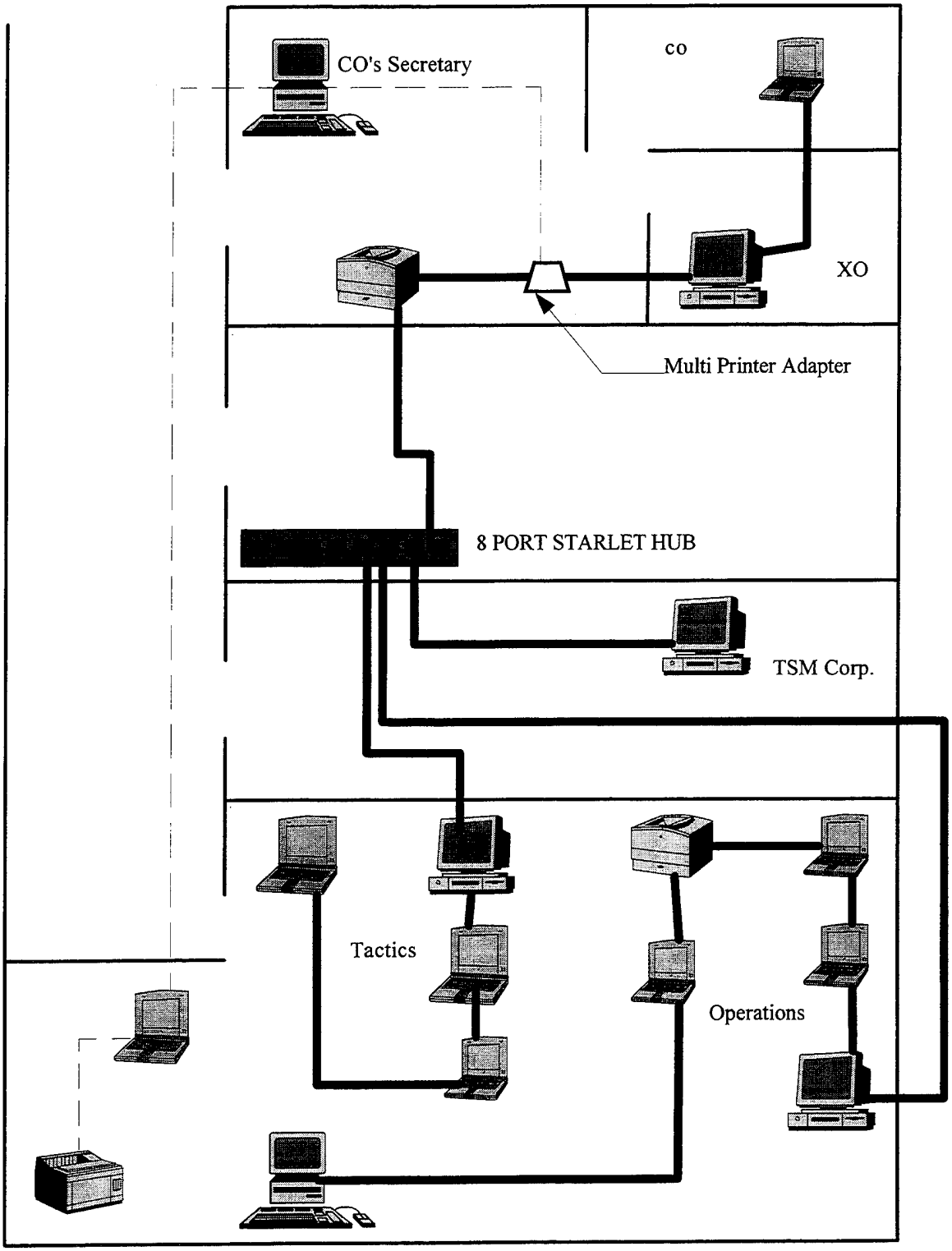
Ethernet Segment

APPENDIX D. STRIKE FIGHTER WEAPONS SCHOOL PACIFIC'S (SFWSP'S) NETWORK INFRASTRUCTURE

This diagram is of SFWSP's LAN infrastructure and the Macintosh equipment networked. Hardware inventories are contained in Appendix I.

Strike Fighter Weapons School Pacific
Building 4

Note: All Macintosh equipment



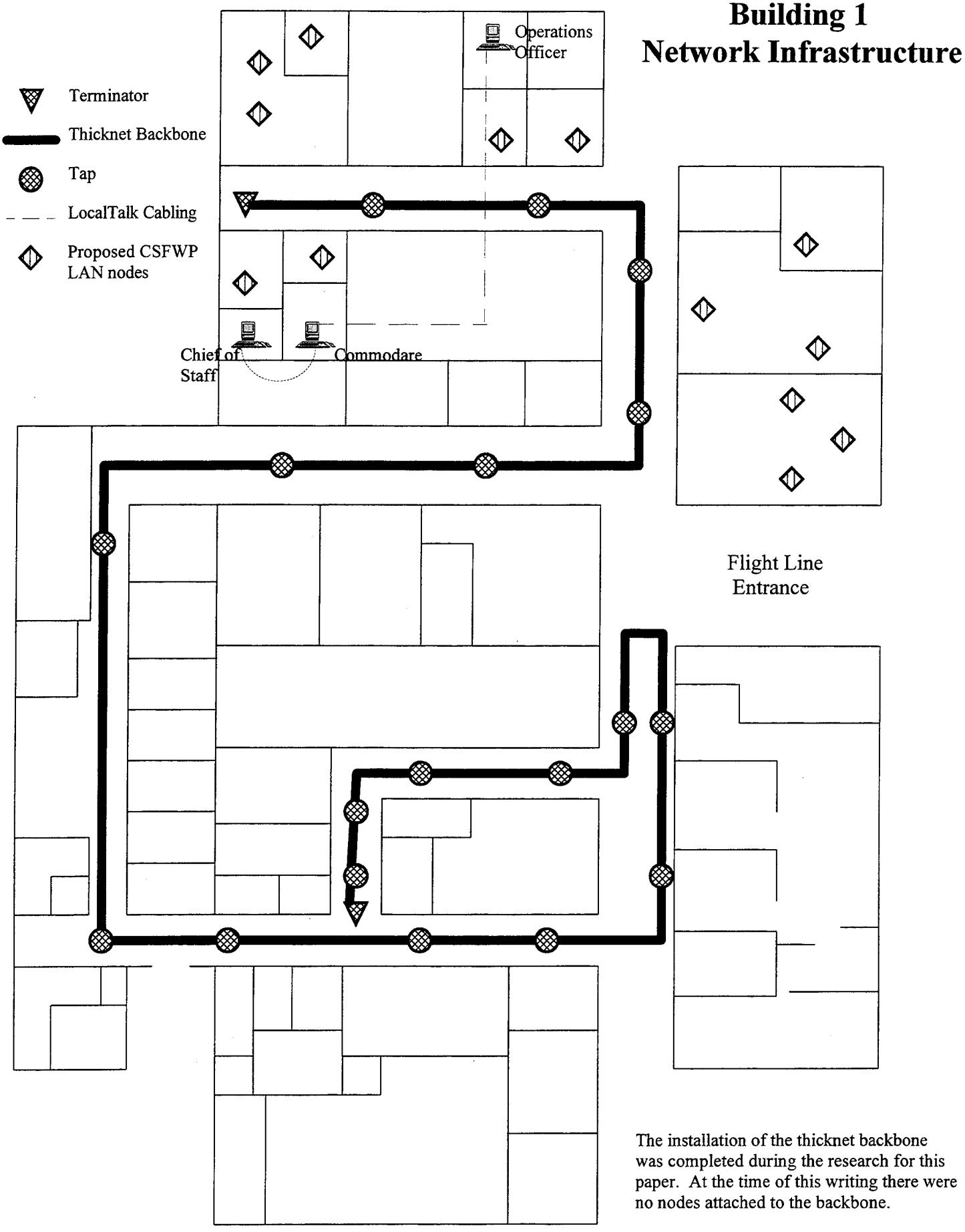
_ _ _ Phonenet Cable

Thinnet Ethernet Cable

APPENDIX E. BUILDING ONE NETWORK INFRASTRUCTURE

This appendix contains two diagrams. The first is of the thicknet (Ethernet) backbone that was recently laid. No nodes are depicted on this diagram because at the writing of this report, the backbone was the only cabling laid. The second diagram is of the three node AppleTalk network linking the Air Wing Commodore, Chief of Staff, and Air Wing Operations Officer.

Building 1
Network Infrastructure

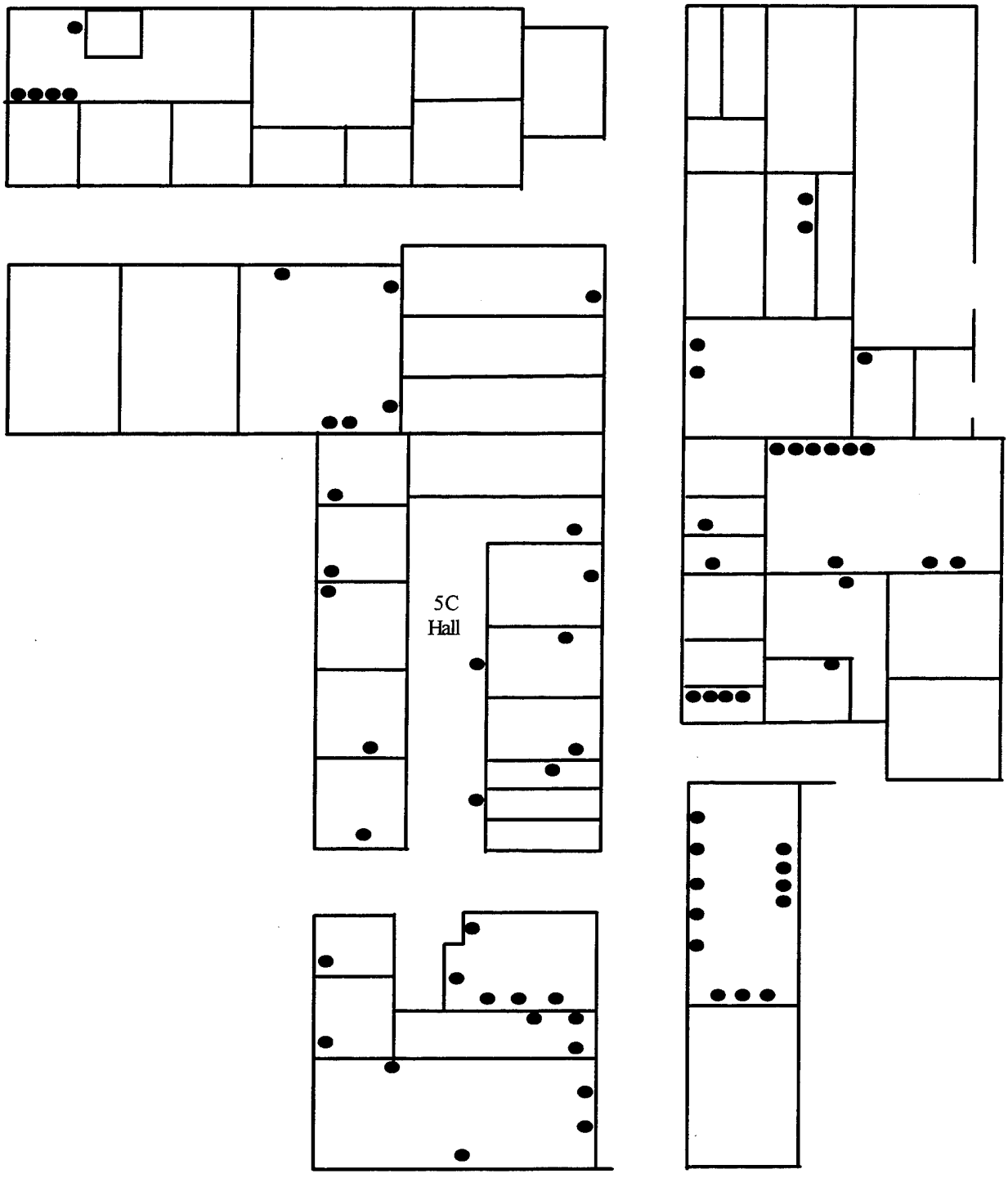


The installation of the thicknet backbone was completed during the research for this paper. At the time of this writing there were no nodes attached to the backbone.

APPENDIX F. BUILDING 11 (NAVAL HOSPITAL ANNEX) COMPOSITE HEALTH CARE SYSTEM (CHCS) NETWORK TAPS

This appendix contains a diagram of the CHCS network taps installed into the Naval Hospital Annex spaces of building 11. The CHCS system is run by network administrators whose office is in the Naval Hospital building on the administrative side of NAS Lemoore (they are connected by a T1 line).

Hospital Annex (Building 11) Composite Health Care System Network Taps



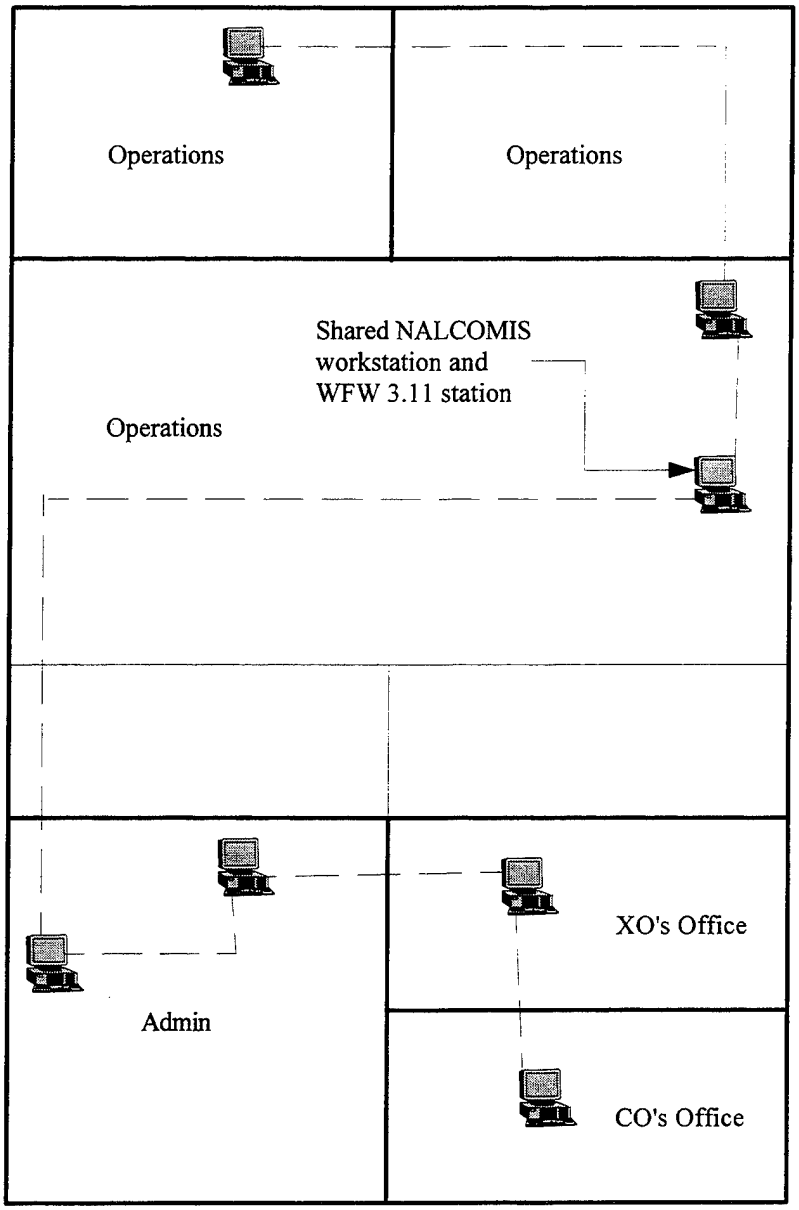
All CHCS terminals are dumb terminals and are linked to servers located at the Naval Hospital on the administrative side (Building 930).

APPENDIX G. VFA-25 WINDOWS FOR WORKGROUPS LAN

This appendix documents the only squadron level local area network outside the NALCOMIS Phase III realm. This VFA-25 seven node LAN was built with inter-squadron expertise and links the squadron's administrative and operations chain of command. Complete integration with the one node that is a NALCOMIS Phase III workstation has not yet been achieved but was in work at this writing.

VFA-25
HANGER 2 MOD 2

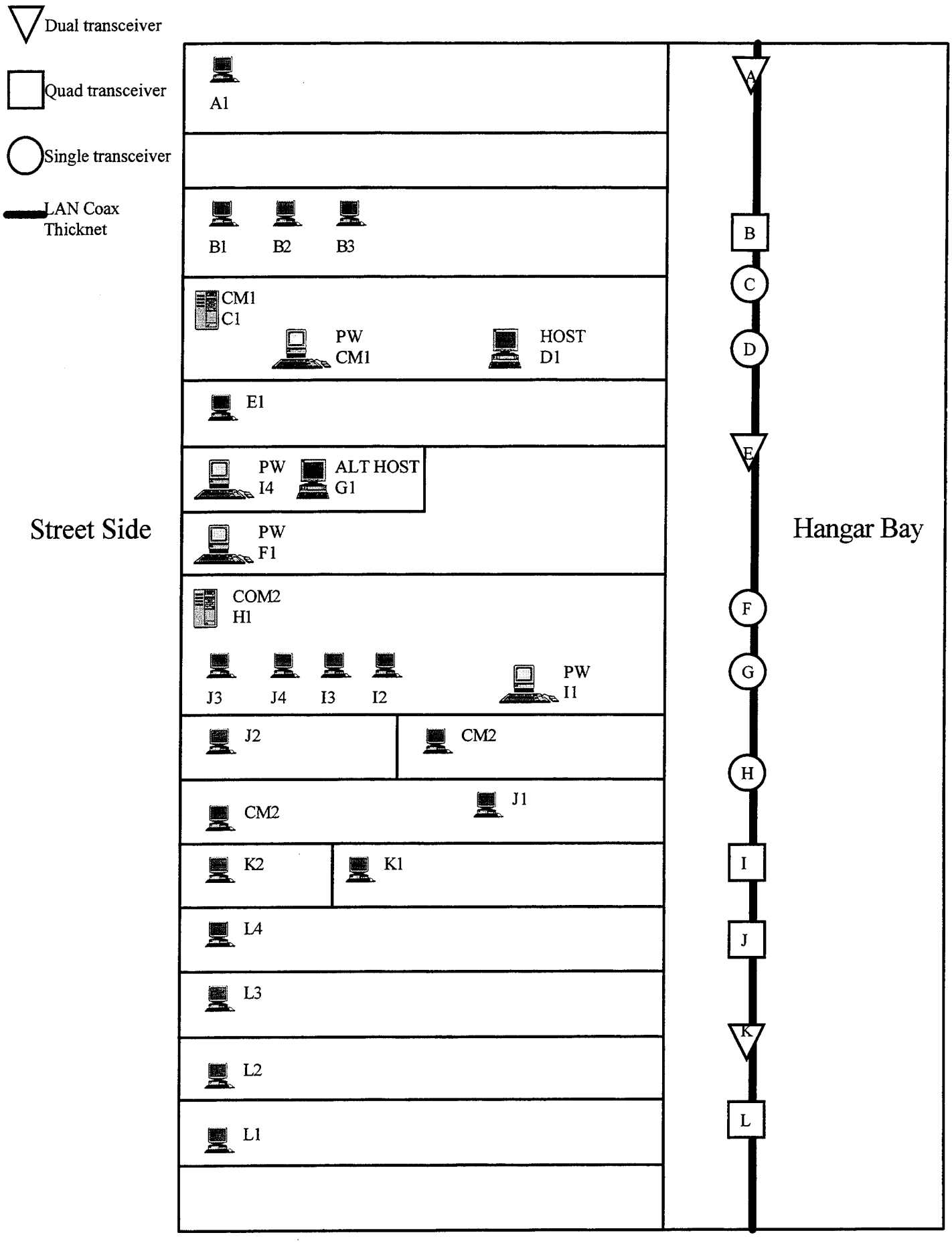
Note: This is a Windows For
Workgroups 3.11
LAN



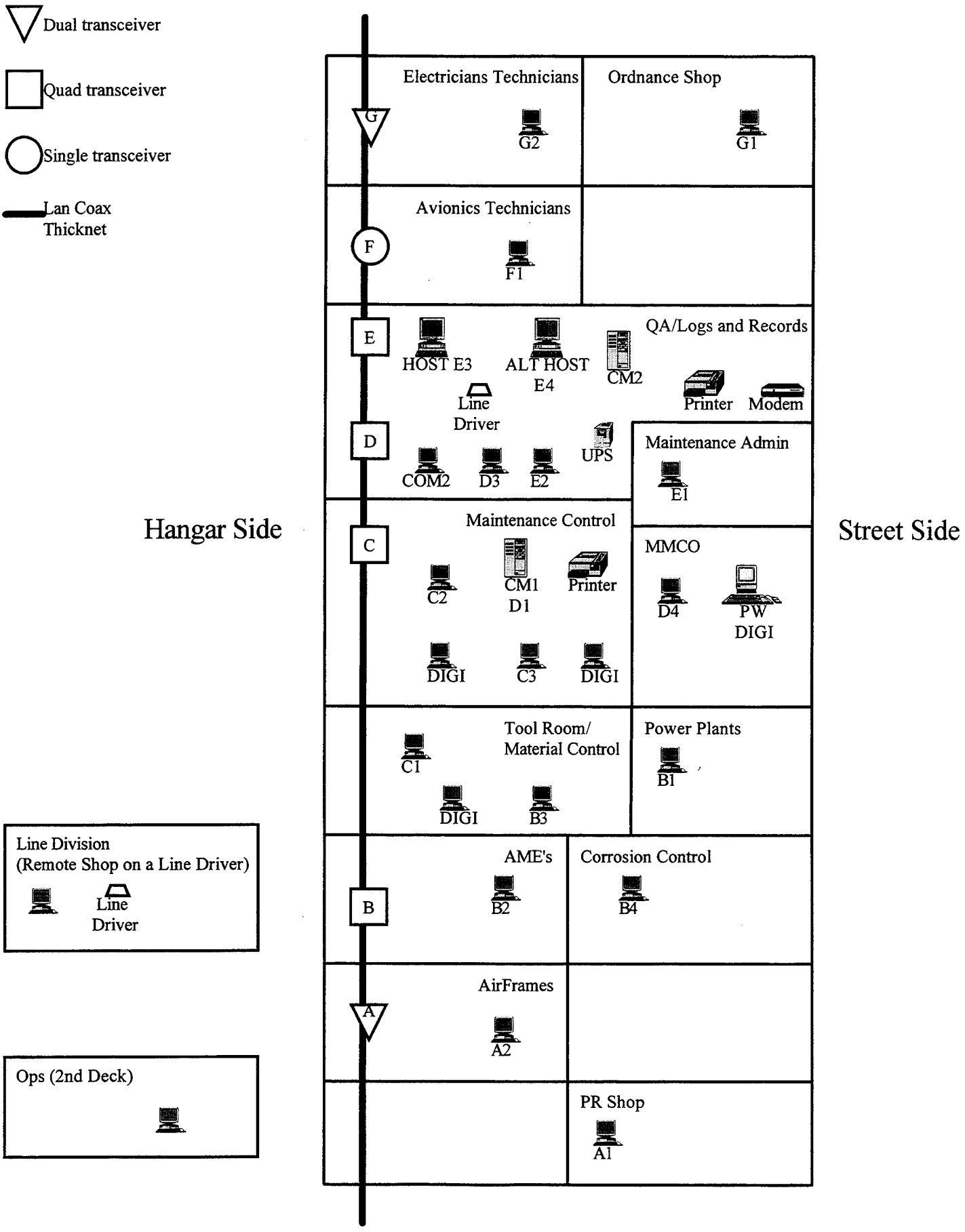
APPENDIX H. NALCOMIS PHASE III DIAGRAMS

NALCOMIS Phase III organizational level maintenance reporting system was integrated into ten of eleven squadrons at NAS Lemoore. These appendix contains the diagram of each Phase III LAN.

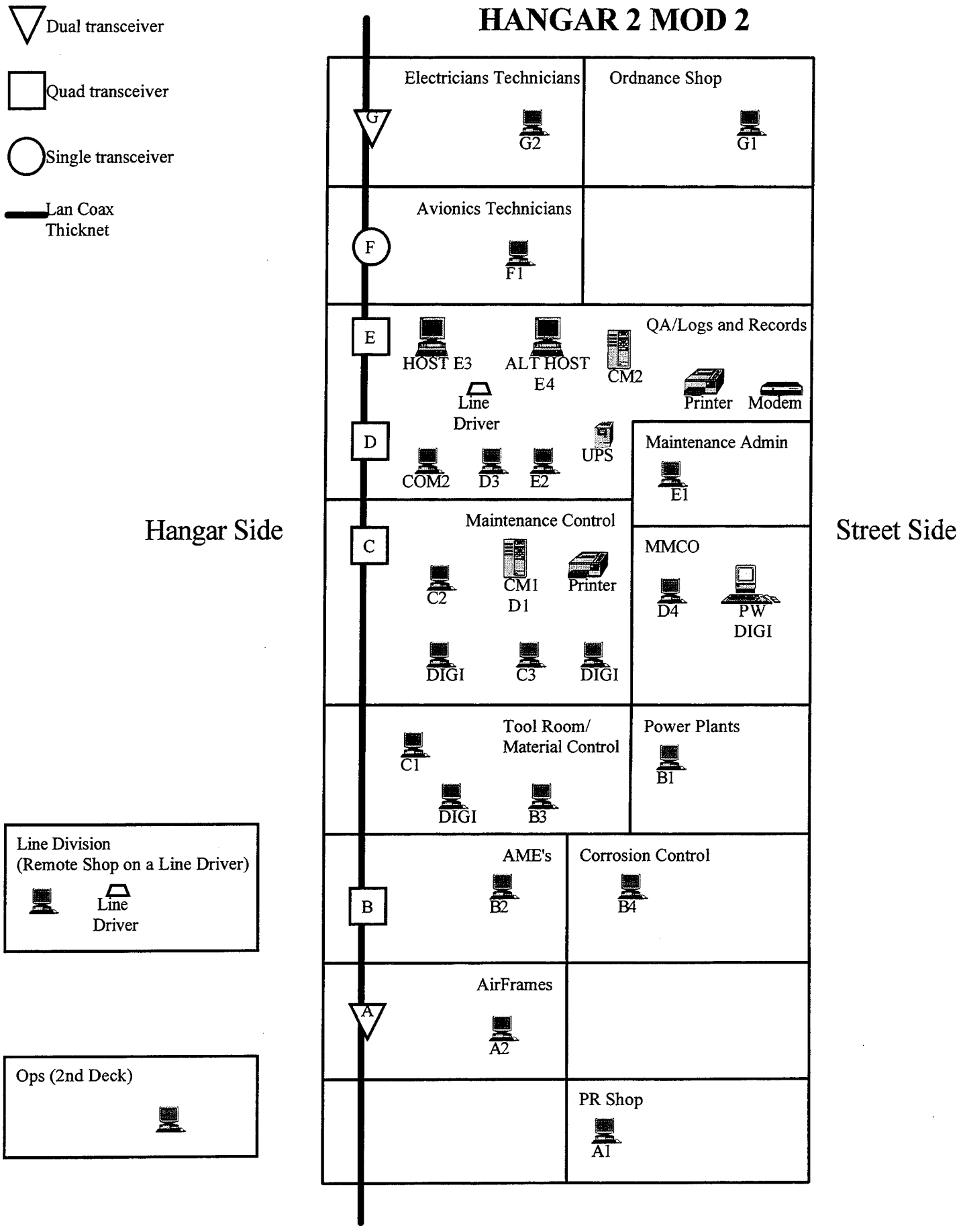
VFA-125 NALCOMIS LAN
HANGAR 1



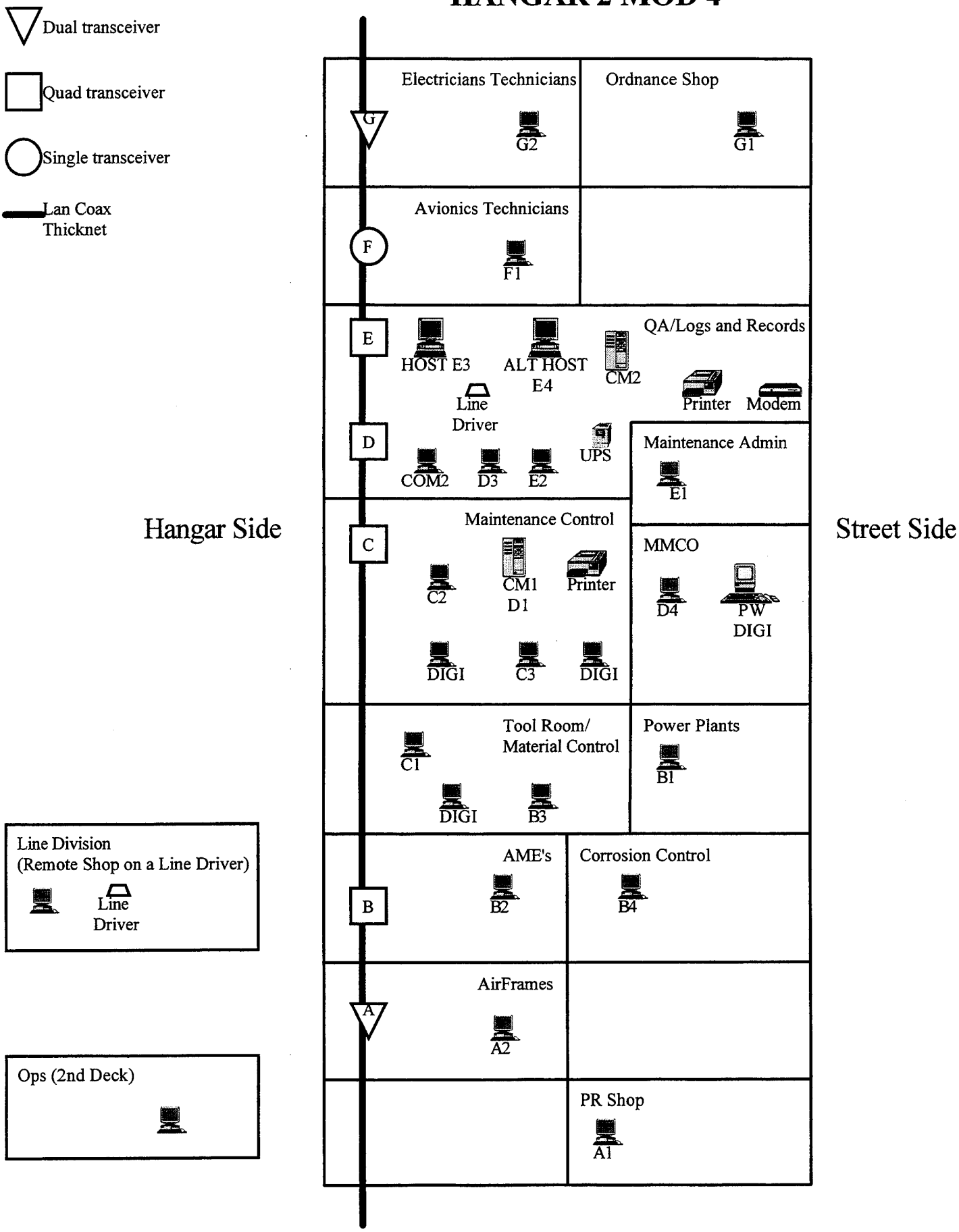
VFA-113 NALCOMIS LAN
HANGAR 2 MOD 1



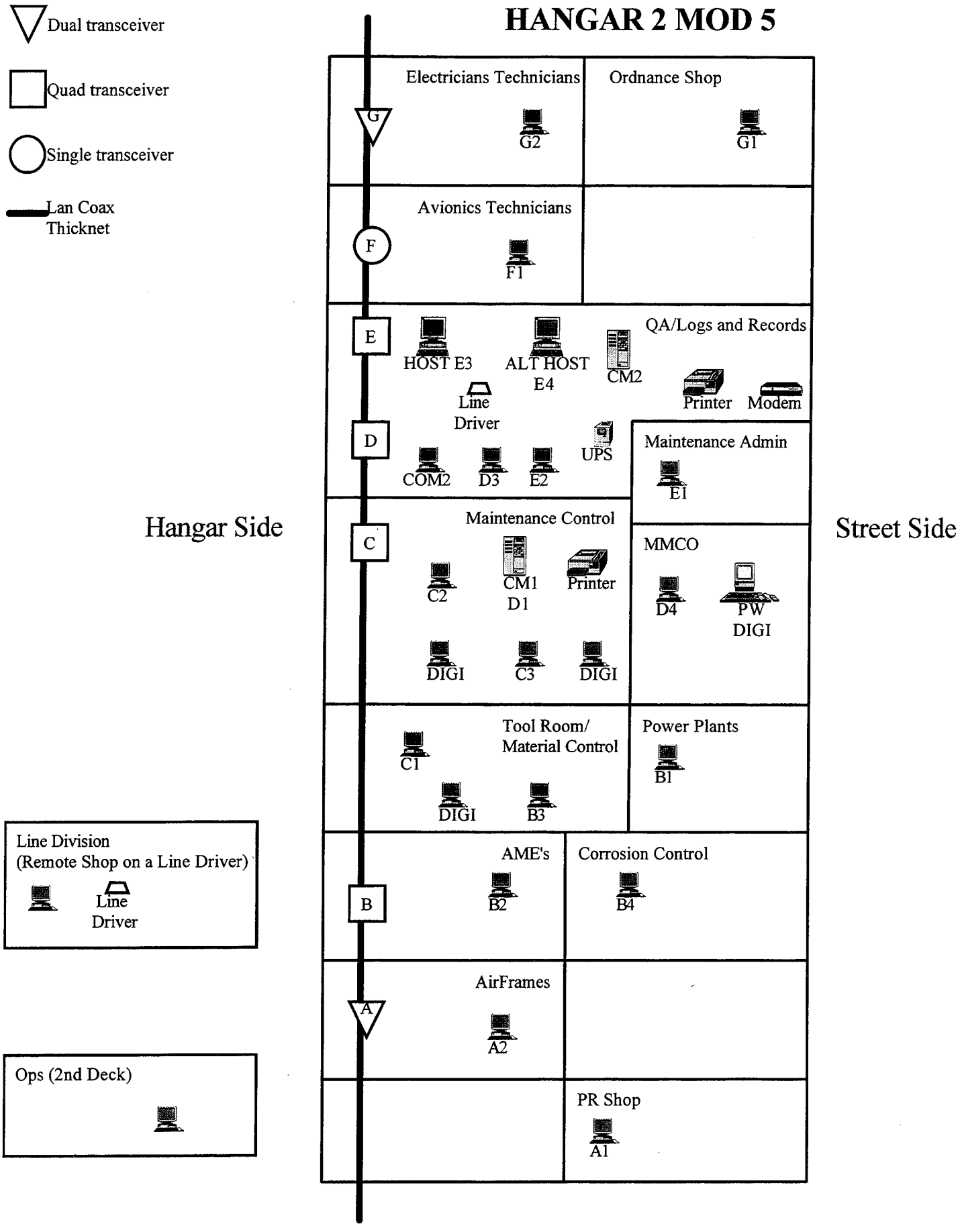
VFA-25 NALCOMIS LAN
HANGAR 2 MOD 2



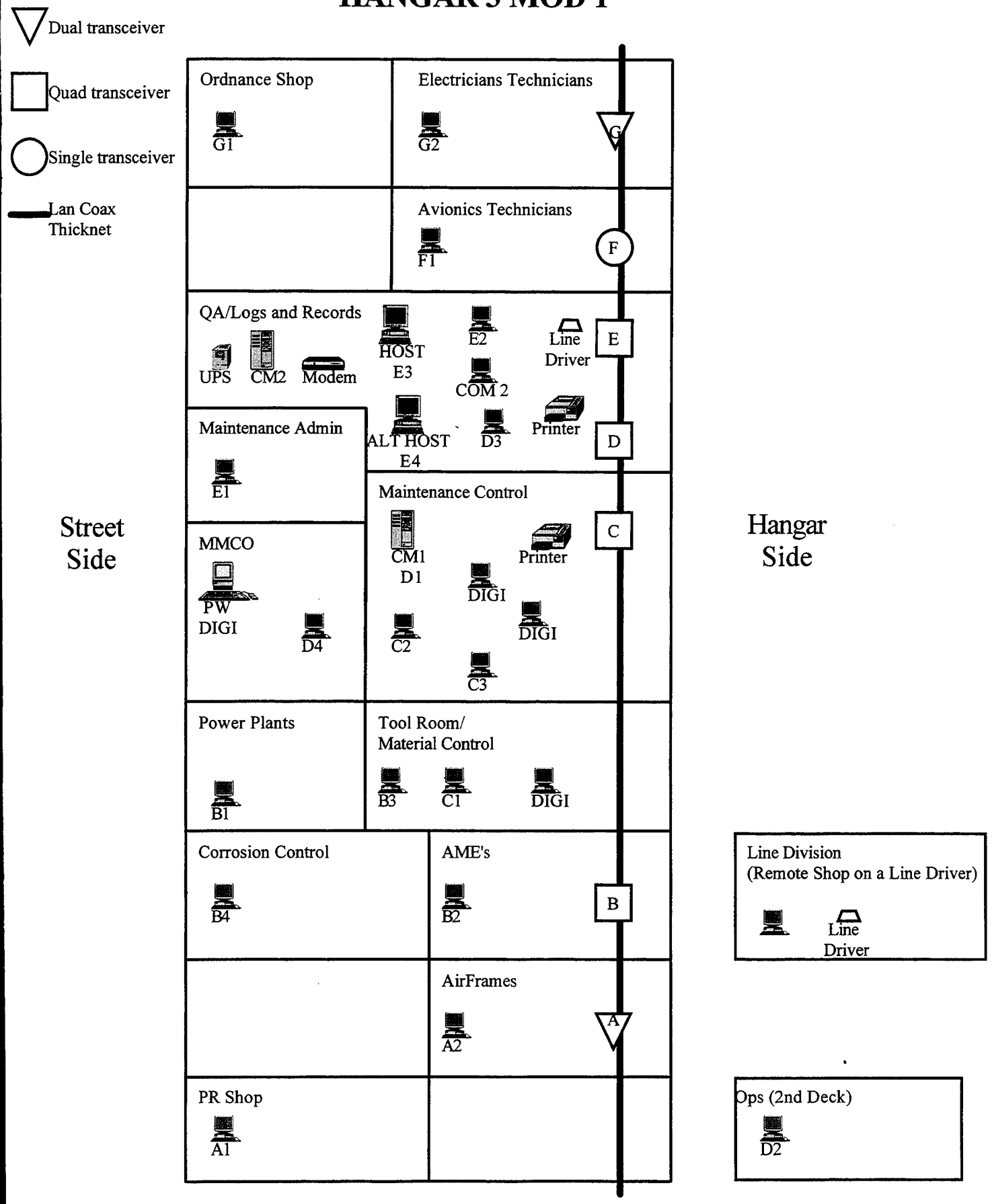
VFA-22 NALCOMIS LAN
HANGAR 2 MOD 4



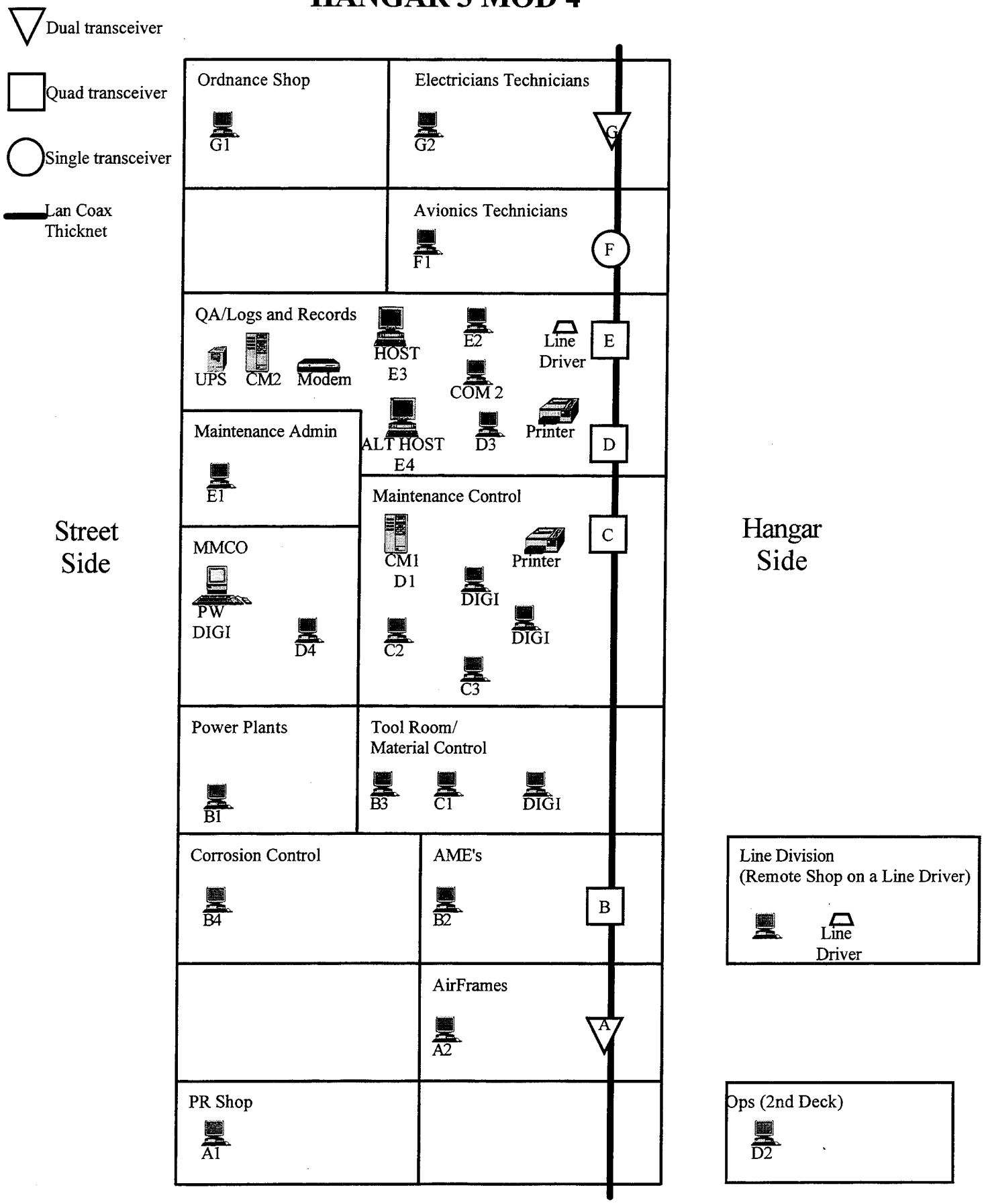
VFA-94 NALCOMIS LAN
HANGAR 2 MOD 5



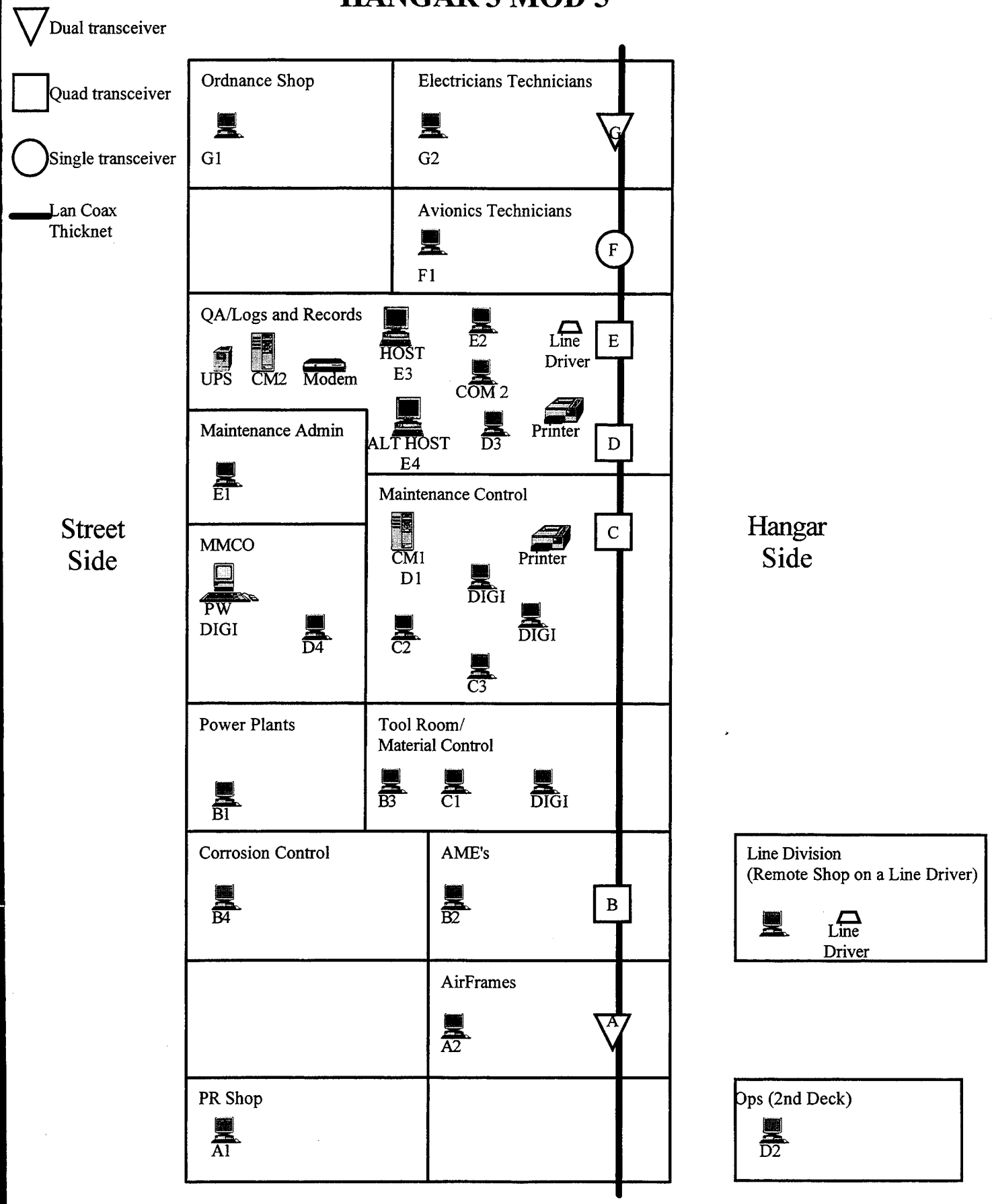
VFA-97 NALCOMIS LAN
HANGAR 3 MOD 1



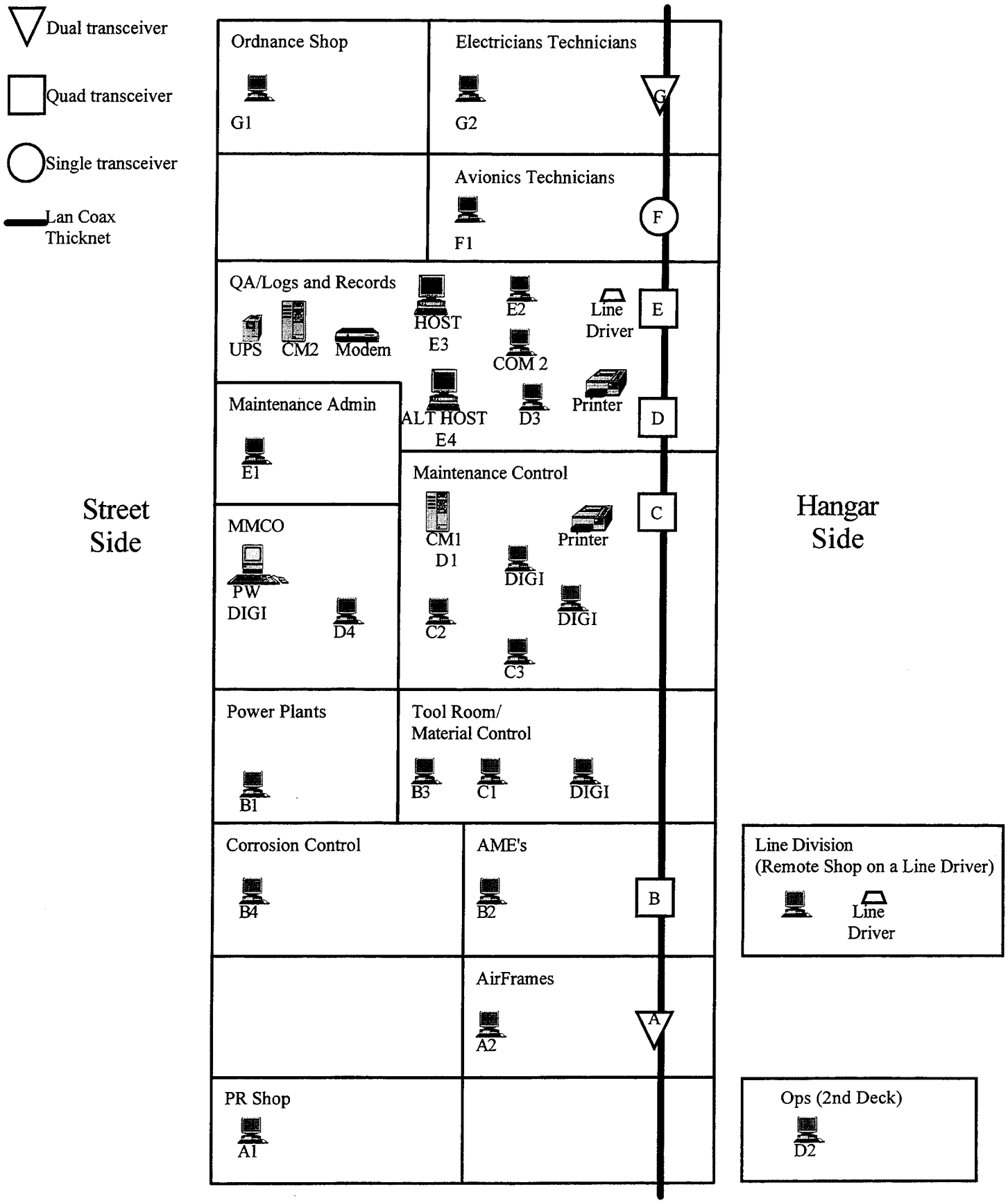
VFA-146 NALCOMIS LAN
HANGAR 3 MOD 4



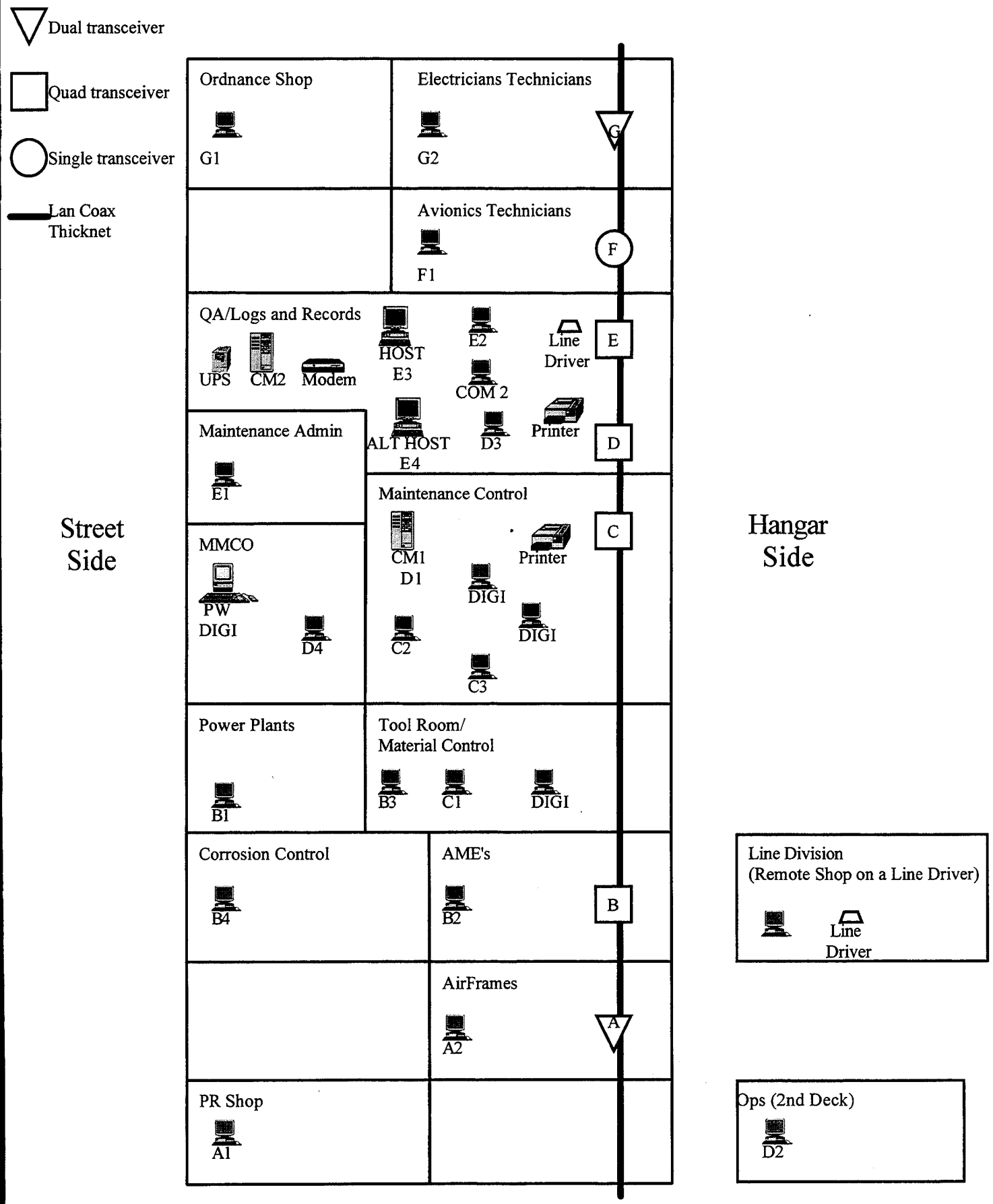
VFA-147 NALCOMIS LAN
HANGAR 3 MOD 5



VFA-137 NALCOMIS LAN
HANGAR 5 MOD 1



VFA-151 NALCOMIS LAN
HANGAR 5 MOD 2



APPENDIX I. NAS LEMOORE'S (OPERATIONS) CONSOLIDATED HARDWARE INVENTORY

A single source consolidated listing of hardware that can be found in the various units that form the operations side of NAS Lemoore. Due to some inconsistencies in record keeping, items listed as "Computer Systems" contain a CPU, internal floppy drives, monitor, keyboard, and mouse.

COMMAND	NOMEN	MFG	MODEL
FVFA-125	CPU	ZENITH	248-52
FVFA-125	CPU	ZENITH	ZWL-184-97
FVFA-125	CPU	ZENITH	248-52
FVFA-125	CPU	EVEREX	EX-3000R-A1
FVFA-125	CPU	EVEREX	EXO-3000T-A2
FVFA-125	KEYBOARD	EVEREX	EO3601Q
FVFA-125	KEYBOARD	EVEREX	EO3601Q
FVFA-125	MONITOR	ZENITH	343
FVFA-125	MONITOR	ZENITH	343
FVFA-125	MONITOR	CTX	CVP-5468A
FVFA-125	MONITOR	CTX	CVP-5468A
FVFA-125	PRINTER	ALPS	P2000G
FVFA-125	PRINTER	ALPS	P2000G
FVFA-125	PRINTER	ALPS	ASP1600
FVFA-125	PRINTER	DATAPROD	9044-2
FVFA-125	PRINTER	KYOCERA	F-1000A
VFA-125	5.25 DRIVE	ZENITH	4869
VFA-125	CD-ROM ACC	SONY	OPA-4620
VFA-125	CD-ROM ACC	SONY	OPA-4620
VFA-125	CD-ROM DRV	SONY	CDU-6251
VFA-125	CD-ROM DRV	SONY	CDU-6251
VFA-125	CD-ROM DRV	SONY	CDU-6251
VFA-125	CD-ROM DRV	SONY	CDU-6251
VFA-125	CPU	ZENITH	248-62
VFA-125	CPU	IBM	5525
VFA-125	CPU	ZENITH	248-62
VFA-125	CPU	ZENITH	121-32
VFA-125	CPU	ZENITH	248-52
VFA-125	CPU	IBM	PS-2
VFA-125	CPU	ZENITH	248-62
VFA-125	CPU	ZENITH	121-32
VFA-125	CPU	IBM	5525
VFA-125	CPU	AST	AST-286
VFA-125	CPU	AST	AST-286
VFA-125	CPU	AST	AST-286
VFA-125	CPU	AST	AST-286
VFA-125	CPU	AST	AST-286
VFA-125	CPU	AST	AST-286
VFA-125	CPU	ZENITH	248-62
VFA-125	CPU	AST	AST-286
VFA-125	CPU	AST	AST-286
VFA-125	CPU	ZENITH	248-52
VFA-125	CPU	ZENITH	ZWX-0248-52
VFA-125	CPU	ZENITH	ZWX-0248-62
VFA-125	CPU	ZENITH	248-62
VFA-125	CPU	ZENITH	248-62
VFA-125	CPU	AST	AST-286
VFA-125	CPU	ZENITH	248-62
VFA-125	CPU	ZENITH	ZWX-0248-62
VFA-125	CPU	ZENITH	121-32

VFA-125	CPU	ZENITH	ZWX-0248-62
VFA-125	CPU	AST	AST-286
VFA-125	CPU	ZENITH	248-62
VFA-125	CPU	ZENITH	ZWL-184-97
VFA-125	CPU	UNISYS	HXZPCI32061
VFA-125	CPU	UNISYS	HXZPCI32061
VFA-125	CPU	UNISYS	HXZPCI32061
VFA-125	CPU	UNISYS	PW816-20
VFA-125	CPU	UNISYS	PW816-20
VFA-125	CPU	UNISYS	HXZPCI32061
VFA-125	CPU	UNISYS	PW816-20
VFA-125	CPU	UNISYS	PW816-20
VFA-125	CPU	UNISYS	PW816-20
VFA-125	CPU	UNISYS	PW816-20
VFA-125	CPU	EVEREX	EX-3000R-A1
VFA-125	CPU	EVEREX	EX-3000R-A1
VFA-125	CPU	EVEREX	EXO-3000T-A2
VFA-125	CPU	EVEREX	EXO-3000R-A4
VFA-125	CPU	ZENITH	ZWL-0360-AA
VFA-125	DISK DRIVE	IBM	8530-021
VFA-125	EXT DRIVE	WELTEC	N/A
VFA-125	FAXSCANNER	MICROTEK	TELESCAN III
VFA-125	FIXED HD	UNISYS	ST 2-FX-2
VFA-125	FIXED HD	UNISYS	ST 2-FX-2
VFA-125	FIXED HD	UNISYS	ST 2-FX-2
VFA-125	HARD DRIVE	BERNULLI	
VFA-125	KEYBOARD	MICROTRM	5510
VFA-125	KEYBOARD	MICROTRM	5510
VFA-125	KEYBOARD	MICROTRM	5510
VFA-125	KEYBOARD	DIGITAL	LK201
VFA-125	KEYBOARD	MICROTRM	5510
VFA-125	KEYBOARD	MICROTRM	5510
VFA-125	KEYBOARD	DIGITAL	LK201
VFA-125	KEYBOARD	DIGITAL	LK201
VFA-125	KEYBOARD	MICROTRM	5510
VFA-125	KEYBOARD	UNISYS	556-352
VFA-125	KEYBOARD	UNISYS	556-352
VFA-125	KEYBOARD	UNISYS	556-352
VFA-125	KEYBOARD	UNISYS	PCK101KBD
VFA-125	KEYBOARD	UNISYS	E03435ZEUS
VFA-125	KEYBOARD	UNISYS	PCK101KBD
VFA-125	KEYBOARD	UNISYS	PCK101KBD
VFA-125	KEYBOARD	UNISYS	556-352
VFA-125	KEYBOARD	UNISYS	PCK101KBD
VFA-125	KEYBOARD	UNISYS	PCK101KBD
VFA-125	KEYBOARD	UNISYS	PCK101KBD
VFA-125	KEYBOARD	EVEREX	EO3601Q
VFA-125	KEYBOARD	EVEREX	EO3601Q
VFA-125	KEYBOARD	EVEREX	EO3601Q
VFA-125	MODEM	ZENITH	ZM-2401
VFA-125	MODEM	ZENITH	ZM-2401

VFA-125	MODEM	ZENITH	ZVM-2401
VFA-125	MODEM	ZENITH	ZM-2401
VFA-125	MODEM	UNISYS	BFJ9D93108US
VFA-125	MONITOR	ZENITH	1380
VFA-125	MONITOR	ZENITH	1390
VFA-125	MONITOR	ZENITH	1380
VFA-125	MONITOR	ZENITH	ZVM-1380
VFA-125	MONITOR	ZENITH	1380
VFA-125	MONITOR	ZENITH	ZVM-1380
VFA-125	MONITOR	ZENITH	1380
VFA-125	MONITOR	ZENITH	1380
VFA-125	MONITOR	MICROTRM	5510
VFA-125	MONITOR	SAMSUNG	SM-12SFAA7
VFA-125	MONITOR	ZENITH	1380
VFA-125	MONITOR	ZENITH	1380
VFA-125	MONITOR	MICROTRM	5510
VFA-125	MONITOR	MICROTRM	5510
VFA-125	MONITOR	IBM	5153
VFA-125	MONITOR	IBM	8512-001
VFA-125	MONITOR	MICROTRM	5510
VFA-125	MONITOR	ZENITH	ZMM-14706
VFA-125	MONITOR	ZENITH	ZVM-1380
VFA-125	MONITOR	ZENITH	ZVM-1380
VFA-125	MONITOR	SAMSUNG	SM-12SFA7
VFA-125	MONITOR	ZENITH	ZMM-14706
VFA-125	MONITOR	DIGITAL	VT320-A2
VFA-125	MONITOR	SAMSUNG	SM-12SFA7
VFA-125	MONITOR	ZENITH	ZVM-1380
VFA-125	MONITOR	ZENITH	1380
VFA-125	MONITOR	SAMSUNG	SM-12SFLAA7
VFA-125	MONITOR	ZENITH	1380
VFA-125	MONITOR	SAMTRON	SM-430
VFA-125	MONITOR	MICROTRM	5510
VFA-125	MONITOR	DIGITAL	VT320-A2
VFA-125	MONITOR	DIGITAL	VT320-A2
VFA-125	MONITOR	ZENITH	ZVM-1380
VFA-125	MONITOR	SAMSUNG	SM-12SFLAA7
VFA-125	MONITOR	SAMSUNG	SM-12SFLAA7
VFA-125	MONITOR	SAMSUNG	SM430
VFA-125	MONITOR	MICROTRM	5510
VFA-125	MONITOR	SAMSUNG	
VFA-125	MONITOR	ZENITH	1380
VFA-125	MONITOR	SAMSUNG	SM-12SFA7
VFA-125	MONITOR	UNISYS	VGA-200
VFA-125	MONITOR	UNISYS	VGA-200
VFA-125	MONITOR	UNISYS	VGA-200
VFA-125	MONITOR	UNISYS	ASICBA002
VFA-125	MONITOR	UNISYS	ASICBA002
VFA-125	MONITOR	UNISYS	VGA-200
VFA-125	MONITOR	UNISYS	VGA-200
VFA-125	MONITOR	UNISYS	ASICBA002

VFA-125	MONITOR	UNISYS	ASICBA002
VFA-125	MONITOR	UNISYS	VGA-200
VFA-125	MONITOR	CTX	CVP-5468A
VFA-125	MONITOR	CTX	CVP-5468A
VFA-125	MONITOR	CTX	CVP-5468A
VFA-125	MONITOR	CTX	CVP-5468A
VFA-125	MOUSE	UNISYS	C3K76FPS26C
VFA-125	MOUSE	UNISYS	C3K76FPS26C
VFA-125	MOUSE	UNISYS	C3K76FPS26C
VFA-125	MOUSE	UNISYS	C3K76FPS26C
VFA-125	POWER SUP		PTI 400
VFA-125	POWER SUP	DATASHIE	SS400
VFA-125	PRINTER	ALPS	P2000G
VFA-125	PRINTER	CANON	LBP-8A1
VFA-125	PRINTER	ALPS	P2000G
VFA-125	PRINTER	OKIDATA	8222A
VFA-125	PRINTER	ALPS	P2000G
VFA-125	PRINTER	EPSON	LQ-1050
VFA-125	PRINTER	OKIDATA	8222A
VFA-125	PRINTER	PRIMAGE	90-GT
VFA-125	PRINTER	OKIDATA	U83A
VFA-125	PRINTER	PRIMAGE	90-GT
VFA-125	PRINTER	ALPS	P2000G
VFA-125	PRINTER	ALPS	P2000G
VFA-125	PRINTER	ALPS	P2000G
VFA-125	PRINTER	PRIMAGE	90-GT
VFA-125	PRINTER	ALPS	P2000G
VFA-125	PRINTER	ALPS	P2000G
VFA-125	PRINTER	IBM	5219
VFA-125	PRINTER	XEROX	80N
VFA-125	PRINTER	ALPS	P2000
VFA-125	PRINTER	PRIMAGE	90GT
VFA-125	PRINTER	HEWLETT	HP SERIES II
VFA-125	PRINTER	ALPS	P2000G
VFA-125	PRINTER	PRIMAGE	90-GT
VFA-125	PRINTER	EPSON	LQ-1050
VFA-125	PRINTER	DECWRITE	LA120-AA
VFA-125	PRINTER	DIABLO	630
VFA-125	PRINTER	ALPS	P2000G
VFA-125	PRINTER	DECWRITE	LA120-AA
VFA-125	PRINTER	OKIDATA	U83A
VFA-125	PRINTER	ALPS	P2000G
VFA-125	PRINTER	DECWRITE	LA120-AA
VFA-125	PRINTER	ALPS	P2000G
VFA-125	PRINTER	IBM	5258
VFA-125	PRINTER	UNISYS	AP1339
VFA-125	PRINTER	UNISYS	AP1339
VFA-125	PRINTER	UNISYS	3770 9706
VFA-125	PRINTER	ALPS	ASP1600
VFA-125	PRINTER	UNISYS	3770 9706
VFA-125	PRINTER	UNISYS	3770 9706

VFA-125	PRINTER	UNISYS	AP1339
VFA-125	PRINTER	UNISYS	3770 9706
VFA-125	PRINTER	UNISYS	AP1339
VFA-125	PRINTER	KYOCERA	F-1000A
VFA-125	PRINTER	KYOCERA	F-1000A
VFA-125	PRINTER	DATAPROD	9044-2
VFA-125	PRINTER	DATAPROD	9044-2
VFA-125	PRINTER	UNISYS	AP1337
VFA-125	PRINTER	UNISYS	AP1339
VFA-125	SCANNER	SCANTRON	2012
VFA-125	SHEET FEED	ALPS	P2000
VFA-125	SHEET FEED	EPSON	LQ-1050
VFA-125	SHEET FEED	EPSON	LQ-1050
VFA-125	SWITCHBOX	PATTON	20
VFA-125	TAPEBACKUP	IRWIN	445
VFA-125	WINDOWS 3.	MICROSOF	VER. 3.0
VFA-125	WORD PROC.	IBM	5253
VFA-125	WORD PROC.	IBM	5253
VFA-125	WORD PROC.	IBM	5253
VFA-125	WORD PROC.	IBM	5253
VFA-125	WORD PROC.	IBM	5253
VFA-125	CPU	MICRONUC	486/33MHZ
VFA-125	MONITOR	MICRONUC	14" SVGA
VFA-125	PRINTER	FUJITSU	DOT MATRIX
VFA-125	MOUSE		
VFA-125	HARDDRIVE	SYSQUEST	105MB
VFA-125	CPU LAPTOP		
VFA-125	CD-ROM DR	SMS	CDU6251A
VFA-197	CD-ROM ACC	SONY	OPA-4620
VFA-197	CD-ROM DRV	SONY	CDU-6251

COMMAND	NOMEN	MFG	MODEL
BLDG 43	Computer system	Compaq	Deskpro XL566
BLDG 43	Computer system	Compaq	Deskpro XL566
BLDG 43	Computer system	Compaq	Deskpro XL566
BLDG 43	Computer system	Compaq	Deskpro XL566
BLDG 43	Computer system	Compaq	Deskpro XL566
BLDG 43	Computer system	Compaq	Deskpro XL566
BLDG 43	Computer system	Compaq	Deskpro XL566
BLDG 43	Computer system	Compaq	Deskpro XL566
BLDG 43	Computer system	Compaq	Deskpro XL566
BLDG 43	Computer system	Compaq	Deskpro XL566
BLDG 43	Computer system	Compaq	Deskpro XL566
BLDG 43	Computer system	Compaq	Deskpro XL566
BLDG 43	Computer system	Compaq	Deskpro XL566
BLDG 43	Computer system	Compaq	Deskpro XL566
BLDG 43	Computer system	Compaq	Deskpro XL566
BLDG 43	Computer system	Compaq	Deskpro XL566
BLDG 43	Computer system	Compaq	Deskpro XL566
BLDG 43	Computer system	Compaq	Deskpro XL566
BLDG 43	Computer system	Compaq	Deskpro XL566
BLDG 43	Computer system	Compaq	Deskpro XL566
BLDG 43	Computer system	Compaq	Deskpro XL566
BLDG 43	Computer system	Compaq	Deskpro XL566
BLDG 43	Computer system	Compaq	Deskpro XL566
BLDG 43	Computer system	Compaq	Deskpro XL566
BLDG 43	Modem	Compaq	Speedpaq 144/I
BLDG 43	Scanner	Hewlett Packard	Scanjet II
BLDG 43	Printer	Hewlett Packard	Laserjet 4M
BLDG 43	Bernoulli Drive	Iomega	Iomega 150MB
BLDG 43	Bernoulli Drive	Iomega	Iomega 150MB
BLDG 43	Bernoulli Drive	Iomega	Iomega 150MB
BLDG 43	Bernoulli Drive	Iomega	Iomega 150MB
BLDG 43	Bernoulli Drive	Iomega	Iomega 150MB
BLDG 43	Bernoulli Drive	Iomega	Iomega 150MB
BLDG 43	Computer system	ASI	486 DX33
BLDG 43	Printer	Hewlett Packard	Laserjet 4ML
BLDG 43	Computer system	Macintosh	PowerMAC 8100
BLDG 43	Computer system	Macintosh	PowerMAC 8100
BLDG 43	Computer system	Macintosh	PowerMAC 8100
BLDG 43	UPS Datashield		AST KB101
BLDG 43	Printer	Hewlett Packard	Laserjet II
BLDG 43	Computer System	AST	Premium 286
BLDG 43	Computer System	AST	286
BLDG 43	Computer System	AST	286
BLDG 43	Computer System	AST	286
BLDG 43	Computer System	Zenith	286
BLDG 43	Printer	ALPS	P2000
BLDG 43	Printer	Unisys	AP1339
BLDG 43	Printer	NEC	Silent Writer 2
BLDG 43	Computer System	Macintosh	Quadra 800
BLDG 43	Bernoulli Drive		150MB

BLDG 43	Scanner	Microtek	Scanmaker
BLDG 43	Digitizing Tablet	Wacom	
BLDG 43	Printer	NEC	Silent Writer 2
BLDG 43	Computer System	Macintosh	Quadra 700
BLDG 43	Bernoulli Drive		90MB
BLDG 43	Computer System	Macintosh	PowerMAC 7100
BLDG 43	Bernoulli Drive		150MB
BLDG 43	Bernoulli Drive		44MB
BLDG 43	Printer	Iomega	Lasersafe M0650
BLDG 43	Computer System	Macintosh	Quadra 800
BLDG 43	Bernoulli Drive		90MB
BLDG 43	Computer System	Macintosh	Centrus 700
BLDG 43	Bernoulli Drive		44MB
BLDG 43	Bernoulli Drive		90MB
BLDG 43	Digital Film Recorder		
BLDG 43	Scanner	Microtek	Scanmaker
BLDG 43	Computer System	Macintosh	Centrus 700
BLDG 43	Bernoulli Drive		90MB
BLDG 43	Computer System	Eternal	486DX33
BLDG 43	Computer System	Eternal	486DX33
BLDG 43	Computer System	ASI	486DX33
BLDG 43	Computer System	ASI	486DX33
BLDG 43	Computer System		486DX33
BLDG 43	Computer System	ASI	486DX33
BLDG 43	Computer System	Eternal	386DX40
BLDG 43	Computer System	Unisys	386DX
BLDG 43	Computer System	Eternal	386DX40
BLDG 43	FAX	Hewlett Packard	HP-900
BLDG 43	Computer System	Eternal	386DX40
BLDG 43	Computer System		386DX20
BLDG 43	Printer	Hewlett Packard	Laserjet 4ML
BLDG 43	Computer System	Eternal	386DX40
BLDG 43	Modem	Everex	EV-945
BLDG 43	Bernoulli Drive	Iomega	150MB
BLDG 43	Computer System		486DX50
BLDG 43	UPS	Back-UPS	Back-UPS 400
BLDG 43	Printer	Compaq	XJ-V58 Page Marq 15

COMMAND	NOMEN	MFG	MODEL
VFA-151	CD-ROM ACC	SONY	OPA-4620
VFA-151	CD-ROM DRV	SONY	CDU-6251
VFA-151	CD-ROM DRV	SONY	CDU-6251
VFA-151	CPU	ZENITH	ZFG-121-32
VFA-151	CPU	ZENITH	ZFG-121-32
VFA-151	CPU	ZENITH	ZWX-0248-62
VFA-151	CPU	ZENITH	ZWX-0248-62
VFA-151	CPU	ZENITH	ZWX-0248-62
VFA-151	CPU	ZENITH	ZWX-0248-62
VFA-151	CPU	ZENITH	ZWX-0248-52
VFA-151	CPU	ZENITH	ZWL-0184-97
VFA-151	CPU	ZENITH	ZWL-0184-97
VFA-151	CPU	UNISYS	PW-816-CDP
VFA-151	CPU	EVEREX	EXO-3000T-A2
VFA-151	CPU	EVEREX	EXO-3000R-A4
VFA-151	EXT. DRIVE	ZENITH	ZA-180-54
VFA-151	EXT. DRIVE	ZENITH	ZA-180-54
VFA-151	FAXSCANNER	MICROTEK	TELESCAN II
VFA-151	KEYBOARD	UNISYS	101-Q
VFA-151	KEYBOARD	EVEREX	EO3601Q
VFA-151	MONITOR	ZENITH	ZCM-1390
VFA-151	MONITOR	ZENITH	ZCM-1390Z
VFA-151	MONITOR	LEAD TEC	1431E
VFA-151	MONITOR	ZENITH	ZMM-1470G
VFA-151	MONITOR	ZENITH	ZCM-1390
VFA-151	MONITOR	UNISYS	VDC 1-VGA
VFA-151	MONITOR	CTX	CVP-5468A
VFA-151	MONITOR	CTX	CVP-5468A
VFA-151	PRINTER	EPSON	RX-80F/T
VFA-151	PRINTER	PRIMAGE	90GT
VFA-151	PRINTER	ZDS	80N
VFA-151	PRINTER	ALPS	P2000G
VFA-151	PRINTER	ALPS	P2000G
VFA-151	PRINTER	SILVEREE	EXP800
VFA-151	PRINTER	ALPS	ASP1000
VFA-151	PRINTER	ALPS	P2000G
VFA-151	PRINTER	EPSON	LX-80
VFA-151	PRINTER	ALPS	ASP1000
VFA-151	PRINTER	UNISYS	WDM 1-PTR
VFA-151	PRINTER	KYOCERA	F-1000A
VFA-151	PRINTER	KYOCERA	F-1000A
VFA-151	PRINTER	UNISYS	AP1337
VFA-151	PRINTER	UNISYS	AP1337
VFA-151	CPU	EDS/SMC	ASL 325
VFA-151	KEYBOARD	KEYTRONI	E03601QEDS
VFA-151	MONITOR	INTRA	CM-1402E+
VFA-151	PRINTER	FUJITSU	M3377D
VFA-151	CPU LAPTOP	DGI	IDP
VFA-151	CPU LAPTOP		

NALCOMIS	EQUIPMENT	
HOST COMPUTER	SYSOREX	486/66
HOST COMPUTER	SYSOREX	486/66
DESKTOP SYSTEM	SYSOREX	486/25
DESKTOP SYSTEM	SYSOREX	486/25
DESKTOP SYSTEM	SYSOREX	486/25
DESKTOP SYSTEM	SYSOREX	486/25
DESKTOP SYSTEM	SYSOREX	486/25
DESKTOP SYSTEM	SYSOREX	486/25
DESKTOP SYSTEM	SYSOREX	486/25
DESKTOP SYSTEM	SYSOREX	486/25
DESKTOP SYSTEM	SYSOREX	486/25
DESKTOP SYSTEM	SYSOREX	486/25
DESKTOP SYSTEM	SYSOREX	486/25
DESKTOP SYSTEM	SYSOREX	486/25
DESKTOP SYSTEM	SYSOREX	486/25
DESKTOP SYSTEM	SYSOREX	486/25
DESKTOP SYSTEM	SYSOREX	486/25
DESKTOP SYSTEM	SYSOREX	486/25
DESKTOP SYSTEM	SYSOREX	486/25
DESKTOP SYSTEM	SYSOREX	486/25
DESKTOP SYSTEM	SYSOREX	486/25
PORTABLE WORKSTA		486/25
UPS		
LAPTOP	TEXAS INST.	486/33-DET USE
LAPTOP	TEXAS INST.	486/33-DET USE
MODEM	HAYES	14400 BPS
MODEM	HAYES	9600 BPS
SYSTEM PRINTER		DOT MATRIX
SYSTEM PRINTER		DOT MATRIX
SYSTEM PRINTER		DOT MATRIX -DET USE
WORKSTATION PRINTER		DOT MATRIX
WORKSTATION PRINTER		DOT MATRIX
WORKSTATION PRINTER		DOT MATRIX
WORKSTATION PRINTER		DOT MATRIX
WORKSTATION PRINTER		DOT MATRIX
WORKSTATION PRINTER		DOT MATRIX
WORKSTATION PRINTER		DOT MATRIX
WORKSTATION PRINTER		DOT MATRIX
WORKSTATION PRINTER		DOT MATRIX
WORKSTATION PRINTER		DOT MATRIX
WORKSTATION PRINTER		DOT MATRIX
WORKSTATION PRINTER		DOT MATRIX
WORKSTATION PRINTER		DOT MATRIX
WORKSTATION PRINTER		DOT MATRIX
WORKSTATION PRINTER		DOT MATRIX
WORKSTATION PRINTER		DOT MATRIX
WORKSTATION PRINTER		DOT MATRIX
WORKSTATION PRINTER		DOT MATRIX
WORKSTATION PRINTER		DOT MATRIX

WORKSTATION PRINTER		DOT MATRIX
WORKSTATION PRINTER		DOT MATRIX-DET USE
WORKSTATION PRINTER		DOT MATRIX-DET USE
COMMSERVER	EMULEX	
COMMSERVER	EMULEX	

COMMAND	NOMEN	MFG	MODEL
VFA-137	CD-ROM ACC	SONY	OPA-4620
VFA-137	CD-ROM DRV	SONY	CDU-6251
VFA-137	CD-ROM DRV	SONY	CDU-6251
VFA-137	CPU	EVEREX	EXO-3000R-A4
VFA-137	MONITOR	CTX	CVP-5468A
VFA-137	PRINTER	UNISYS	AP1337
VFA-137	PRINTER	UNISYS	AP1339
VFA-137	CPU	EDS/SMC	ASL 325
VFA-137	CPU	EDS/SMC	ASL 325
VFA-137	CPU	EDS/SMC	ASL 325
VFA-137	KEYBOARD	KEYTRONI	E03601QEDS
VFA-137	KEYBOARD	KEYTRONI	E03601QEDS
VFA-137	KEYBOARD	KEYTRONI	E03601QEDS
VFA-137	MONITOR	INTRA	CM-1402E+
VFA-137	MONITOR	INTRA	CM-1402E+
VFA-137	MONITOR	INTRA	CM-1402E+
VFA-137	PRINTER	FUJITSU	M3377D
VFA-137	PRINTER	FUJITSU	M3377D
VFA-137	PRINTER	FUJITSU	M3377D
VFA-137	PRINTER	HP	LASERJET IIIP
VFA-137	PRINTER	HP	LASERJET IIIP
VFA-137	CPU	ZENITH	
VFA-137	MONITOR	ZENITH	
VFA-137	PRINTER	DIABLO	635
VFA-137	CPU	ZENITH	
VFA-137	MONITOR	ZENITH	
VFA-137	CPU	ZENITH	ZWL
VFA-137	CPU	ZENITH	ZWL
VFA-137	PRINTER	ALPS	ASP???
VFA-137	CPU	ZENITH	ZWL
VFA-137	PRINTER	EPSON	
VFA-137	EXT. DRIVE	??	??
VFA-137	CPU	ZENITH	
VFA-137	MONITOR	ZENITH	
VFA-137	CPU (TPL)	EDS/SMC	ASL 325
VFA-137	MONITOR	INTRA	CM-1402E+
VFA-137	PRINTER	UNYSIS	
VFA-137	CD-ROM DRV	SONY	
VFA-137	CPU	ZENITH	
VFA-137	MONITOR	ZENITH	
VFA-137	PRINTER	ALPS	
VFA-137	CPU	IBM	
VFA-137	MONITOR	IBM	
VFA-137	PRINTER	EPSON	
VFA-137	CPU	IBM	
VFA-137	MONITOR	IBM	
VFA-137	CPU (TPL)	EDS/SMC	ASL 325
VFA-137	MONITOR	INTRA	CM-1402E+
VFA-137	PRINTER	TI	
VFA-137	CD-ROM DRV	SONY	

VFA-137	CPU LAPTOP	DGI	IDP
VFA-137	CPU LAPTOP		

NALCOMIS	EQUIPMENT	
HOST COMPUTER	SYSOREX	486/66
HOST COMPUTER	SYSOREX	486/66
DESKTOP SYSTEM	SYSOREX	486/25
DESKTOP SYSTEM	SYSOREX	486/25
DESKTOP SYSTEM	SYSOREX	486/25
DESKTOP SYSTEM	SYSOREX	486/25
DESKTOP SYSTEM	SYSOREX	486/25
DESKTOP SYSTEM	SYSOREX	486/25
DESKTOP SYSTEM	SYSOREX	486/25
DESKTOP SYSTEM	SYSOREX	486/25
DESKTOP SYSTEM	SYSOREX	486/25
DESKTOP SYSTEM	SYSOREX	486/25
DESKTOP SYSTEM	SYSOREX	486/25
DESKTOP SYSTEM	SYSOREX	486/25
DESKTOP SYSTEM	SYSOREX	486/25
DESKTOP SYSTEM	SYSOREX	486/25
DESKTOP SYSTEM	SYSOREX	486/25
DESKTOP SYSTEM	SYSOREX	486/25
DESKTOP SYSTEM	SYSOREX	486/25
DESKTOP SYSTEM	SYSOREX	486/25
DESKTOP SYSTEM	SYSOREX	486/25
DESKTOP SYSTEM	SYSOREX	486/25
DESKTOP SYSTEM	SYSOREX	486/25
PORTABLE WORKSTA		486/25
UPS		
LAPTOP	TEXAS INST.	486/33-DET USE
LAPTOP	TEXAS INST.	486/33-DET USE
MODEM	HAYES	14400 BPS
MODEM	HAYES	9600 BPS
SYSTEM PRINTER		DOT MATRIX
SYSTEM PRINTER		DOT MATRIX
SYSTEM PRINTER		DOT MATRIX -DET USE
WORKSTATION PRINTER		DOT MATRIX
WORKSTATION PRINTER		DOT MATRIX
WORKSTATION PRINTER		DOT MATRIX
WORKSTATION PRINTER		DOT MATRIX
WORKSTATION PRINTER		DOT MATRIX
WORKSTATION PRINTER		DOT MATRIX
WORKSTATION PRINTER		DOT MATRIX
WORKSTATION PRINTER		DOT MATRIX
WORKSTATION PRINTER		DOT MATRIX
WORKSTATION PRINTER		DOT MATRIX
WORKSTATION PRINTER		DOT MATRIX
WORKSTATION PRINTER		DOT MATRIX
WORKSTATION PRINTER		DOT MATRIX
WORKSTATION PRINTER		DOT MATRIX
WORKSTATION PRINTER		DOT MATRIX

WORKSTATION PRINTER		DOT MATRIX
WORKSTATION PRINTER		DOT MATRIX
WORKSTATION PRINTER		DOT MATRIX
WORKSTATION PRINTER		DOT MATRIX
WORKSTATION PRINTER		DOT MATRIX-DET USE
WORKSTATION PRINTER		DOT MATRIX-DET USE
COMMSERVER	EMULEX	
COMMSERVER	EMULEX	

COMMAND	NOMEN	MFG	MODEL
SFWSP	CPU	ZENITH	ZWX024862
SFWSP	KEYBOARD	MS	EO3786USRET
SFWSP	MONITOR	CTX	CVP5439A
SFWSP	PRINTER	KYOCERA	F1000A
SFWSP	CPU	ZENITH	ZWX024862
SFWSP	KEYBOARD	MS	E03786USRET
SFWSP	MONITOR	ZENITH	ZVM1380
SFWSP	PRINTER	PRIMAGE	90G
SFWSP	CPU	APPLE	MAC II
SFWSP	KEYBOARD	APPLE	M3501
SFWSP	MONITOR	MIRROR	
SFWSP	PRINTER	APPLE	LASERWRITER
SFWSP	MOUSE	KENSINGTON	TURBO MOUSE
SFWSP	CPU	APPLE	MAC7100
SFWSP	KEYBOARD	APPLE	M3501
SFWSP	MONITOR	APPLE	M1212
SFWSP	MOUSE	KENSINGTON	TURBO MOUSE
SFWSP	CPU	UNISYS	3256DX
SFWSP	KEYBOARD	UNISYS	
SFWSP	MONITOR	UNISYS	200COL
SFWSP	CPU	ZENITH	ZWX024862
SFWSP	KEYBOARD	ZENITH	ZKB2R
SFWSP	MONITOR	ZENITH	ZVM1380
SFWSP	PRINTER	UNISYS	AP1339
SFWSP	CPU	UNISYS	PW820COD
SFWSP	KEYBOARD	KEYTRONICS	
SFWSP	MONITOR	UNISYS	
SFWSP	PRINTER	UNISYS	AP1337
SFWSP	POWER DIRECTOR	PMI Tech.	120SH/E64
SFWSP	CPU	EVEREX	EXO-3000T-2A
SFWSP	KEYBOARD	CHICONY	KB5181
SFWSP	MONITOR	CTX	CVP5468A4
SFWSP	PRINTER	ALPS	P2000G
SFWSP	MODEM	ROBOTICS	14400 BAUD
SFWSP	CPU	ZENITH	ZWX024862
SFWSP	KEYBOARD	ZENITH	ZKB2R
SFWSP	MONITOR	ARCHE	PX14S
SFWSP	PRINTER	UNISYS	AP1329
SFWSP	CD-ROM	SONY	CDU6251
SFWSP	CPU	ZENITH	ZWX0248
SFWSP	KEYBOARD	ZENITH	ZKB1
SFWSP	MONITOR	ZENITH	ZVM1380
SFWSP	PRINTER	ALPS	P2000G
SFWSP	CPU	DUNN	386SX
SFWSP	KEYBOARD	NORTHGATE	OMNIKEY 101
SFWSP	MONITOR	CEPTRE	CM6K
SFWSP	CPU	DUNN	386SX
SFWSP	KEYBOARD	NORHTGATE	OMNIKEY 101
SFWSP	MONITOR	CEPTRE	MC6K
SFWSP	PRINTER	EPSON	LQ1070

SFWSP	CPU	SMC/EDS	ASL325
SFWSP	KEYBOARD	KEYTRONIC	E03601Q
SFWSP	MONITOR	INTRA	CM1402E
SFWSP	PRINTER	TI	MICROLASER+
SFWSP	CD-ROM	SONY	CDU6251
SFWSP	MOUSE	MICROSOFT	SERIAL
SFWSP	CPU	SMC/EDS	ASL325
SFWSP	KEYBOARD	KEYTRONIC	EO3601Q
SFWSP	MONITOR	CORNERSTONE	E7220X2-YHCQ
SFWSP	CD-ROM	SONY	CDU6251
SFWSP	MOUSE	MICROSOFT	SERIAL
SFWSP	CPU	SMC/EDS	ASL325
SFWSP	KEYBOARD	KEYTRONIC	EO3601QEDS
SFWSP	MONITOR	INTRA	CM1402E+
SFWSP	PRINTER	FUJITSU	DL1200
SFWSP	CD-ROM	SONY	CDU6251
SFWSP	CPU	UNISYS	
SFWSP	KEYBOARD	UNISYS	PCK101
SFWSP	MONITOR	UNISYS	200-COL
SFWSP	PRINTER	UNISYS	AP1337
SFWSP	PRINTER	CALCOMP	5902G
SFWSP	CPU	ZENITH	ZWX024862
SFWSP	KEYBOARD	ZENITH	100-1860
SFWSP	MONITOR	IBM	5153
SFWSP	CPU	ZENITH	ZWX24862
SFWSP	KEYBOARD	ZENITH	ZMM149P
SFWSP	MONITOR	ZENITH	100-1860
SFWSP	PRINTER	ALPS	P200G
SFWSP	CPU	APPLE	MAC 7100
SFWSP	KEYBOARD	APPLE	M0115
SFWSP	MONITOR	APPLE	M1212
SFWSP	MOUSE	APPLE	M2706
SFWSP	SCANNER	MICROTEK	60025
SFWSP	CPU	APPLE	MAC 7100
SFWSP	KEYBOARD	APPLE	M3501
SFWSP	MONITOR	APPLE	M1212
SFWSP	MOUSE	APPLE	M2706
SFWSP	MODEM	HAYES	5205 AM
SFWSP	CPU	APPLE	MAC IIci
SFWSP	KEYBOARD	APPLE	M0115
SFWSP	MONITOR	APPLE	M0401
SFWSP	PRINTER	TEKTRONIX	PHASER III
SFWSP	MOUSE	APPLE	G5431
SFWSP	BERNOULLI DRIVE	BERNOULLI	B-1150TM
SFWSP	CPU	APPLE	MAC II
SFWSP	KEYBOARD	KEYTRONICX	KBMACPRO+
SFWSP	MONITOR	ACER	7076
SFWSP	MOUSE	APPLE	M2706
SFWSP	MONITOR	SONY	CPD-1605S
SFWSP	CPU	APPLE	MAC IIsi
SFWSP	KEYBOARD	APPLE	M0115

SFWSP	MONITOR	E-MACHINES	E16
SFWSP	MOUSE	APPLE	M0331
SFWSP	EXTERNAL DRIVE	RODINE	20+
SFWSP	CPU	SILICON GRAPH	INDIGO 2
SFWSP	KEYBOARD	SILICON GRAPH	
SFWSP	MONITOR	SILICON GRAPH	GDM-200D11
SFWSP	MOUSE		S100
SFWSP	LAPTOP	ZENITH	ZWL18497
SFWSP	BATTERY CASE	ZENITH	ZA180574
SFWSP	POWER SUPPLY	ZENITH	1504131
SFWSP	EXTERNAL DRIVE	WELTEC	5.25 FDD
SFWSP	NOTEBOOK	ZENITH	ZWL0366AA
SFWSP	PRINTER	ALPS	ASP1600
SFWSP	NOTEBOOK	ZENITH	ZWL184
SFWSP	POWERBOOK	APPLE	520C
SFWSP	POWERBOOK	APPLE	520C
SFWSP	POWERBOOK	APPLE	160
SFWSP	POWERBOOK	APPLE	520C
SFWSP	POWERBOOK	APPLE	540C
SFWSP	POWERBOOK	APPLE	520C
SFWSP	POWERBOOK	APPLE	540C
SFWSP	POWERBOOK	APPLE	540C

TSM Corp. Equipment

Computer System	486DX2 w/Ethernet Car	Canon
Computer System	486DX2 w/Ethernet Car	Canon
Computer System	486DX2 w/Ethernet Car	Canon
Computer System	PowerMAC 7100	Macintosh
Scanner	Scanmaker IIHR	Microtec
Slide Scanner	CoolScan	Nikon
Bernoulli Drive	150MB	
Bernoulli Drive	150MB	
Printer	HP Laserjet 4M+	Hewlett Packard
FAX Machine	HP-900	Hewlett Packard

COMMAND	DEPARTMENT	NOMEN	MFG	MODEL
Hosp Annex	AV Med	Computer	Zenith	ZWX24862
Hosp Annex	AV Med	Modem	Ralin	CDU6251C
Hosp Annex	AV Med	Keyboard	Honeywell	9321
Hosp Annex	AV Med	Computer Monitor	Mitac	M1420-0
Hosp Annex	AV Med	Keyboard		
Hosp Annex	AV Med	Printer	Anadex	DP9620A
Hosp Annex	AV Med	Keyboard	Data General	5242NM
Hosp Annex	AV Med	Computer Monitor	Data General	
Hosp Annex	AV Med	Printer	Epson	LQ1070
Hosp Annex	AV Med	Computer	Comtec	386-20
Hosp Annex	AV Med	Computr Monitor	Mitac	1420-0
Hosp Annex	AV Med	Printer	Unisys	AP1329
Hosp Annex	AV Med	Computer Monitor	Zenith	ZCM1390A
Hosp Annex	AV Med	Computer	Zenith	ZWX024862
Hosp Annex	AV Med	Keyboard	Zenith	
Hosp Annex	AV Med	Computer	Zenith	ZWX024852
Hosp Annex	AV Med	Printer	Alps	AL2000G
Hosp Annex	AV Med	Computer Monitor	Zenith	ZCM1390A
Hosp Annex	AV Med	Modem	Zenith	2400
Hosp Annex	AV Med	Keyboard	Zenith	
Hosp Annex	AV Med	Tape Backup System	Valitek	PST60F
Hosp Annex	AV Med	CHCS Dumb Terminal		VT420
Hosp Annex	AV Med	CHCS Dumb Terminal		VT420
Hosp Annex	AV Med	CHCS Dumb Terminal		VT420
Hosp Annex	AV Med	CHCS Dumb Terminal		VT420
Hosp Annex	AV Med	CHCS Dumb Terminal		VT420
Hosp Annex	AV Med	CHCS Dumb Terminal		VT420
Hosp Annex	AV Med	CHCS Dumb Terminal		VT420
Hosp Annex	AV Med Lab	CHCS Dumb Terminal		VT420
Hosp Annex	AV Med Pharmacy	CHCS Dumb Terminal		VT420
Hosp Annex	AV Med	CHCS Printer		LA75 PRINTER
Hosp Annex	AV Med	CHCS Printer		LA75 PRINTER
Hosp Annex	AV Med Lab	CHCS Printer		LA75 PRINTER
Hosp Annex	AV Med Pharmacy	CHCS Printer		LA75 PRINTER
Hosp Annex	AV Med			Datasouth XL300
Hosp Annex	AV Med Lab			Datasouth XL300
Hosp Annex	AV Med Pharmacy			Datasouth XL300
Hosp Annex	AV Med	Barcade Label Printer		
Hosp Annex	Treatment Room	CHCS Printer		LA75 PRINTER
Hosp Annex	Treatment Room	CHCS Dumb Terminal		VT420
Hosp Annex	Physical Exam Roo	CHCS Dumb Terminal		VT420
Hosp Annex	Room 47	CHCS Dumb Terminal		VT420
Hosp Annex	Room 28	CHCS Dumb Terminal		VT420
Hosp Annex	Industrial Hygiene	Printer	Radio Shack	TRS 80
Hosp Annex	Industrial Hygiene	Computer Monitor	Zenith	ZCM13902
Hosp Annex	Industrial Hygiene	CD ROM Drive	Sony	CDR 1503F
Hosp Annex	Industrial Hygiene	Computer	Zenith	ZWX024862
Hosp Annex	Industrial Hygiene	Printer	Alps	P2000G
Hosp Annex	Industrial Hygiene	Computer	Comtech	486-33
Hosp Annex	Industrial Hygiene	Computer Monitor	CTX	

Hosp Annex	Industrial Hygiene	Bubble Jet Printer	Canon	BJ-200E
Hosp Annex	Occupational Health	Computer Monitor	Zenith	ZMM1470G
Hosp Annex	Occupational Health	Computer	Zenith	ZWX024852
Hosp Annex	Occupational Health	Computer Monitor	Zenith	ZMM1470G
Hosp Annex	Occupational Health	Printer	Epson	LQ 1070
Hosp Annex	Occupational Health	Computer Monitor	VIT	VM1491H
Hosp Annex	Occupational Health	Computer		SV 1024
Hosp Annex	Occupational Health	Printer	Alps	P2000G
Hosp Annex	Occupational Health	Computer Monitor	Zenith	ZCM13902
Hosp Annex	Occupational Health	Computer	Zenith	
Hosp Annex	Occupational Health	Printer	Tandy	
Hosp Annex	Occupational Health	Computer	Tandy	TRS-80
Hosp Annex	Occupational Health	Printer	Epson	1070
Hosp Annex	Occupational Health	Computer	Comtech	386-20
Hosp Annex	Occupational Health	Computer Monitor	Samsung	SYNCMASTER
Hosp Annex	Occupational Health	Laser Jet Printer	Hewlett Packard	C2005A

COMMAND	NOMEN	MFG	MODEL
VFA-146	CD-ROM DRV	SONY	CDU-6251
VFA-146	ADID	NGL	1225R000
VFA-146	ADM INFO		ADM-3A
VFA-146	CD-ROM ACC	SONY	OPA-4620
VFA-146	CD-ROM DRV	SONY	CDU-6251
VFA-146	CPU	ZENITH	121-32
VFA-146	CPU	ZENITH	248-62
VFA-146	CPU	ZENITH	248-62
VFA-146	CPU	ZENITH	248-62
VFA-146	CPU	ZENITH	248-52
VFA-146	CPU	UNISYS	PW816COP
VFA-146	CPU	ZENITH	ZWX-0248-62
VFA-146	CPU	TRILOBYT	111B
VFA-146	CPU	ZENITH	ZWL-184-97
VFA-146	CPU	EVEREX	EXO-3000T-A2
VFA-146	CPU	ZENITH	ZWL-0360-AA
VFA-146	CPU	EVEREX	EXO-3000R-A4
VFA-146	DSU MODULE	NGL	
VFA-146	DTE SYSTEM	HEW-PACK	HP9000-300
VFA-146	EXT DRIVE	WELTEC	N/A
VFA-146	FAXSCANNER	MICROTEK	TELESCANN II
VFA-146	KEYBOARD	EVEREX	EO3601Q
VFA-146	LINEPRINTR	PRINTRON	P300
VFA-146	MODEM		VA1604
VFA-146	MONITOR	ZENITH	ZCN-1390
VFA-146	MONITOR	ZENITH	ZMM-1470G
VFA-146	MONITOR	UNISYS	VDC 1-VGA
VFA-146	MONITOR	CTX	CVP-5468A
VFA-146	MONITOR	ZENITH	ZCM-1390-2
VFA-146	MONITOR	ZENITH	ZVN-1380
VFA-146	MONITOR	CTX	CVP-5468A
VFA-146	MONITOR	CTX	CVP-5468A
VFA-146	MOUSE	UNISYS	PM 2-SP
VFA-146	PRINTER	UNISYS	37692506
VFA-146	PRINTER	OKIDATA	835
VFA-146	PRINTER	ZENITH	
VFA-146	PRINTER	ALPS	P2000
VFA-146	PRINTER	PRIMAGE	90-GT
VFA-146	PRINTER	PRIMAGE	P-90-GT
VFA-146	PRINTER	ALPS	P2000G
VFA-146	PRINTER	ALPS	P2000
VFA-146	PRINTER	PRIMAGE	P-90GT
VFA-146	PRINTER	ALPS	ASP1600
VFA-146	PRINTER	KYOCERA	F-1000A
VFA-146	PRINTER	KYOCERA	F-1000A
VFA-146	PRINTER	UNISYS	AP1337
VFA-146	PRINTER	UNISYS	AP1339
VFA-146	TAPEBACKUP	IRWIN	445
VFA-146	TTM MODULE	NGL	M891-1
VFA-146	VIDEO DISP	CIE	CIT50+

VFA-146	VIDEO DISP	CIE	CIT50+
VFA-146	VIDEO DISP	CIE	CIT50+
VFA-146	CPU	EDS/SMC	ASL 325
VFA-146	KEYBOARD	KEYTRONI	E03601QEDS
VFA-146	MONITOR	INTRA	CM-1402E+
VFA-146	PRINTER	FUJITSU	M3377D
VFA-146	CPU LAPTOP	DGI	IDP
VFA-146	CPU	MICRONUC	486/33MHZ
VFA-146	MONITOR	MICRONUC	14" SVGA
VFA-146	PRINTER	FUJITSU	DOT MATRIX
VFA-146	MOUSE		
VFA-146	HARDRIVE	SYSQUEST	105MB
VFA-146	CPU LAPTOP		

NALCOMIS EQUIPMENT

HOST COMPUTER	SYSOREX	486/66
HOST COMPUTER	SYSOREX	486/66
DESKTOP SYSTEM	SYSOREX	486/25
DESKTOP SYSTEM	SYSOREX	486/25
DESKTOP SYSTEM	SYSOREX	486/25
DESKTOP SYSTEM	SYSOREX	486/25
DESKTOP SYSTEM	SYSOREX	486/25
DESKTOP SYSTEM	SYSOREX	486/25
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DESKTOP SYSTEM	SYSOREX	486/25
DESKTOP SYSTEM	SYSOREX	486/25
DESKTOP SYSTEM	SYSOREX	486/25
DESKTOP SYSTEM	SYSOREX	486/25
DESKTOP SYSTEM	SYSOREX	486/25
DESKTOP SYSTEM	SYSOREX	486/25
DESKTOP SYSTEM	SYSOREX	486/25
PORTABLE WORKSTA		486/25
UPS		
LAPTOP	TEXAS INST.	486/33-DET USE
LAPTOP	TEXAS INST.	486/33-DET USE
MODEM	HAYES	14400 BPS
MODEM	HAYES	9600 BPS
SYSTEM PRINTER		DOT MATRIX
SYSTEM PRINTER		DOT MATRIX
SYSTEM PRINTER		DOT MATRIX -DET USE
WORKSTATION PRINTER		DOT MATRIX
WORKSTATION PRINTER		DOT MATRIX
WORKSTATION PRINTER		DOT MATRIX
WORKSTATION PRINTER		DOT MATRIX

WORKSTATION PRINTER		DOT MATRIX
WORKSTATION PRINTER		DOT MATRIX
WORKSTATION PRINTER		DOT MATRIX
WORKSTATION PRINTER		DOT MATRIX
WORKSTATION PRINTER		DOT MATRIX
WORKSTATION PRINTER		DOT MATRIX
WORKSTATION PRINTER		DOT MATRIX
WORKSTATION PRINTER		DOT MATRIX
WORKSTATION PRINTER		DOT MATRIX
WORKSTATION PRINTER		DOT MATRIX
WORKSTATION PRINTER		DOT MATRIX
WORKSTATION PRINTER		DOT MATRIX
WORKSTATION PRINTER		DOT MATRIX
WORKSTATION PRINTER		DOT MATRIX
WORKSTATION PRINTER		DOT MATRIX
WORKSTATION PRINTER		DOT MATRIX
WORKSTATION PRINTER		DOT MATRIX-DET USE
WORKSTATION PRINTER		DOT MATRIX-DET USE
COMMSERVER	EMULEX	
COMMSERVER	EMULEX	

COMMAND	NOMEN	MFG	MODEL
VFA-147	CD-ROM ACC	SONY	OPA-4620
VFA-147	CD-ROM DRV	SONY	CDU-6251
VFA-147	CD-ROM DRV	SONY	CDU-6251
VFA-147	CPU	ZENITH	248-62
VFA-147	CPU	ZENITH	121-32
VFA-147	CPU	ZENITH	ZWX-0248-62
VFA-147	CPU	UNISYS	PW816COP
VFA-147	CPU	ZENITH	248-52
VFA-147	CPU	ZENITH	248-62
VFA-147	CPU	ZENITH	248-62
VFA-147	CPU	ZENITH	248-62
VFA-147	CPU	ZENITH	ZWL-184-97
VFA-147	CPU	EVEREX	EXO-3000T-A2
VFA-147	CPU	ZENITH	ZWL-0360-AA
VFA-147	CPU	EVEREX	EXO-30004-A4
VFA-147	EXT DRIVE	WELTEC	N/A
VFA-147	FAXSCANNER	MICROTEK	TELESCAN II
VFA-147	KEYBOARD	EVEREX	EO3601Q
VFA-147	MONITOR	ZENITH	ZMM-1470-G
VFA-147	MONITOR	ZENITH	ZVM-1380
VFA-147	MONITOR	ZENITH	ZVM-1380
VFA-147	MONITOR	ZENITH	ZCM-1390-Z
VFA-147	MONITOR	UNISYS	
VFA-147	MONITOR	ZENITH	ZCN-1390
VFA-147	MONITOR	CTX	CVP-5468A
VFA-147	MONITOR	CTX	CVP-5468A
VFA-147	PRINTER	PRIMAG	90-GT
VFA-147	PRINTER	PRIMAG	90-GT
VFA-147	PRINTER	UNISYS	
VFA-147	PRINTER	OKIDAT	MICROLINE 83A
VFA-147	PRINTER	ALPS	P2000G
VFA-147	PRINTER	ALPS	P2000G
VFA-147	PRINTER	ZENITH	80N
VFA-147	PRINTER	ALPS	P2000G
VFA-147	PRINTER	ALPS	ASP1600
VFA-147	PRINTER	KYOCERA	F-1000A
VFA-147	PRINTER	KYOCERA	F-1000A
VFA-147	PRINTER	UNISYS	AP1339
VFA-147	PRINTER	UNISYS	AP1337
VFA-147	CPU	EDS/SMC	ASL 325
VFA-147	KEYBOARD	KEYTRONI	E03601QEDS
VFA-147	MONTIOR	INTRA	CM-1402E+
VFA-147	PRINTER	FUJITSU	M3377D
VFA-147	CPU LAPTOP	DGI	IDP
VFA-147	CPU	MICRONUC	486/33MHZ
VFA-147	MONITOR	MICRONUC	14" SVGA
VFA-147	PRINTER	FUJITSU	DOT MATRIX
VFA-147	MOUSE		
VFA-147	HARDRIVE	SYSQUEST	105MB
VFA-147	CPU LAPTOP		

NALCOMIS	EQUIPMENT	
HOST COMPUTER	SYSOREX	486/66
HOST COMPUTER	SYSOREX	486/66
DESKTOP SYSTEM	SYSOREX	486/25
DESKTOP SYSTEM	SYSOREX	486/25
DESKTOP SYSTEM	SYSOREX	486/25
DESKTOP SYSTEM	SYSOREX	486/25
DESKTOP SYSTEM	SYSOREX	486/25
DESKTOP SYSTEM	SYSOREX	486/25
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DESKTOP SYSTEM	SYSOREX	486/25
DESKTOP SYSTEM	SYSOREX	486/25
DESKTOP SYSTEM	SYSOREX	486/25
DESKTOP SYSTEM	SYSOREX	486/25
DESKTOP SYSTEM	SYSOREX	486/25
PORTABLE WORKSTA		486/25
UPS		
LAPTOP	TEXAS INST.	486/33-DET USE
LAPTOP	TEXAS INST.	486/33-DET USE
MODEM	HAYES	14400 BPS
MODEM	HAYES	9600 BPS
SYSTEM PRINTER		DOT MATRIX
SYSTEM PRINTER		DOT MATRIX
SYSTEM PRINTER		DOT MATRIX -DET USE
WORKSTATION PRINTER		DOT MATRIX
WORKSTATION PRINTER		DOT MATRIX
WORKSTATION PRINTER		DOT MATRIX
WORKSTATION PRINTER		DOT MATRIX
WORKSTATION PRINTER		DOT MATRIX
WORKSTATION PRINTER		DOT MATRIX
WORKSTATION PRINTER		DOT MATRIX
WORKSTATION PRINTER		DOT MATRIX
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WORKSTATION PRINTER		DOT MATRIX
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WORKSTATION PRINTER		DOT MATRIX
WORKSTATION PRINTER		DOT MATRIX
WORKSTATION PRINTER		DOT MATRIX
WORKSTATION PRINTER		DOT MATRIX
WORKSTATION PRINTER		DOT MATRIX

WORKSTATION PRINTER		DOT MATRIX
WORKSTATION PRINTER		DOT MATRIX
WORKSTATION PRINTER		DOT MATRIX-DET USE
WORKSTATION PRINTER		DOT MATRIX-DET USE
COMMSERVER	EMULEX	
COMMSERVER	EMULEX	

COMMAND	NOMEN	MFG	MODEL
VFA-97	CD-ROM ACC	SONY	OPA-4620
VFA-97	CD-ROM DRV	SONY	CDU-6251
VFA-97	CD-ROM DRV	SONY	CDU-6251
VFA-97	CPU	ZENITH	ZWX-0248-62
VFA-97	CPU	ZENITH	248-62
VFA-97	CPU	ZENITH	248-62
VFA-97	CPU	ZENITH	ZWX-0248-62
VFA-97	CPU	ZENITH	121-32
VFA-97	CPU	ZENITH	248-52
VFA-97	CPU	ZENITH	248-62
VFA-97	CPU	ZENITH	ZWL-184-97
VFA-97	CPU	EVEREX	EXO-3000T-A2
VFA-97	CPU	EVEREX	EX-3000R-A1
VFA-97	CPU	ZENITH	ZWL-0360-AA
VFA-97	EXT DRIVE	WELTEC	N/A
VFA-97	FAXSCANNER	MICROTEK	TELESCANNER II
VFA-97	KEYBOARD	EVEREX	EO3601Q
VFA-97	KEYBOARD	EVEREX	EO3601Q
VFA-97	MONITOR	ZENITH	ZVM-1380
VFA-97	MONITOR	ZENITH	ZVM-1380
VFA-97	MONITOR	ZENITH	ZVM-1380
VFA-97	MONITOR	ZENITH	ZCM-1390-Z
VFA-97	MONITOR	ZENITH	ZCM-1390-Z
VFA-97	MONITOR	ZENITH	ZMM1470G
VFA-97	MONITOR	CTX	CVP-5468A
VFA-97	MONITOR	CTX	CVP-5468A
VFA-97	MONITOR	CTX	CVP-5468A
VFA-97	PRINTER	ALPS	ASP1600
VFA-97	PRINTER	ALPS	P2000G
VFA-97	PRINTER	ALPS	P2000G
VFA-97	PRINTER	XEROX	80N
VFA-97	PRINTER	PRIMAGE	90-GT
VFA-97	PRINTER	OKIDATA	83A
VFA-97	PRINTER	ALPS	P2000G
VFA-97	PRINTER	ALPS	P2000G
VFA-97	PRINTER	PRIMAGE	90-GT
VFA-97	PRINTER	KYOCERA	F-1000A
VFA-97	PRINTER	KYOCERA	F-100A
VFA-97	PRINTER	DATAPROD	9044-2
VFA-97	PRINTER	UNISYS	AP1339
VFA-97	PRINTER	UNISYS	AP1337
VFA-97	TAPEBACKUP	IRWIN	445
VFA-97	CPU	EDS/SMC	ASL 325
VFA-97	KEYBOARD	KEYTRONI	E03601QEDS
VFA-97	MONITOR	INTRA	CM-1402E+
VFA-97	PRINTER	FUJITSU	M3377D
VFA-97	MODEM	AVATEX	1200
VFA-97	PRINTER	PRIMAGE	90-GT
VFA-97	KEYBOARD	ZENITH	100-1860
VFA-97	KEYBOARD	ZENITH	N/A

VFA-97	MONITOR	ZENITH	ZMM1470G
VFA-97	PRINTER	ALPS	P2000G
VFA-97	CPU	EVEREX	EX-3000RA4
VFA-97	KEYBOARD	KEYTRONI	E03601Q
VFA-97	MONITOR	CTX	CVP-5468A
VFA-97	PRINTER	DATAPROD	9044-2
VFA-97	KEYBOARD	ZENITH	ZKB-2R
VFA-97	MONITOR	CTX	CVP-5468A
VFA-97	MOUSE	DEXXA	MF21-9F
VFA-97	CPU	EVEREX	EX-3000RA4
VFA-97	KEYBOARD	KEYTRONI	EP3435EVRX
VFA-97	MOUSE	MICROSOF	N/A
VFA-97	KEYBOARD	ZENITH	ZKB-2R
VFA-97	KEYBOARD	KEYTRONI	EP3435EVRX
VFA-97	MONITOR	CTX	CVP-5468A
VFA-97	KEYBOARD	NMB TECH	RT101+
VFA-97	MONITOR	CTX	CVP-5468A
VFA-97	CPU	LEAD EDG	MP-1676L
VFA-97	DEYBOARD	MICROSWT	101RX43S-13E-J
VFA-97	MONITOR	PRINCETO	MAX12
VFA-97	PRINTER	EPSON	LQ1500
VFA-97	CD-ROM DRV	SONY	CDU6251
VFA-97	CPU (TPL)	EVEREX	ASL 325
VFA-97	KEYBOARD	KEYTRONI	E03601QEDS
VFA-97	MONITOR	INTRA	CM-1402E+
VFA-97	MOUSE	MICROSOF	24394
VFA-97	CD-ROM DRV	SONY	CDU6251
VFA-97	CPU (TPL)	EVEREX	ASL 325
VFA-97	KEYBOARD	KEYTRONI	E03601QEDS
VFA-97	MONITOR	INTRA	CM-1402E+
VFA-97	MOUSE	MICROSOF	24394
VFA-97	PRINTER	TI	MICROLASER +
VFA-97	CPU	IBM	MAX12
VFA-97	KEYBOARD	FUJITSU	N8604700T101
VFA-97	MONITOR	PRINCETO	MAX12
VFA-97	CPU	MICRONUC	486/33MHZ
VFA-97	MONITOR	MICRONUC	14" SVGA
VFA-97	PRINTER	FUJITSU	DOT MATRIX
VFA-97	MOUSE		
VFA-97	HARDRIVE	SYSQUEST	105MB
VFA-97	PRINTER	FUJITSU	DOT MATRIX
VFA-97	MOUSE		
VFA-97	HARDRIVE	SYSQUEST	105MB
VFA-97	CPU LAPTOP		

NALCOMIS	EQUIPMENT	
HOST COMPUTER	SYSOREX	486/66
HOST COMPUTER	SYSOREX	486/66
DESKTOP SYSTEM	SYSOREX	486/25
DESKTOP SYSTEM	SYSOREX	486/25
DESKTOP SYSTEM	SYSOREX	486/25

DESKTOP SYSTEM	SYSOREX	486/25
DESKTOP SYSTEM	SYSOREX	486/25
DESKTOP SYSTEM	SYSOREX	486/25
DESKTOP SYSTEM	SYSOREX	486/25
DESKTOP SYSTEM	SYSOREX	486/25
DESKTOP SYSTEM	SYSOREX	486/25
DESKTOP SYSTEM	SYSOREX	486/25
DESKTOP SYSTEM	SYSOREX	486/25
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DESKTOP SYSTEM	SYSOREX	486/25
DESKTOP SYSTEM	SYSOREX	486/25
DESKTOP SYSTEM	SYSOREX	486/25
DESKTOP SYSTEM	SYSOREX	486/25
DESKTOP SYSTEM	SYSOREX	486/25
DESKTOP SYSTEM	SYSOREX	486/25
DESKTOP SYSTEM	SYSOREX	486/25
DESKTOP SYSTEM	SYSOREX	486/25
DESKTOP SYSTEM	SYSOREX	486/25
PORTABLE WORKSTA		486/25
UPS		
LAPTOP	TEXAS INST.	486/33-DET USE
LAPTOP	TEXAS INST.	486/33-DET USE
MODEM	HAYES	14400 BPS
MODEM	HAYES	9600 BPS
SYSTEM PRINTER		DOT MATRIX
SYSTEM PRINTER		DOT MATRIX
SYSTEM PRINTER		DOT MATRIX -DET USE
WORKSTATION PRINTER		DOT MATRIX
WORKSTATION PRINTER		DOT MATRIX
WORKSTATION PRINTER		DOT MATRIX
WORKSTATION PRINTER		DOT MATRIX
WORKSTATION PRINTER		DOT MATRIX
WORKSTATION PRINTER		DOT MATRIX
WORKSTATION PRINTER		DOT MATRIX
WORKSTATION PRINTER		DOT MATRIX
WORKSTATION PRINTER		DOT MATRIX
WORKSTATION PRINTER		DOT MATRIX
WORKSTATION PRINTER		DOT MATRIX
WORKSTATION PRINTER		DOT MATRIX
WORKSTATION PRINTER		DOT MATRIX
WORKSTATION PRINTER		DOT MATRIX
WORKSTATION PRINTER		DOT MATRIX
WORKSTATION PRINTER		DOT MATRIX
WORKSTATION PRINTER		DOT MATRIX
WORKSTATION PRINTER		DOT MATRIX
WORKSTATION PRINTER		DOT MATRIX
WORKSTATION PRINTER		DOT MATRIX-DET USE
WORKSTATION PRINTER		DOT MATRIX-DET USE
COMMSERVER	EMULEX	
COMMSERVER	EMULEX	

COMMAND	NOMEN	MFG	MODEL
VFA-113	CD-ROM ACC	SONY	OPA-4620
VFA-113	CD-ROM DRV	SONY	CDU-6251
VFA-113	CD-ROM DRV	SONY	CDU-6251
VFA-113	CPU	ZENITH	ZFG-121-32
VFA-113	CPU	ZENITH	248-62
VFA-113	CPU	ZENITH	248-62
VFA-113	CPU	ZENITH	121-32
VFA-113	CPU	ZENITH	248-62
VFA-113	CPU	ZENITH	248-62
VFA-113	CPU	ZENITH	248-52
VFA-113	CPU	ZENITH	ZWX-0248-52
VFA-113	CPU	ZENITH	ZWL-184-97
VFA-113	CPU	EVEREX	EX-3000R-A1
VFA-113	CPU	EVEREX	EXO-3000T-A2
VFA-113	CPU	EVEREX	EXO-30004-A4
VFA-113	CPU	ZENITH	ZWL-0360-AA
VFA-113	EXT DRIVE	WELTEC	N/A
VFA-113	FAXSCANNER	MICROTEK	TELESCAN II
VFA-113	KEYBOARD	EVEREX	EO3601Q
VFA-113	KEYBOARD	EVEREX	EO3601Q
VFA-113	MONITOR	ZENITH	ZVM-1380
VFA-113	MONITOR	ZENITH	NA
VFA-113	MONITOR	ZENITH	ZVM-1380
VFA-113	MONITOR	ZENITH	ZVM-1380
VFA-113	MONITOR	LDG TECH	1431E1
VFA-113	MONITOR	ZENITH	ZVM-1380
VFA-113	MONITOR	ZENITH	ZCM-1390-Z
VFA-113	MONITOR	ZENITH	ZCM-1390-Z
VFA-113	MONITOR	CTX	CVP-5468A
VFA-113	MONITOR	CTX	CVP-5468A
VFA-113	MONITOR	CTX	CVP-5468A
VFA-113	PRINTER	ALPS	P2000G
VFA-113	PRINTER	ALPS	P2000G
VFA-113	PRINTER	OKIDATA	83A
VFA-113	PRINTER	ALPS	P2000G
VFA-113	PRINTER	XEROX	80N
VFA-113	PRINTER	PRIMAGE	90GT
VFA-113	PRINTER	PRIMAGE	90GT
VFA-113	PRINTER	PRIMAGE	90GT
VFA-113	PRINTER	XEROX	80N
VFA-113	PRINTER	ALPS	ASP1600
VFA-113	PRINTER	DATAPROD	9044-2
VFA-113	PRINTER	KYOCERA	F-1000A
VFA-113	PRINTER	KYOCERA	F-1000A
VFA-113	PRINTER	UNISYS	AP1337
VFA-113	PRINTER	UNISYS	AP1339
VFA-113	CPU	EDS/SMC	ASL 325
VFA-113	KEYBOARD	KEYTRONI	E03601QEDS
VFA-113	MONITOR	INTRA	CM-1402E+
VFA-113	PRINTER	FUJITSU	M3377D

VFA-113	MODEM	ZOOM	VX 14,400 BPS
VFA-113	CPU LAPTOP	DGI	IDP
VFA-113	CPU	MICRONUC	486/33MHZ
VFA-113	MONITOR	MICRONUC	14" SVGA
VFA-113	PRINTER	FUJITSU	DOT MATRIX
VFA-113	MOUSE		
VFA-113	HARDRIVE	SYSQUEST	105MB
VFA-113	CPU LAPTOP		

NALCOMIS	EQUIPMENT	
HOST COMPUTER	SYSOREX	486/66
HOST COMPUTER	SYSOREX	486/66
DESKTOP SYSTEM	SYSOREX	486/25
DESKTOP SYSTEM	SYSOREX	486/25
DESKTOP SYSTEM	SYSOREX	486/25
DESKTOP SYSTEM	SYSOREX	486/25
DESKTOP SYSTEM	SYSOREX	486/25
DESKTOP SYSTEM	SYSOREX	486/25
DESKTOP SYSTEM	SYSOREX	486/25
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DESKTOP SYSTEM	SYSOREX	486/25
DESKTOP SYSTEM	SYSOREX	486/25
DESKTOP SYSTEM	SYSOREX	486/25
DESKTOP SYSTEM	SYSOREX	486/25
DESKTOP SYSTEM	SYSOREX	486/25
DESKTOP SYSTEM	SYSOREX	486/25
DESKTOP SYSTEM	SYSOREX	486/25
PORTABLE WORKSTA		486/25
UPS		
LAPTOP	TEXAS INST.	486/33-DET USE
LAPTOP	TEXAS INST.	486/33-DET USE
MODEM	HAYES	14400 BPS
MODEM	HAYES	9600 BPS
SYSTEM PRINTER		DOT MATRIX
SYSTEM PRINTER		DOT MATRIX
SYSTEM PRINTER		DOT MATRIX -DET USE
WORKSTATION PRINTER		DOT MATRIX
WORKSTATION PRINTER		DOT MATRIX
WORKSTATION PRINTER		DOT MATRIX
WORKSTATION PRINTER		DOT MATRIX
WORKSTATION PRINTER		DOT MATRIX
WORKSTATION PRINTER		DOT MATRIX
WORKSTATION PRINTER		DOT MATRIX
WORKSTATION PRINTER		DOT MATRIX
WORKSTATION PRINTER		DOT MATRIX

WORKSTATION PRINTER		DOT MATRIX
WORKSTATION PRINTER		DOT MATRIX
WORKSTATION PRINTER		DOT MATRIX
WORKSTATION PRINTER		DOT MATRIX
WORKSTATION PRINTER		DOT MATRIX
WORKSTATION PRINTER		DOT MATRIX
WORKSTATION PRINTER		DOT MATRIX
WORKSTATION PRINTER		DOT MATRIX
WORKSTATION PRINTER		DOT MATRIX
WORKSTATION PRINTER		DOT MATRIX
WORKSTATION PRINTER		DOT MATRIX-DET USE
WORKSTATION PRINTER		DOT MATRIX-DET USE
COMMSERVER	EMULEX	
COMMSERVER	EMULEX	

COMMAND	NOMEN	MFG	MODEL
VFA-25	CD-ROM ACC	SONY	OPA-4620
VFA-25	CD-ROM DRV	SONY	CDU-6251
VFA-25	CD-ROM DRV	SONY	CDU-6251
VFA-25	CPU	ZENITH	248-62
VFA-25	CPU	ZENITH	121-32
VFA-25	CPU	ZENITH	248
VFA-25	CPU	ZENITH	248-62
VFA-25	CPU	ZENITH	248
VFA-25	CPU	ZENITH	248
VFA-25	CPU	ZENITH	ZWL-184-97
VFA-25	CPU	EVEREX	EXO-3000T-A2
VFA-25	CPU	EVEREX	EX-3000R-A1
VFA-25	CPU	EVEREX	EX0-3000R-A4
VFA-25	CPU	ZENITH	ZWL-0360-AA
VFA-25	EXT DRIVE	WELTEC	N/A
VFA-25	FAXSCANNER	MICROTEK	TELESCANN II
VFA-25	KEYBOARD	EVEREX	E03601Q
VFA-25	KEYBOARD	EVEREX	EO3601Q
VFA-25	MODEM	ZENITH	ZM-2041
VFA-25	MONITOR	ZENITH	1380
VFA-25	MONITOR	ZENITH	ZVM-1380
VFA-25	MONITOR	ZENITH	ZVM-1380
VFA-25	MONITOR	ZENITH	ZCM-1390Z
VFA-25	MONITOR	ZENITH	ZVM-1380
VFA-25	MONITOR	ZENITH	ZVM-1380
VFA-25	MONITOR	ZENITH	ZVM-1380
VFA-25	MONITOR	ZENITH	ZCM-1390Z
VFA-25	MONITOR	CTX	CVP-5468A
VFA-25	MONITOR	CTX	CVP-5468A
VFA-25	MONITOR	CTX	CVP-5468A
VFA-25	PRINTER	ALPS	P2000G
VFA-25	PRINTER	PRIMAGE	90-GT
VFA-25	PRINTER	ALPS	P2000G
VFA-25	PRINTER	MPI INC.	180FT
VFA-25	PRINTER	OKIDATA	0222A
VFA-25	PRINTER	ALPS	P2000G
VFA-25	PRINTER	ALPS	P2000G
VFA-25	PRINTER	ALPS	ASP1600
VFA-25	PRINTER	KYOCERA	F-1000A
VFA-25	PRINTER	KYOCERA	F-1000A
VFA-25	PRINTER	DATAPROD	9044-2
VFA-25	PRINTER	UNISYS	AP1337
VFA-25	PRINTER	UNISYS	AP1337
VFA-25	TAPEBACKUP	IRWIN	445
VFA-25	CPU	EDS/SMC	ASL 325
VFA-25	KEYBOARD	KEYTRONI	E03601QEDS
VFA-25	MONITOR	INTRA	CM-1402E+
VFA-25	PRINTER	FUJITSU	M3377D
VFA-25	CPU LAPTOP	DGI	IDP
VFA-25	CPU	MICRONUC	486/33MHZ

VFA-25	MONITOR	MICRONUC	14" SVGA
VFA-25	MODEM	ZENITH	2400
VFA-25	CPU LAPTOP	DGI	IDP

NALCOMIS	EQUIPMENT	
HOST COMPUTER	SYSOREX	486/66
HOST COMPUTER	SYSOREX	486/66
DESKTOP SYSTEM	SYSOREX	486/25
DESKTOP SYSTEM	SYSOREX	486/25
DESKTOP SYSTEM	SYSOREX	486/25
DESKTOP SYSTEM	SYSOREX	486/25
DESKTOP SYSTEM	SYSOREX	486/25
DESKTOP SYSTEM	SYSOREX	486/25
DESKTOP SYSTEM	SYSOREX	486/25
DESKTOP SYSTEM	SYSOREX	486/25
DESKTOP SYSTEM	SYSOREX	486/25
DESKTOP SYSTEM	SYSOREX	486/25
DESKTOP SYSTEM	SYSOREX	486/25
DESKTOP SYSTEM	SYSOREX	486/25
DESKTOP SYSTEM	SYSOREX	486/25
DESKTOP SYSTEM	SYSOREX	486/25
DESKTOP SYSTEM	SYSOREX	486/25
DESKTOP SYSTEM	SYSOREX	486/25
DESKTOP SYSTEM	SYSOREX	486/25
DESKTOP SYSTEM	SYSOREX	486/25
DESKTOP SYSTEM	SYSOREX	486/25
DESKTOP SYSTEM	SYSOREX	486/25
DESKTOP SYSTEM	SYSOREX	486/25
PORTABLE WORKSTA		486/25
UPS		
LAPTOP	TEXAS INST.	486/33-DET USE
LAPTOP	TEXAS INST.	486/33-DET USE
MODEM	HAYES	14400 BPS
MODEM	HAYES	9600 BPS
SYSTEM PRINTER		DOT MATRIX
SYSTEM PRINTER		DOT MATRIX
SYSTEM PRINTER		DOT MATRIX -DET USE
WORKSTATION PRINTER		DOT MATRIX
WORKSTATION PRINTER		DOT MATRIX
WORKSTATION PRINTER		DOT MATRIX
WORKSTATION PRINTER		DOT MATRIX
WORKSTATION PRINTER		DOT MATRIX
WORKSTATION PRINTER		DOT MATRIX
WORKSTATION PRINTER		DOT MATRIX
WORKSTATION PRINTER		DOT MATRIX
WORKSTATION PRINTER		DOT MATRIX
WORKSTATION PRINTER		DOT MATRIX
WORKSTATION PRINTER		DOT MATRIX
WORKSTATION PRINTER		DOT MATRIX
WORKSTATION PRINTER		DOT MATRIX
WORKSTATION PRINTER		DOT MATRIX

WORKSTATION PRINTER		DOT MATRIX
WORKSTATION PRINTER		DOT MATRIX
WORKSTATION PRINTER		DOT MATRIX
WORKSTATION PRINTER		DOT MATRIX
WORKSTATION PRINTER		DOT MATRIX
WORKSTATION PRINTER		DOT MATRIX-DET USE
WORKSTATION PRINTER		DOT MATRIX-DET USE
COMMSERVER	EMULEX	
COMMSERVER	EMULEX	

COMMAND	NOMEN	MFG	MODEL
VFA-94	5.25 DRIVE	ZENITH	N/A
VFA-94	5.25 DRIVE	ZENITH	N/A
VFA-94	CD-ROM ACC	SONY	OPA 4620
VFA-94	CD-ROM DRV	SONY	CDU-6251
VFA-94	CD-ROM DRV	SONY	CDU-6251
VFA-94	CPU	ZENITH	248-62
VFA-94	CPU	ZENITH	248-62
VFA-94	CPU	UNISYS	800/16
VFA-94	CPU	ZENITH	248-52
VFA-94	CPU	ZENITH	248-62
VFA-94	CPU	ZENITH	121-32
VFA-94	CPU	ZENITH	Z-184
VFA-94	CPU	ZENITH	Z-184
VFA-94	CPU	EVEREX	EXO-3000T-A2
VFA-94	CPU	EVEREX	EXO-3000R-A4
VFA-94	CPU	EVEREX	EXO-3000R-A4
VFA-94	FAXSCANNER	MICROTEK	TELESCANN II
VFA-94	KEYBOARD	EVEREX	EO3601Q
VFA-94	MODEM	ZENITH	ZM-2401
VFA-94	MONITOR	ZENITH	ZVM-1380
VFA-94	MONITOR	ZENITH	ZMM-1470G
VFA-94	MONITOR	ZENITH	ZVM-1380
VFA-94	MONITOR	ZENITH	N/A
VFA-94	MONITOR	UNISYS	N/A
VFA-94	MONITOR	CTX	CVP-5468A
VFA-94	MONITOR	CTX	CVP-5468A
VFA-94	MOUSE	UNISYS	N/A
VFA-94	PRINTER	PRIMAGE	90-GT
VFA-94	PRINTER	XEROX	N/A
VFA-94	PRINTER	ZENITH	N/A
VFA-94	PRINTER	PRIMAGE	90
VFA-94	PRINTER	ALPS	ASP1000
VFA-94	PRINTER	ALPS	P2000G
VFA-94	PRINTER	ALPS	ASP1000
VFA-94	PRINTER	PRIMAGE	90-GT
VFA-94	PRINTER	ALPS	P2000G
VFA-94	PRINTER	DIABLO	630
VFA-94	PRINTER	UNISYS	N/A
VFA-94	PRINTER	UNISYS	AP1339
VFA-94	PRINTER	UNISYS	LQP 1-PTR
VFA-94	PRINTER	KYOCERA	F-1000A
VFA-94	PRINTER	KYOCERA	F-1000A
VFA-94	PRINTER	UNISYS	AP1339
VFA-94	PRINTER	UNISYS	AP1337
VFA-94	CPU	EDS/SMC	ASL 325
VFA-94	KEYBOARD	KEYTRONI	E03601QEDS
VFA-94	MONITOR	INTRA	CM-1402E+
VFA-94	PRINTER	FUJITSU	M3377D
VFA-94	KEYBOARD	ZENITH	2KB-2
VFA-94	MONITOR	CTX	CVG-5432

VFA-94	PRINTER	PRIMAGE	P2000G
VFA-94	KEYBOARD	KEYTRONI	EP3435EVRX
VFA-94	MONITOR	CTX	CVP-5468A
VFA-94	PRINTER	EPSON	N0P6318
VFA-94	KEYBOARD	ZENITH	2KB-2R
VFA-94	KEYBOARD	KEYTRONI	E03435ZEUS
VFA-94	DATA XFER	HP	74D580004-100
VFA-94	CPU (TPL)	EDS/SMC	ASL 325
VFA-94	KEYBOARD	KEYTRONI	E03601QEDS
VFA-94	MONITOR	INTRA	CM-1402E+
VFA-94	PRINTER	TI	2559820-0021
VFA-94	CD-ROM DRV	SONY	CDU-6251
VFA-94	MOUSE	MICROSOF	24394
VFA-94	CPU (TPL)	EDS/SMC	ASL 325
VFA-94	KEYBOARD	KEYTRONI	E03601QEDS
VFA-94	MONITOR	INTRA	CM-1402E+
VFA-94	CD-ROM DRV	RONY	CDU-6251
VFA-94	MOUSE	MICROSOF	24394
VFA-94	CPU LAPTOP	DGI	IDP
VFA-94	MODEM	ZOOM	9600
VFA-94	CPU	MICRONUC	486/33MHZ
VFA-94	MONITOR	MICRONUC	14" SVGA
VFA-94	PRINTER	FUJITSU	DOT MATRIX
VFA-94	MOUSE		
VFA-94	HARDRIVE	SYSQUEST	105MB
VFA-94	CPU LAPTOP	DGI	IDP

NALCOMIS	EQUIPMENT	
HOST COMPUTER	SYSOREX	486/66
HOST COMPUTER	SYSOREX	486/66
DESKTOP SYSTEM	SYSOREX	486/25
DESKTOP SYSTEM	SYSOREX	486/25
DESKTOP SYSTEM	SYSOREX	486/25
DESKTOP SYSTEM	SYSOREX	486/25
DESKTOP SYSTEM	SYSOREX	486/25
DESKTOP SYSTEM	SYSOREX	486/25
DESKTOP SYSTEM	SYSOREX	486/25
DESKTOP SYSTEM	SYSOREX	486/25
DESKTOP SYSTEM	SYSOREX	486/25
DESKTOP SYSTEM	SYSOREX	486/25
DESKTOP SYSTEM	SYSOREX	486/25
DESKTOP SYSTEM	SYSOREX	486/25
DESKTOP SYSTEM	SYSOREX	486/25
DESKTOP SYSTEM	SYSOREX	486/25
DESKTOP SYSTEM	SYSOREX	486/25
DESKTOP SYSTEM	SYSOREX	486/25
DESKTOP SYSTEM	SYSOREX	486/25
DESKTOP SYSTEM	SYSOREX	486/25
DESKTOP SYSTEM	SYSOREX	486/25
DESKTOP SYSTEM	SYSOREX	486/25
DESKTOP SYSTEM	SYSOREX	486/25

PORTABLE WORKSTA		486/25
UPS		
LAPTOP	TEXAS INST.	486/33-DET USE
LAPTOP	TEXAS INST.	486/33-DET USE
MODEM	HAYES	14400 BPS
MODEM	HAYES	9600 BPS
SYSTEM PRINTER		DOT MATRIX
SYSTEM PRINTER		DOT MATRIX
SYSTEM PRINTER		DOT MATRIX -DET USE
WORKSTATION PRINTER		DOT MATRIX
WORKSTATION PRINTER		DOT MATRIX
WORKSTATION PRINTER		DOT MATRIX
WORKSTATION PRINTER		DOT MATRIX
WORKSTATION PRINTER		DOT MATRIX
WORKSTATION PRINTER		DOT MATRIX
WORKSTATION PRINTER		DOT MATRIX
WORKSTATION PRINTER		DOT MATRIX
WORKSTATION PRINTER		DOT MATRIX
WORKSTATION PRINTER		DOT MATRIX
WORKSTATION PRINTER		DOT MATRIX
WORKSTATION PRINTER		DOT MATRIX
WORKSTATION PRINTER		DOT MATRIX
WORKSTATION PRINTER		DOT MATRIX
WORKSTATION PRINTER		DOT MATRIX
WORKSTATION PRINTER		DOT MATRIX
WORKSTATION PRINTER		DOT MATRIX
WORKSTATION PRINTER		DOT MATRIX
WORKSTATION PRINTER		DOT MATRIX-DET USE
WORKSTATION PRINTER		DOT MATRIX-DET USE
COMMSERVER	EMULEX	
COMMSERVER	EMULEX	

COMMAND	NOMEN	MFG	MODEL
VFA-22	5.25 DRIVE	ZENITH	ZA-180-54
VFA-22	5.25 DRIVE	ZENITH	ZA-180-54
VFA-22	CD-ROM ACC	SONY	OPA-4620
VFA-22	CD-ROM DRV	SONY	CDU-6251
VFA-22	CD-ROM DRV	SONY	CDU-6251
VFA-22	CPU	ZENITH	121-32
VFA-22	CPU	ZENITH	248-62
VFA-22	CPU	ZENITH	248-52
VFA-22	CPU	ZENITH	248-62
VFA-22	CPU	ZENITH	248-62
VFA-22	CPU	ZENITH	Z-184
VFA-22	CPU	ZENITH	Z-184
VFA-22	CPU	UNISYS	PW816 COP
VFA-22	CPU	EVEREX	EXO-3000T-A2
VFA-22	CPU	EVEREX	EX0-3000R-A4
VFA-22	CPU	EVEREX	EX0-3000R-A4
VFA-22	FAXSCANNER	MICROTEK	TELESCAN II
VFA-22	KEYBOARD	UNISYS	KBD 101-Q
VFA-22	KEYBOARD	EVEREX	EO3601Q
VFA-22	MODEM	ZENITH	ZM-2401
VFA-22	MONITOR	ZENITH	ZVM-1380
VFA-22	MONITOR	ZENITH	ZVM-1380
VFA-22	MONITOR	ZENITH	ZMM-1470G
VFA-22	MONITOR	ZENITH	ZVM-1380
VFA-22	MONITOR	ZENITH	ZVM-1380
VFA-22	MONITOR	UNISYS	VDC 1-VGA
VFA-22	MONITOR	ZENITH	ZCM-1390-Z
VFA-22	MONITOR	UNISYS	N/A
VFA-22	MONITOR	CTX	CVP-5468A
VFA-22	MONITOR	CTX	CVP-=5468A
VFA-22	PRINTER	PRIMAGE	90GT
VFA-22	PRINTER	DIABLO	630
VFA-22	PRINTER	PRIMAGE	90-GT
VFA-22	PRINTER	ALPS	P2000G
VFA-22	PRINTER	PRIMAGE	90GT
VFA-22	PRINTER	ALPS	P2000G
VFA-22	PRINTER	ALPS	ASP-1000
VFA-22	PRINTER	ALPS	ASP-1000
VFA-22	PRINTER	UNISYS	WDM 1-PTR
VFA-22	PRINTER	UNISYS	WDM 1-PTR
VFA-22	PRINTER	KYOCERA	F-1000A
VFA-22	PRINTER	KYOCERA	F-1000A
VFA-22	PRINTER	UNISYS	AP1337
VFA-22	PRINTER	UNISYS	AP1339
VFA-22	TAPEBACKUP	IRWIN	445
VFA-22	CPU LAPTOP	DGI	IDP
VFA-22	MODEM	ZENITH	2400
VFA-22	MODEM	ZOOM	9600
VFA-22	CPU	MICRONUC	486/33MHZ
VFA-22	MONITOR	MICRONUC	14" SVGA

VFA-22	PRINTER	FUJITSU	DOT MATRIX
VFA-22	MOUSE		
VFA-22	HARDRIVE	SYSQUEST	105MB
VFA-22	CPU LAPTOP		
VFA-22	CPU LAPTOP	DGI	IDP
VFA-22	CPU LAPTOP	DGI	IDP

NALCOMIS EQUIPMENT

HOST COMPUTER	SYSOREX	486/66
HOST COMPUTER	SYSOREX	486/66
DESKTOP SYSTEM	SYSOREX	486/25
DESKTOP SYSTEM	SYSOREX	486/25
DESKTOP SYSTEM	SYSOREX	486/25
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DESKTOP SYSTEM	SYSOREX	486/25
DESKTOP SYSTEM	SYSOREX	486/25
DESKTOP SYSTEM	SYSOREX	486/25
DESKTOP SYSTEM	SYSOREX	486/25
PORTABLE WORKSTA		486/25
UPS		
LAPTOP	TEXAS INST.	486/33-DET USE
LAPTOP	TEXAS INST.	486/33-DET USE
MODEM	HAYES	14400 BPS
MODEM	HAYES	9600 BPS
SYSTEM PRINTER		DOT MATRIX
SYSTEM PRINTER		DOT MATRIX
SYSTEM PRINTER		DOT MATRIX-DET USE
WORKSTATION PRINTER		DOT MATRIX
WORKSTATION PRINTER		DOT MATRIX
WORKSTATION PRINTER		DOT MATRIX
WORKSTATION PRINTER		DOT MATRIX
WORKSTATION PRINTER		DOT MATRIX
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WORKSTATION PRINTER		DOT MATRIX
WORKSTATION PRINTER		DOT MATRIX
WORKSTATION PRINTER		DOT MATRIX
WORKSTATION PRINTER		DOT MATRIX-DET USE
WORKSTATION PRINTER		DOT MATRIX-DET USE
COMMSERVER	EMULEX	
COMMSERVER	EMULEX	

COMMAND	NOMEN	MFG	MODEL
VFA-27	CD-ROM ACC	SONY	OPA-4620
VFA-27	CD-ROM DRV	SONY	CDU-6251
VFA-27	CD-ROM DRV	SONY	CDU-6251
VFA-27	CPU	ZENITH	248-52
VFA-27	CPU	ZENITH	ZWX-0248-62
VFA-27	CPU	ZENITH	248-62
VFA-27	CPU	ZENITH	248-62
VFA-27	CPU	ZENITH	121-32
VFA-27	CPU	ZENITH	248-62
VFA-27	CPU	ZENITH	ZWL-184-97
VFA-27	CPU	EVEREX	EX-3000R-A1
VFA-27	CPU	EVEREX	EXO-3000T-A2
VFA-27	CPU	EVEREX	EX0-3000R-A4
VFA-27	CPU	ZENITH	ZWL-0360-AA
VFA-27	EXT DRIVE	WELTEC	N/A
VFA-27	FAXSCANNER	MICROTEK	TELESCAN II
VFA-27	KEYBOARD	EVEREX	EO3601Q
VFA-27	KEYBOARD	EVEREX	EO3601Q
VFA-27	MODEM	ZENITH	ZM-2401
VFA-27	MONITOR	ZENITH	N/A
VFA-27	MONITOR	ZENITH	ZVM-1380
VFA-27	MONITOR	ZENITH	ZCM-1390-Z
VFA-27	MONITOR	ZENITH	ZVM-1380
VFA-27	MONITOR	ZENITH	1470G
VFA-27	MONITOR	ZENITH	ZVM-1380
VFA-27	MONITOR	ZENITH	ZCM-1390-2
VFA-27	MONITOR	CTX	CVP-5468A
VFA-27	MONITOR	CTX	CVP-5468A
VFA-27	MONITOR	CTX	CVP-5468A
VFA-27	PRINTER	ALPS	P2000G
VFA-27	PRINTER	ZENITH	N/A
VFA-27	PRINTER	PRIMAGE	90GT
VFA-27	PRINTER	OKIDATA	U83A
VFA-27	PRINTER	PRIMAGE	90GT
VFA-27	PRINTER	PRIMAGE	90-GT
VFA-27	PRINTER	ZENITH	80N
VFA-27	PRINTER	ALPS	P2000G
VFA-27	PRINTER	ALPS	P2000
VFA-27	PRINTER	MANNESMA	N/A
VFA-27	PRINTER	PRIMAGE	90-GT
VFA-27	PRINTER	ALPS	ASP1600
VFA-27	PRINTER	KYOCERA	F-1000A
VFA-27	PRINTER	DATAPROD	9044-2
VFA-27	PRINTER	KYOCERA	F-1000A
VFA-27	PRINTER	UNISYS	AP1339
VFA-27	PRINTER	UNISYS	AP-1337
VFA-27	T-SWITCH	INMAC	1063
VFA-27	TAPEBACKUP	IRWIN	445
VFA-27	CPU	EDS/SMC	ASL 325
VFA-27	KEYBOARD	KEYTRONI	E03601QEDS

VFA-27	MONITOR	INTRA	CM-1402E+
VFA-27	PRINTER	FUJITSU	M3377D
VFA-27	KEYBOARD	KEYTRONI	E03601QEDS
VFA-27	CPU	EVEREX	EX-3000T-A2
VFA-27	MONITOR	CTX	CVP-5468A
VFA-27	KEYBOARD	ZENITH	N/A
VFA-27	MONITOR	CTX	CVP-5468A
VFA-27	PRINTER	DATAPROD	9044-2
VFA-27	KEYBOARD	ZENITH	N/A
VFA-27	MONITOR	CTX	CVP-5468A
VFA-27	KEYBOARD	ZENITH	N/A
VFA-27	MONITOR	CTX	CVP-5468A
VFA-27	KEYBOARD	KEYTRONI	E03601QEDS
VFA-27	CPU (TPL)	EDS/SMC	ASL 325
VFA-27	MONITOR	INTRA	CM-1402E+
VFA-27	KEYBOARD	KEYTRONI	E03601QEDS
VFA-27	CPU (TPL)	EDS/SMC	ASL 325
VFA-27	MONITOR	INTRA	CM-1402E+
VFA-27	CD-ROM DRV	SONY	CDU-6251
VFA-27	CD-ROM DRV	SONY	CDU-6251
VFA-27	MOUSE	MICROSOF	24394
VFA-27	MOUSE	MICROSOF	24394
VFA-27	PRINTER	TI	2559820-0021
VFA-27	KEYBOARD	ZENITH	N/A
VFA-27	T-SWITCH	INTEREX	MDS-1A
VFA-27	KEYBOARD	ZENITH	N/A
VFA-27	MONITOR	CTX	CVP-5439A
VFA-27	CPU	MICRONUC	486/33MHZ
VFA-27	MONITOR	MICRONUC	14" SVGA
VFA-27	PRINTER	FUJITSU	DOT MATRIX
VFA-27	MOUSE		
VFA-27	HARDRIVE	SYSQUEST	105MB
VFA-27	CPU LAPTOP		

DEPT	SYS_N	DESC	MFR	MODEL
AIMD	000	MONITOR	CTX	5468
AIMD	000	MONITOR	CTX	CVP-5468A
AIMD	000	MONITOR	UNISYS	VDC 1-VGA
AIMD	000	MONITOR, COLOR	CTX	CVP5468A
AIMD	000	MONITOR,	ZENITH	ZMM-1470-G
AIMD	000	MOUSE DEVICE	MIDWEST MICRO	JX MOUSE
AIMD	000	MOUSE DEVICE	UNISYS	PMP-OP
AIMD	000	MOUSE DEVICE	UNISYS	PM 2-SP
AIMD	000	MOUSE DEVICE	LOGITECH	82-9F
AIMD	000	MOUSE DEVICE	MICROSOFT	24394
AIMD	000	MOUSE DEVICE	MICROSOFT	24394
AIMD	000	MOUSE DEVICE	LOGITECH	3F-9F
AIMD	000	MOUSE DEVICE	MICROSOFT	
AIMD	000	MOUSE DEVICE	MICROSOFT	
AIMD	000	MOUSE DEVICE	MICROSOFT	2-BUTTON
AIMD	000	MOUSE DEVICE	MICROSOFT	2-BUTTON
AIMD	000	MOUSE, HARDWARE	KYE	CLIX ES
AIMD	000	MOUSE, HARDWARE	KYE	CLIX ES
AIMD	000	MOUSE, HARDWARE	KYE	CLIX ES
AIMD	000	MOUSE, HARDWARE	KYE	CLIX ES
AIMD	000	MOUSE, HARDWARE	MICROSOFT	2-BUTTON
AIMD	000	MOUSE, HARDWARE	MICROSOFT	2-BUTTON
AIMD	000	MOUSE, HARDWARE	MICROSOFT	2-BUTTON
AIMD	000	MOUSE, HARDWARE	KYE	CLIX ES
AIMD	000	MOUSE, HARDWARE	MICROSOFT	2-BUTTON
AIMD	000	MOUSE, HARDWARE	MICROSOFT	2-BUTTON
AIMD	000	MOUSE, HARDWARE	MICROSOFT	2-BUTTON
AIMD	000	MOUSE, HARDWARE	MICROSOFT	2-BUTTON
AIMD	000	MOUSE, HARDWARE	MICROSOFT	2-BUTTON
AIMD	000	MOUSE, HARDWARE	MICROSOFT	2-BUTTON
AIMD	000	MOUSE, HARDWARE	MICROSOFT	2-BUTTON
AIMD	000	MOUSE, HARDWARE	MICROSOFT	2-BUTTON
AIMD	000	MOUSE, HARDWARE	MICROSOFT	2-BUTTON
AIMD	000	MOUSE, HARDWARE	MICROSOFT	2-BUTTON
AIMD	000	PRINTER	ALPS	ALLEGRO 500
AIMD	000	PRINTER	ALPS	P2000
AIMD	000	PRINTER	OKIDATA	MICROLINE 182
AIMD	001	PRINTER	ALPS	PG2000
AIMD	003	MONITOR, COLOR	CTX	CVP5468A

DEPT	SYS_N	DESC	MFR	MODEL
AIMD	024	MODEM, EXTERNAL	ZENITH	ZM-2401
AIMD	047	CPU	ZENITH	ZWX-0248-52
AIMD	047	MONITOR, COLOR	ZENITH	ZVM-1380
AIMD	048	CPU	ZENITH	ZWX-0248-52
AIMD	048	MONITOR, COLOR	CTX	CVP-5468A
AIMD	048	PRINTER	EPSON	LQ-1070
AIMD	061	CPU	ZENITH	ZWX-0248-62
AIMD	061	MONITOR	LEADING	1431E
AIMD	061	PRINTER	ALPS	P2000
AIMD	061	TAPE BACK-UP	ZENITH	445
AIMD	089	CPU	ZENITH	ZWX-0248-52
AIMD	089	MONITOR, COLOR	ZENITH	ZVM-1380
AIMD	089	PRINTER	NEC	P5300
AIMD	094	CPU	ZENITH	ZWX-0248-52
AIMD	094	MONITOR	UNISYS	VDC 1-VGA
AIMD	095	CPU	ZENITH	ZWX-0248-52
AIMD	095	MONITOR,	ZENITH	ZMM-149-P
AIMD	095	PRINTER	ALPS	ASP1000
AIMD	096	CPU	ZENITH	ZWX-0248-52
AIMD	096	MONITOR, COLOR	MIDWEST MICRO	ELITE 14
AIMD	096	PRINTER	ALPS	ASP1000
AIMD	097	CPU	ZENITH	ZWX-0248-52
AIMD	097	MONITOR	ZENITH	ZCM-1492BA1
AIMD	100	CPU	ZENITH	ZWX-0248-52
AIMD	100	MONITOR, COLOR	CTX	1451ES
AIMD	100	PRINTER	ALPS	P2000G
AIMD	112	CPU	ZENITH	ZWX-0248-62
AIMD	112	MONITOR, COLOR	ZENITH	ZCM-1490-Z
AIMD	112	PRINTER	ALPS	P2000
AIMD	114	CPU	ZENITH	ZWX-0248-62
AIMD	114	MONITOR, COLOR	CTX	CVP-5468A
AIMD	114	PRINTER	ALPS	P2000
AIMD	114	TAPE BACK-UP	IRWIN	445
AIMD	118	CPU	ZENITH	ZWX-0248-52
AIMD	118	MONITOR, COLOR	ZENITH	ZVM-1380
AIMD	122	CPU	ZENITH	ZWX-0248-52
AIMD	122	MONITOR, COLOR	CTX	CVP-5468A
AIMD	124	CPU	ZENITH	ZWX-0248-52
AIMD	124	MONITOR, COLOR	CTX	CVP-5468A

DEPT	SYS_N	DESC	MFR	MODEL
AIMD	135	CPU	ZENITH	ZWX-0248-62
AIMD	135	MONITOR, COLOR	ZENITH	ZCM-1390
AIMD	135	PRINTER	ALPS	P2000
AIMD	170	CPU	ZENITH	ZWX-0248-52
AIMD	189	CPU	ZENITH	ZWX-0248-52
AIMD	189	MONITOR	STANDARD TEC	
AIMD	189	PRINTER	DIABLO	630
AIMD	190	BATTERY PACK	ZENITH	ZA-180-57
AIMD	190	CPU, LAPTOP	ZENITH	ZWL-184-97
AIMD	190	EXTERNAL FLOPPY	ZENITH	ZA-180-54
AIMD	191	CPU	ZENITH	ZWX-0248-62
AIMD	191	MONITOR, COLOR	CTX	CVG-5432
AIMD	191	PRINTER	ALPS	P2000
AIMD	207	CPU	LOGIVAR	H4T-1NB
AIMD	207	MONITOR, COLOR	ZENITH	ZCM-1390
AIMD	239	CPU	ZENITH	ZWX-0248-52
AIMD	239	MONITOR, COLOR	ZENITH	ZCM-1390-Z
AIMD	239	PRINTER	ALPS	P2000
AIMD	241	CPU	ZENITH	ZWX-0248-62
AIMD	241	MONITOR, COLOR	CTX	CTV 5439A
AIMD	241	MOUSE, HARDWARE	MICROSOFT	2-BUTTON
AIMD	254	CPU	ZENITH	ZWX-0248-52
AIMD	254	MONITOR,	ZENITH	ZMM-1470-G
AIMD	255	CPU	ZENITH	ZWX-0248-62
AIMD	255	MONITOR	ZENITH	ZCM-1490-Z
AIMD	259	CPU	ZENITH	ZBV-2519-EY
AIMD	259	MONITOR	RELISYS	RE5155
AIMD	265	CPU	UNISYS	PW816FDD
AIMD	265	MONITOR, COLOR	CTX	CVP-5468A
AIMD	266	CPU	UNISYS	PW816FDD
AIMD	266	MONITOR	UNISYS	VDC 1-VGA
AIMD	266	PRINTER	ALPS	P2000+
AIMD	274	CPU	ZENITH	ZWX-0248-62
AIMD	355	CPU	ZENITH	ZCV-3726-EF
AIMD	355	MONITOR	UNISYS	VDC 1-VGA
AIMD	356	CPU	ZENITH	ZCV-3726-EF
AIMD	356	MONITOR	ZENITH	ZCM-1492BA1
AIMD	356	PRINTER	ALPS	ALQ324GX
AIMD	426	CPU	EVEREX	EV 18104-386/25

DEPT	SYS_N	DESC	MFR	MODEL
AIMD	426	MONITOR, COLOR	ZENITH	ZCM-1490-Z
AIMD	426	PRINTER	UNISYS	WDM 1-PTR
AIMD	486	CPU	PC CRAFT	2700 386DX
AIMD	486	MONITOR, COLOR	POWER II	HIGH RES 3E
AIMD	486	PRINTER	ALPS	P2000+
AIMD	503	CPU	EDS/SMC	486DX 33MHZ
AIMD	503	MONITOR, COLOR	CTX	CVP-5468A
AIMD	503	PRINTER	ALPS	P2000
AIMD	504	CPU	EDS/SMC	486DX 33MHZ
AIMD	504	MONITOR, COLOR	CTX	1451ES
AIMD	504	MOUSE, HARDWARE	MICROSOFT	2-BUTTON
AIMD	515	CPU	EDS/SMC	486DX 33MHZ
AIMD	515	MONITOR, COLOR	CTX	CVP-5468A
AIMD	515	MOUSE, HARDWARE	MICROSOFT	2-BUTTON
AIMD	515	PRINTER	EPSON	LQ-1070
AIMD	518	CPU	EDS/SMC	486DX 33MHZ
AIMD	518	MONITOR, COLOR	CTX	CVP-5468A
AIMD	518	MOUSE DEVICE	MICROSOFT	
AIMD	518	PRINTER	CANNON	MICROLASER +
AIMD	519	CPU	EDS/SMC	486DX 33MHZ
AIMD	519	MONITOR, COLOR	CTX	CVP-5468A
AIMD	519	PRINTER	PANASONIC	KX-P2124
AIMD	521	CPU	EDS/SMC	486DX 33MHZ
AIMD	521	MONITOR, COLOR	CTX	CVP-5468A
AIMD	521	PRINTER	PANASONIC	KX-P2124
AIMD	574	CPU	EDS/SMC	486DX 33MHZ
AIMD	574	MONITOR, COLOR	CTX	CVP-5468A
AIMD	574	MOUSE, HARDWARE	MICROSOFT	2-BUTTON
AIMD	574	PRINTER	ALPS	ALLEGRO 500XT
AIMD	575	CPU	EDS/SMC	486DX 33MHZ
AIMD	575	MONITOR, COLOR	CTX	CVP-5468A
AIMD	575	MOUSE, HARDWARE	MICROSOFT	2-BUTTON
AIMD	575	PRINTER	TEXAS	MICROLASER +
AIMD	576	CD ROM DRIVE	SONY	CDU 6250
AIMD	576	CPU	EDS/SMC	486DX 33MHZ
AIMD	576	MONITOR, COLOR	CTX	CVP-5468A
AIMD	576	MOUSE DEVICE	LOGITECH	82-9F
AIMD	576	PRINTER	ALPS	500XT
AIMD	577	CPU	EDS/SMC	486DX 33MHZ

DEPT	SYS_N	DESC	MFR	MODEL
AIMD	577	MONITOR, COLOR	CTX	CVP-5468A
AIMD	577	MOUSE DEVICE	MICROSOFT	2-BUTTON
AIMD	577	PRINTER	ALPS	P2000
AIMD	578	CPU	EDS/SMC	486DX 33MHZ
AIMD	578	MONITOR, COLOR	CTX	CVP-5468A
AIMD	578	MOUSE DEVICE	MICROSOFT	2-BUTTON
AIMD	578	PRINTER	EPSON	LQ-1070
AIMD	579	CPU	EDS/SMC	486DX 33MHZ
AIMD	579	MONITOR, COLOR	CTX	CVP-5468A
AIMD	579	MOUSE DEVICE	MICROSOFT	2-BUTTON
AIMD	580	CPU	EDS/SMC	486DX 33MHZ
AIMD	580	MONITOR, COLOR	CTX	CVP-5468A
AIMD	580	MOUSE DEVICE	MICROSOFT	
AIMD	580	PRINTER	ALPS	P2000G
AIMD	581	CPU	EDS/SMC	486DX 33MHZ
AIMD	581	MONITOR, COLOR	CTX	CVP-5468A
AIMD	581	MOUSE, HARDWARE	MICROSOFT	2-BUTTON
AIMD	582	CPU	EDS/SMC	486DX 33MHZ
AIMD	582	MONITOR, COLOR	CTX	CVP-5468A
AIMD	582	PRINTER	ALPS	P2000
AIMD	583	CPU	EDS/SMC	486DX 33MHZ
AIMD	583	MONITOR, COLOR	CTX	1451ES
AIMD	583	MOUSE, HARDWARE	MICROSOFT	2-BUTTON
AIMD	583	PRINTER	ALPS	P2000+
AIMD	584	CPU	EDS/SMC	486DX 33MHZ
AIMD	584	MONITOR, COLOR	CTX	CVP-5468A
AIMD	584	MOUSE, HARDWARE	MICROSOFT	2-BUTTON
AIMD	584	PRINTER, LASERJET	HEWLETT	2686A
AIMD	585	CPU	EDS/SMC	486DX 33MHZ
AIMD	585	MONITOR, COLOR	CTX	CVP-5468A
AIMD	585	PRINTER	TEXAS	MICROLASER +
AIMD	586	CD ROM CHANGER	PIONEER	DRM-604XA
AIMD	586	CPU	EVEREX	486DX 66MHZ
AIMD	586	MONITOR, COLOR	PACKARD BELL	PB-8539-VG
AIMD	586	PRINTER, LASER	TEXAS	MICRO LASER +
AIMD	749	CPU	AST PREM 286	DJK68Y AST 286
AIMD	749	MONITOR, COLOR	ZENITH	ZVM-1380
AIMD	750	CPU	ZENITH	ZWX-0248-52
AIMD	751	CPU	ZENITH	ZWX-0248-52

DEPT	SYS_N	DESC	MFR	MODEL
AIMD	751	MONITOR, COLOR	ZENITH	ZVM-1380
AIMD	779	CPU	MIDWEST MICRO	486DX2 66MHZ
AIMD	779	MONITOR, COLOR	CTX	CVP-5468A
AIMD	779	MOUSE DEVICE	LOGITECH	TRACKBALL
AIMD	779	SCANNER, FLATBED	MICROGRAFX	MFS-6000CS
AIMD	780	CPU	ZENITH	ZWX-0248-52
AIMD	780	MODEM, EXTERNAL	ZENITH	ZM-2401
AIMD	780	MONITOR, COLOR	ZENITH	ZCM-1490-Z
AIMD	780	PRINTER	UNISYS	
AIMD	782	CPU	ZENITH	ZBV-2519-EY
AIMD	817	CPU, MINI TOWER	MIDWEST MICRO	486DX2 66MHZ
AIMD	817	MONITOR, COLOR	MIDWEST MICRO	ELITE 14
AIMD	817	MOUSE DEVICE	LOGITECH	TRACKBALL
AIMD	817	PRINTER, LASER	TEXAS	MICRO LASER +
AIMD	818	CPU, MINI TOWER	MIDWEST MICRO	486DX2 66MHZ
AIMD	818	MONITOR, COLOR	MIDWEST MICRO	ELITE 14
AIMD	818	MOUSE DEVICE	LOGITECH	TRACKBALL
AIMD	818	MOUSE, HARDWARE	MICROSOFT	2-BUTTON
AIMD	819	CPU, MINI TOWER	MIDWEST MICRO	486DX2 66MHZ
AIMD	819	MONITOR, COLOR	CTX	CVP-5468A
AIMD	819	PRINTER	TEXAS	MICROLASER +
AIMD	914	CPU	ZENITH	ZWX-0248-52
AIMD	914	MONITOR	MITAC	M1420-0
AIMD	914	MOUSE DEVICE	MICROSOFT	2-BUTTON
AIMD	914	PRINTER	ALPS	ASP1000
AIMD	915	CPU	ZENITH	ZWX-0248-52
AIMD	916	CPU	ZENITH	ZWX-0248-52
AIMD	917	CPU	ZENITH	ZWX-0248-52
AIMD	924	CPU, MINI TOWER	MIDWEST MICRO	486DX2 66MHZ
AIMD	924	MONITOR, COLOR	CTX	1451GM
AIMD	924	MOUSE, HARDWARE	KYE	CLIX ES
AIMD	924	PRINTER	ALPS	P2000
AIMD	924	PRINTER, LASER	HEWLETT	C2121A
AIMD	925	CPU, MINI TOWER	MIDWEST MICRO	486DX2 66MHZ
AIMD	925	MONITOR, COLOR	CTX	1451GM
AIMD	925	MONITOR, COLOR	CTX	1451GM
AIMD	925	MOUSE, HARDWARE	KYE	CLIX ES
AIMD	925	PRINTER	ALPS	P2000
AIMD	926	CPU, MINI TOWER	MIDWEST MICRO	486DX2 66MHZ

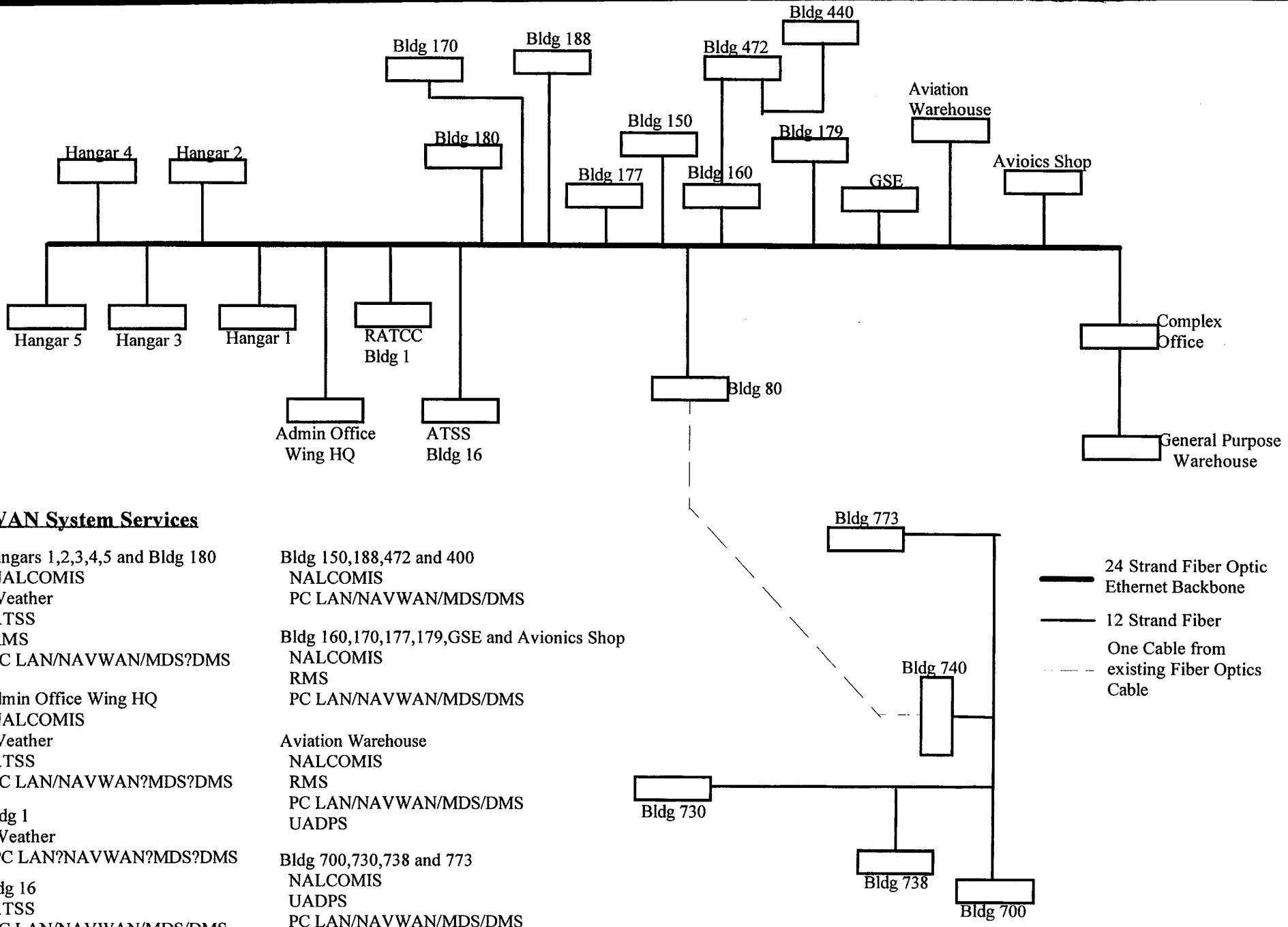
DEPT	SYS_N	DESC	MFR	MODEL
AIMD	926	MONITOR, COLOR	CTX	CVP-5468A
AIMD	926	MONITOR, COLOR	CTX	1451GM
AIMD	926	MOUSE DEVICE	LOGITECH	TRACKBALL
AIMD	926	PRINTER	EPSON	LQ-1070
AIMD	927	CPU, MINI TOWER	MIDWEST MICRO	486DX2 66MHZ
AIMD	927	MONITOR, COLOR	CTX	1451GM
AIMD	927	MOUSE DEVICE	LOGITECHT	TRACKBALL
AIMD	928	CPU, MINI TOWER	MIDWEST MICRO	486DX2 66MHZ
AIMD	928	MONITOR, COLOR	CTX	1451GM
AIMD	929	CPU, MINI TOWER	MIDWEST MICRO	486DX2 66MHZ
AIMD	929	MONITOR, COLOR	CTX	1451GM
AIMD	929	MOUSE, HARDWARE	MICROSOFT	2-BUTTON
AIMD	929	PRINTER	EPSON	LQ-1070
AIMD	930	CPU, MINI TOWER	MIDWEST MICRO	486DX2 66MHZ
AIMD	930	MONITOR, COLOR	CTX	1451GM
AIMD	930	MOUSE, HARDWARE	KYE	CLIX ES
AIMD	930	PRINTER	ALPS	P2000
AIMD	931	CPU, MINI TOWER	MIDWEST MICRO	486DX2 66MHZ
AIMD	932	CPU, MINI TOWER	MIDWEST MICRO	486DX2 66MHZ
AIMD	932	MONITOR, COLOR	CTX	1451GM
AIMD	932	MOUSE, HARDWARE	KYE	CLIX ES
AIMD	932	PRINTER	ALPS	P2000
AIMD	975	CPU	SUNNYVALE	286(486 MB)
AIMD	975	MONITOR, COLOR	CTX	1451ES

DEPT	SYS_N	DESC	MFR	MODEL
AIR OP	000	EXTERNAL FLOPPY	ZENITH	AZ-180-54
AIR OP	000	PRINTER	UNISYS	LQP1-PTR
AIR OP	000	PRINTER	UNISYS	LQP 1-PTR
AIR OP	037	CPU	ZENITH	ZFX-0248-50
AIR OP	037	MONITOR, COLOR	ZENITH	ZCM-1492
AIR OP	037	PRINTER	PRIMAGE CORP	90-GT
AIR OP	057	CPU	ZENITH	ZWX-0248-62
AIR OP	057	MONITOR	CTX	CTX-5468A
AIR OP	059	CD ROM DRIVE	SONY	CDU6250
AIR OP	059	CPU	ZENITH	ZWX-0248-62
AIR OP	059	MONITOR, COLOR	ZENITH	ZVM-1380-C
AIR OP	059	PRINTER	ALPS	P2000
AIR OP	074	CPU	UNISYS	PW820-CDP
AIR OP	074	MONITOR, COLOR	UNISYS	VDC 1-VGA
AIR OP	074	PRINTER	UNISYS	WDM 1-PTR
AIR OP	075	CPU	ZENITH	ZWX-0248-52
AIR OP	075	MONITOR, COLOR	ZENITH	ZVM-1380-C
AIR OP	075	PRINTER	EPSON	LQ-1070
AIR OP	076	CPU	ZENITH	ZWX-0248-52
AIR OP	076	MONITOR	EPSON	MCM-4035N-E
AIR OP	076	PRINTER	ALPS	P2000G
AIR OP	123	CPU	ZENITH	ZWX-0248-52
AIR OP	123	MONITOR, COLOR	PACKARD BELL	PB8539VG
AIR OP	123	PRINTER	EPSON	LQ-1070
AIR OP	125	CPU, LAPTOP	ZENITH	ZWL-184-97
AIR OP	147	CD ROM DRIVE	SONY	CDU 6251A
AIR OP	147	CPU	ZENITH	ZWX-0248-52
AIR OP	147	MONITOR	CTX	5432
AIR OP	147	PRINTER	EPSON	LQ570
AIR OP	221	CPU, LAPTOP	ZENITH	ZWL-184-97
AIR OP	221	PRINTER	ALPS	ASP1000
AIR OP	240	CPU	MITAC	386SX 25MHZ
AIR OP	240	MONITOR, COLOR	CTX	CVP-5468A
AIR OP	240	MOUSE DEVICE	MICROSOFT	MM-100
AIR OP	240	PRINTER	NEC	P5300
AIR OP	272	CPU	ZENITH	ZWX248-62
AIR OP	272	MONITOR,	ZENITH	ZMM-149-P
AIR OP	273	CPU	ZENITH	ZWX-248-62
AIR OP	273	MONITOR, COLOR	ZENITH	ZVM-1380

DEPT	SYS_N	DESC	MFR	MODEL
AIR OP	273	PRINTER	ALPS	ASP1000
AIR OP	291	MONITOR, COLOR	CTX	1451ES
AIR OP	291	PRINTER	EPSON	LQ-1070
AIR OP	299	CPU	ZENITH	Z-248
AIR OP	299	MONITOR	CTX	5432
AIR OP	299	PRINTER	EPSON	LQ-570
AIR OP	299	TAPE BACK-UP	IRWIN	445
AIR OP	366	CPU	SMC/EDS	ASL 325
AIR OP	366	MONITOR	INTRA	CM-1402E+
AIR OP	366	PRINTER	EPSON	LQ-1070+
AIR OP	386	CPU	COMPUADD	A000
AIR OP	386	MONITOR	COMPUADD	51118
AIR OP	386	PRINTER	DIABLO	630
AIR OP	496	CPU	KAO	386DX 4M
AIR OP	496	MODEM, EXTERNAL	HAYES	3124US
AIR OP	496	MONITOR, COLOR	SHINLEE CORP	CM-14XVBU11A
AIR OP	496	MOUSE DEVICE	A4 TECH	AM-5
AIR OP	496	PRINTER	EPSON	LQ 1070
AIR OP	497	CD ROM DRIVE	SONY	CDU 6251A
AIR OP	497	CPU	MEGABYTE INDU	486SX 25MHZ
AIR OP	497	MONITOR, COLOR	SHINLEE CORP	CM-14XVBU11A
AIR OP	497	PRINTER	EPSON	LQ-1070
AIR OP	498	CPU	KAO	386DX 4M
AIR OP	498	MONITOR, COLOR	SHINLEE CORP	CM-14XVBU11A
AIR OP	498	PRINTER	EPSON	LQ-1070
AIR OP	499	CPU	KAYO	386DX 4M
AIR OP	499	MONITOR, COLOR	SHINLEE CORP	CM-14XVBU11A
AIR OP	499	MOUSE DEVICE	A4 TECH	AM-5
AIR OP	499	PRINTER	ALPS	P2000
AIR OP	500	CPU	KAO	386DX 4M
AIR OP	500	MONITOR, COLOR	SHINLEE CORP	CM-14XVBU11A
AIR OP	500	PRINTER	ALPS	ALQ324GX
AIR OP	522	CPU	EDS/SMC	486DX 33MHZ
AIR OP	522	MODEM, EXTERNAL	ZENITH	ZM-2401
AIR OP	522	MONITOR, COLOR	CTX	CVP-5468A
AIR OP	522	PRINTER	EPSON	LQ-2550
AIR OP	523	CPU	EDS/SMC	486DX 33MHZ
AIR OP	523	MONITOR, COLOR	CTX	CVP-5468A
AIR OP	523	PRINTER	DIABLO	630

DEPT	SYS_N	DESC	MFR	MODEL
AIR OP	524	CPU	EDS/SMC	486DX 33MHZ
AIR OP	524	MONITOR, COLOR	CTX	CVP-5468A
AIR OP	524	PRINTER	EPSON	LQ-570
AIR OP	525	CPU	EDS/SMC	486DX 33MHZ
AIR OP	525	MONITOR, COLOR	CTX	CVP-5468A
AIR OP	525	PRINTER	EPSON	LQ-1070
AIR OP	617	MONITOR, COLOR	CTX	1451ES
AIR OP	617	PRINTER	ALPS	P2000G
AIR OP	618	CPU	AST	
AIR OP	618	MONITOR, COLOR	CTX	CVP-5468A
AIR OP	618	PRINTER	ALPS	P2000
AIR OP	619	MONITOR	RELISYS	RE5154E
AIR OP	619	PRINTER	EPSON	FX-870
AIR OP	746	CPU, NOTEBOOK	MIDWEST MICRO	TS30AS
AIR OP	746	PRINTER	ALPS	ALLEGRO 500
AIR OP	783	CPU	AST	
AIR OP	783	MONITOR, COLOR	CTX	1451ES
AIR OP	783	PRINTER	OKIDATA	GE8222A
AIR OP	784	CPU	AST	AST PREM
AIR OP	784	MONITOR, COLOR	CTX	1451ES
AIR OP	785	CPU	AST	DJK68Y
AIR OP	785	MONITOR, COLOR	CTX	1451ES
AIR OP	785	PRINTER	EPSON	LQ-2550
AIR OP	860	CPU	ZENITH	ZWX-0248-62
AIR OP	860	MONITOR, COLOR	ZENITH	ZVM-1380
AIR OP	911	CPU	ZENITH	ZWL248
AIR OP	911	MONITOR,	ZENITH	ZMM-1470-G
AIR OP	911	PRINTER	ALPS	P2000+
AIR OP	912	CPU	ZENITH	ZWX-0248-62
AIR OP	912	MONITOR, COLOR	CTX	CVP-5468A
AIR OP	913	CPU	ZENITH	ZWX-0248-52
AIR OP	913	MONITOR, COLOR	CTX	CVP-5468A
AIR OP	965	CPU	ZENITH	ZWX-0248-52
AIR OP	965	MONITOR, COLOR	ZENITH	ZVM-1380
AIR OP	967	CPU, LAPTOP	ZENITH	ZWL-184-97
AIR OP	000	PRINTER, LASER JET	HEWLETT	C2003A

APPENDIX J. NAS LEMOORE PROPOSED BASE WIDE FIBER OPTIC BACKBONE



WAN System Services

Hangars 1,2,3,4,5 and Bldg 180
- NALCOMIS
- Weather
- ATSS
- RMS
- PC LAN/NAVWAN/MDS?DMS

Admin Office Wing HQ
- NALCOMIS
- Weather
- ATSS
- PC LAN/NAVWAN?MDS?DMS

Bldg 1
- Weather
- PC LAN?NAVWAN?MDS?DMS

Bldg 16
- ATSS
- PC LAN/NAVWAN/MDS/DMS

Bldg 150,188,472 and 400
- NALCOMIS
- PC LAN/NAVWAN/MDS/DMS

Bldg 160,170,177,179,GSE and Avionics Shop
- NALCOMIS
- RMS
- PC LAN/NAVWAN/MDS/DMS

Aviation Warehouse
- NALCOMIS
- RMS
- PC LAN/NAVWAN/MDS/DMS
- UADPS

Bldg 700,730,738 and 773
- NALCOMIS
- UADPS
- PC LAN/NAVWAN/MDS/DMS

LIST OF REFERENCES

1. *Automated Information Systems Department History & Functions*, AIS Department Internal Document.

2. *Automated Information Systems Department History & Functions*, AIS Department Internal Document.

3. *Squadron/Wing Microcomputer Allowances*, Commander Naval Air Force, U.S. Pacific Fleet Ltr Ser N6241.059/6067, 08 July, 1994.

4. *Squadron/Wing Microcomputer Allowances*, Commander Naval Air Force, U.S. Pacific Fleet Ltr Ser N6241.059/6067, 08 July, 1994.

5. *Squadron/Wing Microcomputer Allowances*, Commander Naval Air Force, U.S. Pacific Fleet Ltr Ser N6241.059/6067, 08 July, 1994.

6. *Squadron/Wing Microcomputer Allowances*, Commander Naval Air Force, U.S. Pacific Fleet Ltr Ser N6241.059/6067, 08 July, 1994.

7. Conversation with AT1 Lee A. Wadlington, AIMD System Administrator.

8. Conversation with AT1 Lee A. Wadlington, AIMD System Administrator.

9. United States General Accounting Office, *ADP Acquisition: Naval Aviation Logistics Command Management Information System*, February 1989.

10. United States General Accounting Office, *ADP Acquisition: Naval Aviation Logistics Command Management Information System*, February 1989.

11. United States General Accounting Office, *ADP Acquisition: Naval Aviation Logistics Command Management Information System*, February 1989.

12. Stallings, William, *Data and Computer Communications*, Fourth Edition, Macmillan Publishing Company, 1994.

13. Conversation with AT1 Lee A. Wadlington, AIMD System Administrator.

14. McGillicuddy, Dennis, "If You're Still Using a Z248...Upgrade to 486/25," *CHIPS*, volume XI, issue 3, July 1993.

15. Whitten, J.L., Bentley, L.D., Barlow, V.M., Systems Analysis and Design Methods, Richard D. Irwin, Inc., 1994.

16. Conversation with LCDR Mike Shand, Air Wing ADP Officer.

17. McGillicuddy, Dennis, "If You're Still Using a Z248...Upgrade to 486/25," *CHIPS*, volume XI, issue 3, July 1993.

18. McGillicuddy, Dennis, "If You're Still Using a Z248...Upgrade to 486/25," *CHIPS*, volume XI, issue 3, July 1993.

19. McGillicuddy, Dennis, "Upgrading your Z248: Searching for the Best Alternative," *CHIPS*, volume XII, issue 2, April 1994.

20. McGillicuddy, Dennis, "The Z248 Still Lives," *CHIPS*, volume XII, issue 3, October 1994.

21. Carney, Dan, "Low-cost Chip upgrade Revives Desktop Dinosaurs," *Federal Computer Week*, volume 8, number 24, August 22, 1994.

22. Sartori, Howard, "New Life for Slow, Sturdy DT III," *Government Computer News*, volume 13, number 8, April 18, 1994.

23. Sartori, Howard, "New Life for Slow, Sturdy DT III," *Government Computer News*, volume 13, number 8, April 18, 1994.

24. Morgan, Cynthia, "Pentium OverDrive Works, but Don't Rule Out a New Computer," *Government Computer News*, volume 14, number 8, April 17, 1995.

25. Morgan, Cynthia, "Pentium OverDrive Works, but Don't Rule Out a New Computer," *Government Computer News*, volume 14, number 8, April 17, 1995.

26. Buckley, Fletcher J., *Implementing Configuration Management Hardware, Software, and Firmware*, IEEE Press, 1993.

27. Derfler, Frank J., Jr., "Network Management: Who's Minding Your Network ," PC Magazine, volume 13, number 19, November 8, 1994.

28. Naval Aviation Systems Team Wide-Area Network (NAVWAN), NAVAIR Instruction 5230, AIR-714C.

29. Conversation With Don Coles, NAVWAN Team Expert, May 1995.

30. Conversation With Don Coles, NAVWAN Team Expert, May 1995.

31. Naval Aviation Systems Team Wide-Area Network (NAVWAN), NAVAIR Instruction 5230, AIR-714C.

32. Walton, Mary, *The Deming Management Method*, The Putnam Publishing Group, 1986

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