

U. S. DEPARTMENT OF JUSTICE
LAW ENFORCEMENT ASSISTANCE ADMINISTRATION

DISCRETIONARY GRANT
PROGRESS REPORT

LEAA GRANT NO. 75-DE-04-00318		DATE OF REPORT 18 October 76	REPORT NO. 5 Final
EMENDING SUBGRANTEE TRIOTS POINT DEVELOPMENT AUTHORITY POST OFFICE BOX 986 MT. PLEASANT, S. C. 29164		TYPE OF REPORT <input type="checkbox"/> REGULAR QUARTERLY <input type="checkbox"/> SPECIAL REQUEST <input checked="" type="checkbox"/> FINAL REPORT	
T TITLE OF PROJECT patriots Point Security		GRANT AMOUNT 29,236.00	
RT IS SUBMITTED FOR THE PERIOD 07-01-76		THROUGH 09-15-76	
TURE OF PROJECT DIRECTOR <i>J. Kossler</i>		TYPED NAME & TITLE OF PROJECT DIRECTOR H.J. Kossler, RADM USN (Ret.) Executive Director	

ENCE REPORT HERE (Add continuation pages as required.)

The consulting firm has completed their Final Study of the Security safety aspects of the Aircraft Carrier YORKTOWN.

Since opening on 3 January 1976, 208,175 persons have visited the KETOWN. With a total security force of 12, we have been able to handle itors with a minimum of problems.

Local Law Enforcement officals; City, County, State and Federal, have vided assistance as necessary and have been of great help to the riots Point Development Authority.

All Security and Safety officers have been trained by on-the-job octrination. Communications have been established between the Direc- and three (3) other key high risk areas.

Although the consultant study has provided for many areas of securi- funding and personnel restrictions preclude full implementation at s time. For example, the elaborate communication system recommended not in our opinion justified.

The Authority plans to utilize a walkie-talkie system internally with channel circuit available to the local police for major security blems within the total complex.

This discretionary grant has enabled the Authority to obtain necessary urity consultant services which have been of assistance now and will vide guidance for the future expansion of Patriots Point.

We have initiated a simple but effective security system that provides imum security for monies collected from tourists and provides for a 4 minute response-time from local police if a robbery did occur.

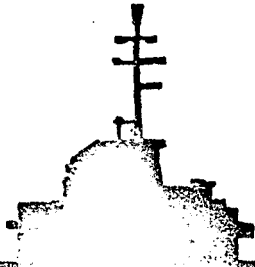
The assistance of the LEAA in providing this discretionary grant is ply appreciated and has been of immense assistance to our project.

A copy of the Consultants report is attached for information.

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VED BY GRANTEE STATE PLANNING AGENCY (Officer) <i>[Signature]</i>	DATE 10-14-76
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**PATRIOTS POINT
SECURITY OPERATION
PLAN**



LOAN DOCUMENT

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The seven-month research and work effort has produced a series of findings and conclusions regarding the security needs and capabilities of the USS Yorktown and the Patriots Point Authority. These are summarized in the following paragraphs:

Findings

1. The artifacts displayed on the USS Yorktown have significant historical value, but are not high monetary art objects. Therefore, security plans should be related to minimizing vandalism and "souvenir shoppers."
2. The highest security risk area is the ticket booth, and the current procedure of removing the cash when receipts reach a certain amount is an effective method of minimizing the risk.
3. The tour route is well planned and does not allow visitors to enter potentially dangerous areas, thereby minimizing the possibility of personal attack.
4. The users' profile is predominantly family oriented, with increasing numbers of school tours. The greatest problem associated with these user groups is safety rather than security.
5. The present security force is well organized and effective in the daily operations. The Chief Security Officer is responsible for the efficiency and responsiveness represented by the security personnel.
6. Attrition rates tend to be high among security officers, and two have left the Yorktown for higher paying jobs

since the opening. This will continue unless salaries can be brought in line with other local security operations.

7. On-board communication systems are weak, but are being strengthened with an improved paging and telephone system. An intercom and radio communications system is needed.
8. Sophisticated surveillance systems are not feasible nor required to secure the USS Yorktown.
9. Unless substantially more area of the ship is opened for tour or another component of the Master Plan implemented, the existing force can fulfill manpower needs for the immediate future. However, two additional positions will increase the second shift operational component to a more acceptable level.
10. The security operations at the present time are very effective and are sufficiently planned to meet all of the daily security requirements.

Recommendations

1. To improve internal security communications for staff and visitors, an intercom system should be installed. This should link specified stations along the tour with a central communications center. The total system's estimated cost is \$1,850.
2. Develop a radio communications system which will provide the security officers with portable radios for internal communications from any location along the tour to the central communications. The system will also link the Yorktown security force with local law enforcement agencies. The estimated cost is \$5,100.
3. Within a two-year period, add two additional security officer positions to provide better coverage in the Bridge and Flight Deck areas and between the ticket booth and Second Deck areas. This need is not imminent, but should be phased in during the next two years.

4. Develop an organizational plan which provides a shift captain on each shift and weekends, and compensate these positions at a higher pay level than the security officer position. This will provide needed career advancement opportunities.
5. Begin to consider as a long-term manpower alternative the use of contract security services in lieu of continuing to increase in-house staff. Using the existing component as the basis of comparison, the estimated savings for contract security services would be approximately \$12,000 annually. At the time another Master Plan increment is implemented, this shift to contract services should be given greater consideration.

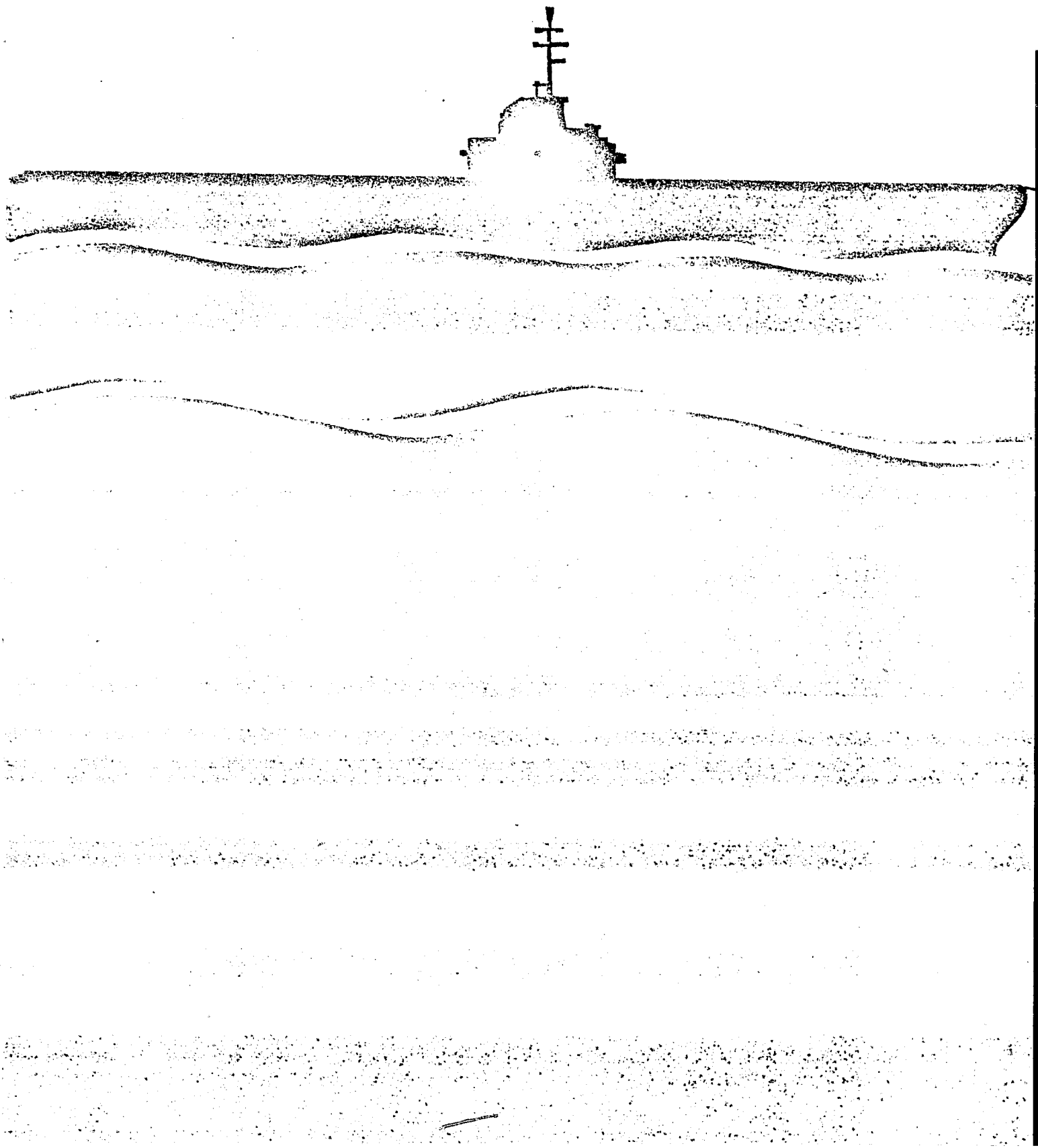
This study was commissioned by the Patriots Point Authority in November 1975, to determine the security needs for the USS Yorktown. During the course of the work effort, two detailed technical memoranda were developed and presented to the Authority staff. The first memorandum, "Preliminary Security Plan," was prepared to correspond with the public opening of the Yorktown on January 3, 1976. This document provided the staff with an analysis of the immediate security needs and, among other recommendations, suggested the use of ship's staff to augment the security force. Since the opening, the consultant team has been able to evaluate this and other short-term recommendations and will present updated findings and refinements in this final report.

In May of 1976, the second memorandum, "Systems Design and Functional Planning," was presented with a summary of alternative security systems which can be implemented to supplement the manned security system. Emphasis in the second memorandum was placed upon the identification of cost effective and technically responsive internal communication and surveillance systems.

This final report of findings combines the manpower and administrative elements of security planning with the technological components of security systems engineering. The recommended short-term security operations plan

hopefully reflects a synergistic security system which has strong individual components, the sum of which is a comprehensive, balanced implementation strategy.

1 Security Needs Analysis



The development of museum security and safety systems requires the consideration of different variables than the preparation of a residential, commercial, or industrial security program. Since the museum is open to the public, a variety of user types will have access to the facilities, not all of whom will be responsive to acceptable social norms which, therefore, requires the development of a security system for protecting the valuable artifacts and memorabilia. This problem is compounded when the facility housing the valuables was originally designed for another function, but has been adopted for use as a museum. Such is the case of the USS Yorktown.

This portion of the report analyzes the security needs relative to:
(1) the objectives of the Authority; (2) the physical environment; (3) the potential users of the facility; and (4) the existing constraints to securing the ship.

BACKGROUND INVESTIGATION

The concept of Patriots Point was developed approximately ten years ago as a central focus for a national museum of naval history. Since the conception the idea has begun to see fruition with the acquisition of the USS Yorktown as the first in-place component of a floating naval museum. In an effort to determine

the impact of past planning and programming efforts upon present and future security needs, an investigation has been made of these previous efforts.

Documentation Review and Site Reconnaissance - The basic documentation of the Patriots Point Development Plan, prepared by LBC&W Consultants of Columbia, South Carolina, was reviewed to gain an insight of the background statistical information and the conceptual plan for the development of the Patriots Point facilities. The particular emphasis in the early documentation has been upon the role of the USS Yorktown in the future Patriots Point Development. For the purpose of this report, the emphasis has been placed upon the role of security only within the confines of the Aircraft Carrier Yorktown.

This report of the feasibility of the Patriots Point Development also provided graphic material illustrating the proposed site plan for the complete development and additional engineering drawings of the interior of the ship. These drawings have been supplemented by U.S. Department of Navy isometric sketches of the Yorktown's interior spaces. From these drawings a basic concept of the interior spaces of the ship has been gained, and will be utilized in the development of the security plan for those areas of the ship to be open for tour.

None of the previously prepared documentation has provided any insight into security needs or a particular security plan for the operations on board the Yorktown. Therefore, the documentation has been useful primarily as it provided

an understanding of the concept of Patriots Point, and through the drawings which were made available, an overall understanding of the potential problem areas has been developed.

Comparable Situation Analysis - To supplement the lack of documentation concerning security on board the Yorktown, several other similar facilities were investigated. Conversations were held with the Director of the State Authority in Texas, which manages the USS Texas moored at Houston. This interview provided substantial insight into particular problems related to security on board a ship which has a similar function as that proposed for the Yorktown.

Basic findings relative to security are as follows:

1. The incidence of vandalism is less with the increased number of visitors.
2. The presence of a security guard is an important psychological factor in controlling vandalism.
3. In the long-term analysis, contracted security officers are more cost-effective than trying to build an in-house security staff.
4. The potentially most troublesome user is the school-age child between the ages of 11 and 14.
5. The ship's visitors should not be allowed to touch any of the equipment or objects, since this leads to eventual souvenir hunting on the part of vandals.
6. Patrolling guards are far more effective than stationed ones, although it will be necessary to have some stationed guard areas on board any museum ship.

7. One of the most difficult areas to secure on the ship was the conning tower and bridge area, due to the restricted access.
8. Personal safety is more of a problem than securing the objects on board the ship.

While the USS Texas has monitoring and communications capability on board the ship, the basic findings and conclusions from these interviews were that there is no substitute for the presence of manpower on board the ship to create the psychological presence of security and control.

As a contrast to security measures on board another naval museum, interviews were held with the Chief of Security and security officers from the Smithsonian Museum in Washington, D. C. While the objects requiring security at the Smithsonian are generally considered of a higher financial value than those on board a naval museum, some of the basic concepts for security and crowd control are transferable to other museum situations. Some of the basic findings from the investigation of the Smithsonian security are as follows:

1. While television and noise monitoring can be a significant security device, it should not be used as a substitute for manpower.
2. A basic training program is essential for all new guards and regular updates and refresher courses are important.
3. The quality of the personnel is one of the most difficult aspects of security to control through restricted hiring practices.

4. A major problem within the Smithsonian Museum is teenagers robbing other guests, and not so much vandalism directed towards the museum art objects.
5. The one area which is a high vandalism-prone area is the gift shop.
6. Approximately 80 percent of the security guards are patrolling rather than stationary.
7. During the peak season of the year temporary guards are employed and are generally used in a stationary position.
8. Any electrical devices used for communications security are only as good as the response which is achievable from the use of the equipment.

Security requirements for a museum as important nationally as the Smithsonian are much more intense than those required in a museum of the nature of the Yorktown. However, there are some important similarities in dealing with crowd control and the substantial amount of in-depth experience which is represented by the Smithsonian security force which have application in the development of a plan for the Yorktown. One of the basic findings of the Smithsonian experience which is different from the USS Texas security plan is that the use of in-house security forces provides more internal control. The difficulty with the Smithsonian is that under the law the security guards all have to be veterans and, therefore, it does present some problem of quality control in hiring practices. Therefore, two contrasting points of view have been represented in the interviews with these museums, one representing the contract security officer as the optimum route for security personnel, and the other placing its emphasis upon the

development of in-house security capabilities. These alternatives will be analyzed closely as they impact the Authority's budgeting plan in Chapter IV.

PROBLEM IDENTIFICATION

The investigation into previous documentation concerning the site development and the experience of other museum environments in developing security systems provided the basis for a closer examination of the particular security problems represented by the physical design of the USS Yorktown. This, in concert with interviews with Authority staff, local law enforcement, state officials, and on-site inspections, has aided the definition of specific problem areas.

On Board Reconnaissance - Several visits were made to the ship to review the proposed tour route and the operations plan as proposed by the Patriots Point Authority. While the detailed components of the existing security system will be pointed out in a later section of this report, the site reconnaissance provided a base of information from which to develop the conceptual security communications plan and manpower needs analysis.

The total amount of ship's area open for public inspection and tour is approximately 95,000 square feet. Figure 1 illustrates the area of the ship opened for public inspection.

Second Deck	13,000 square feet
Hangar Deck	36,000 " "
Flight Deck	40,000 " "
Bridge Area	6,000 " "
	<hr/>
	95,000 square feet

Hangar Deck

1. Mine warfare display
2. Fantail

Down to Second Deck

Second Deck

3. Chief Petty Officers' mess, lounge and galley
4. Crew's berthing area
5. Crew's washroom
6. Chapel and lounge
- *7. Freedom Shrine
8. Torpedo elevator
9. Torpedo workshop
10. Fire fighting equipment
- *11. Sick Bay
12. Laundry
13. Garbage grinding room
14. Marine Corps living compartment
15. Typical office
16. Tailor shop
17. Officers stateroom - double occupancy
18. Air officers stateroom
- *19. Chairman's Room (L. Mendel Rivers memorial)
20. Pilot's Ready Room
- *21. Officers Ward Room - Office of Yorktown Association

Up two flights to Flight Deck

Flight Deck

22. Various aircraft
23. Ladder to Bridge Area

Bridge Area

- *24. Captain's Tactical Plotting Room
- *25. Wheel House
- *26. Captain's Sea Cabin
- *27. Conning Station
28. Ships Bridge
29. Flag Bridge
30. Flag Tactical Plot

*Denotes priority security areas

In the second deck the tour length is approximately 4,500 feet from the Chief's berthing quarters at the aft section of the ship to the Ward Room area in the forward portion. The three basic tour components of the second deck include the Chief's berthing quarters where the tour begins, following towards the forward portion of the ship through the Sick Bay area along a very narrow and restricted corridor to the Ward Room area. From that point, the tour moves upstairs to the

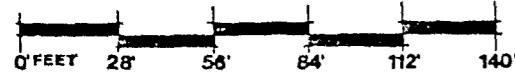
The tour begins on the hangar deck with an initial inspection of the mine warfare area, passing through this area to the fantail, or ship's stern, where concessions are available. At that point the tour route directs the visitor to the second deck and a view of the facilities which are described in the previous paragraph. The hangar deck is approximately 600 linear feet, and is used currently to display heavier equipment which represents less of a security problem than some of the objects located in the second deck and bridge area. It is envisioned that the largest masses of people will be gathered in the hangar deck and, therefore, a substantial amount of psychological crowd control can be achieved.

From the hangar deck the visitor passes to the flight deck, which is approximately 40,000 square feet of exhibition area, and has an overall length of greater than 700 feet. While this area does not represent a substantial security problem, it does represent a very real safety concern. Since the carrier

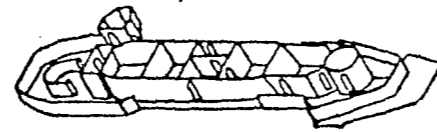
USS YORKTOWN

TOUR ROUTE AND HIGH SECURITY AREAS

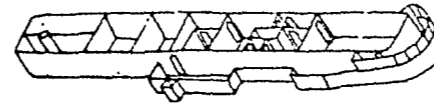
FIG. 1



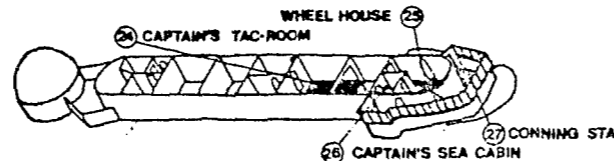
Buford Goff & Associates
Stephen Carter & Associates



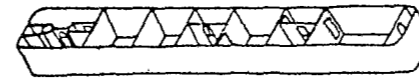
TOWER-PILOT HOUSE



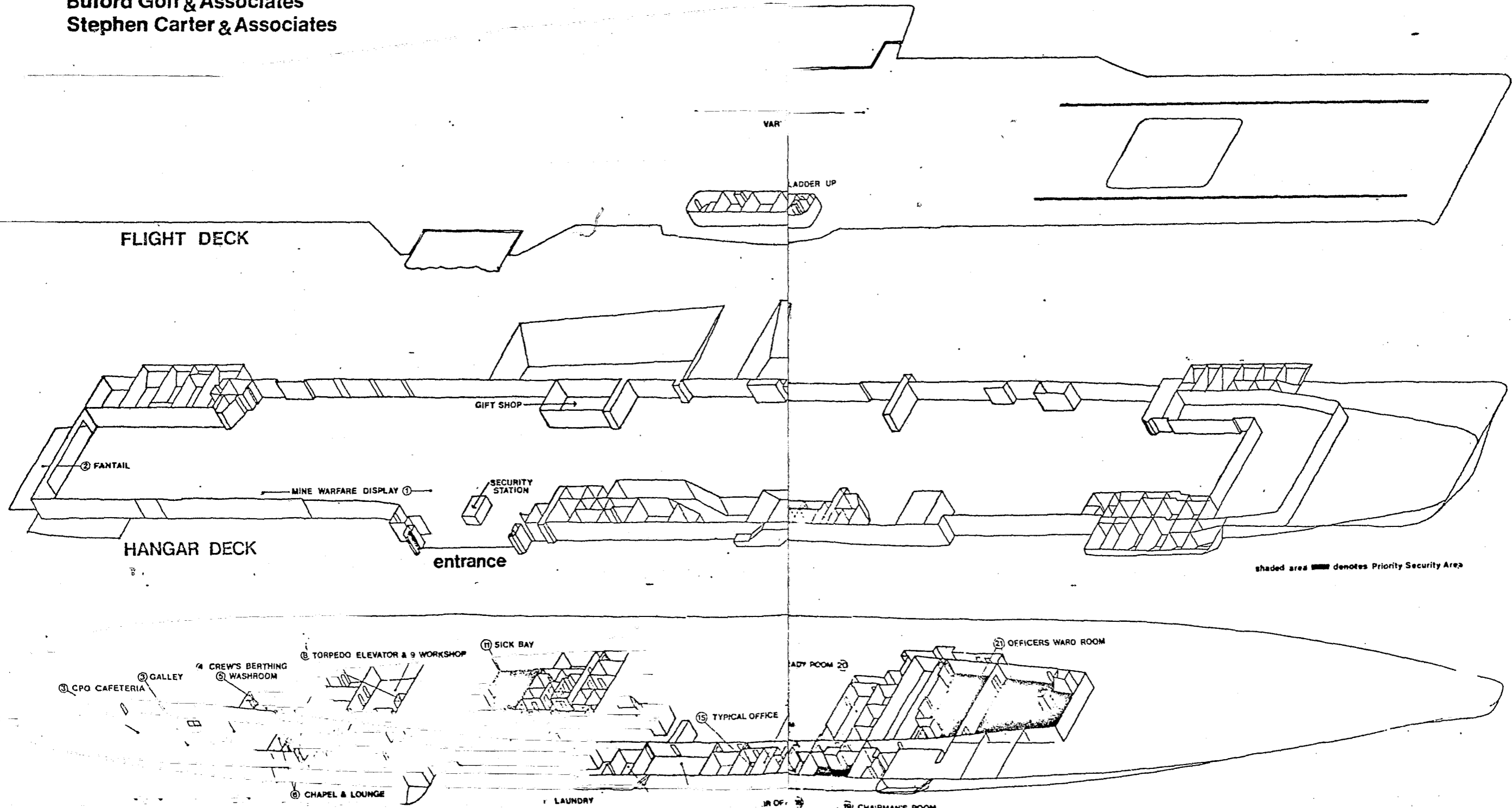
FLAG BRIDGE



NAVIGATING BRIDGE



COMMUNICATION PLATFORM



does not have any permanent security railings, it has been necessary to add temporary crowd control devices to prevent any possible accidents related to persons falling overboard from the flight deck. The objects to be displayed on the flight deck are replicas of various naval aircraft and, while they do not represent a substantial security problem, it is necessary to patrol this area to prevent visitors from climbing aboard the aircraft and possibly injuring themselves in the process.

With this proposed tour and project phasing, it is possible to identify the priority security areas. Basically, the second deck and the bridge area represent the priority security areas. In terms of visitor safety, the flight deck represents a high priority along with the ladders connecting the decks. Security and safety measures developed for these areas should be able to be linked to future tour phases. The full tour length which opened to the public on January 3, 1976, is approximately one-half mile. In the subsequent sections specific recommendations will be made for securing or providing better safety conditions for these high priority areas.

CONSTRAINTS

Prior to the development of a security operations plan, it was necessary to analyze the profile of the anticipated users and investigate the currently operational security plan. This information will yield an identification of system and people constraints to the implementation of a needs responsive security plan.

User Profile - Previous documentation identifies the regions of the country from which the basic visitor groups will originate. However, none of the existing documentation identifies the socioeconomic characteristics of the anticipated visitors. From a security point of view, the characteristics of the users is as important as the number of users.

Based upon research of other museum facilities and past experience in visitor profile analyses for recreation facilities, several basic assumptions have been made regarding the socioeconomic characteristics of the visitor population. These are as follows:

1. The largest single visitor group will be families with a middle income classification;
2. Veterans' families are anticipated to comprise a large percentage of the users;
3. School children tours will comprise a high percentage of off-peak visitations, originating from the South Carolina market area;
4. Since an admission charge will be levied, some lower socioeconomic groups will be eliminated from visitation.

Basically, the average visitor to the shop is anticipated to be a middle income adult. This user profile does not require considerable investment in security measures. However, a substantial user group will be school-age children, predominantly between 10 and 16 years of age. While these children will be

supervised, the nature of the planned tour is such that it does not offer consistent opportunities for parental or supervisory control. Special security precautions will be necessary for this user group.

In addition to the visitors to the naval museum, several other users will be assigned or located on board the carrier. These groups require specific attention to safety and security measures.

The first such group is the staff and crew of the ship which includes repairmen, electricians, and machinists. While these on-board user groups are a part of the ship's operation, some attention to safety deriving from the nature of their purpose on board should be considered. Certain areas of the ship where these user groups will be working will be exposed to the general public. In these instances, it will be necessary to invoke special safety precautions.

The staff offices for the Patriots Point Authority are now located on board the carrier. These spaces will not be accessible to the touring public, but should be available for special purpose visitations. The primary security needs of this area are relative to protection of the space from unwanted entry by tourists.

In addition to the Patriots Point offices, the Yorktown Association houses its national offices on board the carrier. These offices are located in conjunction with the Ward Room area of the ship and require special attention to security measures for the protection of the memorabilia.

As the ship expands internally, other special interest groups will locate on board and will require specific security measures. All security planning should be modular in concept so that expansion is achievable with minimal expense and disruption to routine operations.

Existing Security Force - Prior to the undertaking of this study, the Authority had previously employed seven security personnel and has added five additional since the study began. Therefore, for the first year of operations, it has been assumed that the existing twelve-man staff will form the security manpower component.

Currently, the Chief Security Officer is on duty from 8:00 to 4:00 p.m. during which time three other security officers are on duty. Each of the two eight-hour shifts has two men each, bringing the total shift component to eight personnel, including the Chief of Security Officer. On weekends four security officers are employed during the operational hours. Prior to opening, the primary role of the security officers had been to provide surveillance during the construction period. Now operational, however, this staff (during the daylight hours) provides tour information services as well as surveillance service.

During both the daylight and nocturnal shifts, the security crew conducts both roving and stationary patrol. The central base of operation is the Chief of Security's office, which was initially located on the hangar deck. From this

office one-way communication with roving security officers was maintained through the ship's public address system. Within the Chief of Security's quarters a telephone with one outside line was maintained and is currently in place in the new security headquarters on the Hangar Deck mezzanine level. This allows the security force the only link to local law enforcement or emergency medical services. At the time of this report, the one-way communications system operates from a point near the entrance on the Hangar Deck.

The initial security plan implemented by the Authority for the opening months utilized existing staff for support of the two full-time security officers on duty during the ship's opening time. One staff position was assigned to the Flight Deck with another staff-filled position on the Hangar Deck where a two-three hour rotating policy was employed. While this approach helped satisfy the initial security staff shortage, it was not a satisfactory administrative measure in that the Chief of Security had little operational authority in establishing time schedules or areas of responsibility for the non-security force personnel.

A permanent safety officer is assigned to the Sick Bay area, who also provides surveillance services in this position. In the Ward Room area, the Yorktown Association has employed a fulltime (five days a week) secretary to act as an information agent and carry out the duties as secretary to the Association. The original security plan required the secretary to provide some surveillance

services in addition to the information duties. However, this has not proven effective and cannot be considered as a component of the security operational plan.

The preceding has described the manpower component of the existing security system. Additional information will be provided in the following chapter which describes the manpower operational plan. However, to continue with a definition of constraints to optimum security operations, the following is a description of the internal and external communications system.

Presently, only two communication systems are available to the Yorktown security force. The first, a paging system, allows only one-way communication and is totally inadequate for security type use. The second system is the external telephone which, again, is not an adequate security communications system. Although the ship, when in operation, was equipped with a point-to-point intercommunications system, this is no longer operative. However, the results of an inspection of the system indicated that the system could be reactivated.

Summary of Security System Needs

The initial investigation effort defined several system needs which are necessary to develop a balanced and responsive security system. These are summarized as follows:

1. The security force requires both roving and stationed officers;
2. The conning tower represents one of the most difficult portions of the ship to surveil;
3. Visitor safety is as critical an issue as securing the ship's artifacts;
4. Utilizing ship's staff (non-security) can, at best, be a short-term measure to meet emergency manpower needs;
5. Some type of point-to-point, person-to-person, and ship-to-shore communication system is the highest security priority.

In the following chapter the study efforts will focus upon the development of a manpower operational plan which will be designed to meet the need for surveillance in various areas of the ship.

A major component of the Yorktown security plan will be the manpower. Although electronic systems will be recommended, the nucleus of the entire security system will be the trained security force. The physical design of the ship's tour area and the budget constraints combine to prevent sophisticated surveillance systems from becoming viable alternatives. The emphasis, therefore, will rest with a people-oriented security plan. This chapter will illustrate and define several of the major manpower considerations.

PERSONNEL REQUIREMENTS

The Authority funded the initial security force through Law Enforcement Assistance Administration aid. However, in the fiscal year commencing July 1, 1976, the manpower component of the security system will become a financial responsibility of the Authority. With these financial constraints apparent, the following paragraphs present an analysis of essential manpower requirements.

Manpower Needs - As previously reported, the Authority committed an initial full-time security staff of eight for the January 3, 1976 opening. In addition to these eight security positions, the safety officer, two staff support positions, a Yorktown Association position, and one weekend position were

available for security assignment by the opening. This brought the total Authority recommended security manpower component to 13 personnel for three shifts.

Since the opening date, the permanent security staff strength has been increased to eleven (11), excluding the Chief Security Officer. This staff component consists of three officers on duty during the hours of operation, 8 a.m. to 4 p.m., in addition to the Chief Security Officer; and two officers on duty for each of the two remaining shifts. During the active weekend hours, four security officers are on duty during the ship's viewing hours. Figure 2 illustrates the existing daytime operational deployment of the security officers. One stationed position is located at the quarter-deck which is the main entrance. Of the remaining officers, one is on roving patrol of the Second Deck with primary emphasis upon the ward room and chairman's room. The third officer roves between the Hangar Deck, Flight Deck, and the Bridge. This is a most difficult patrol as the Bridge is accessible only through restricted movement via narrow ship's ladders.

The following is a summary of the existing positions by deck for the daytime (second shift) security and related personnel:

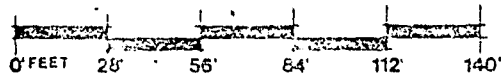
Second Deck

- (1) Sick Bay - Safety Officer
- (1) Ward Room - Yorktown Association Secretary
- (1) Roving Officer - Full-time officer

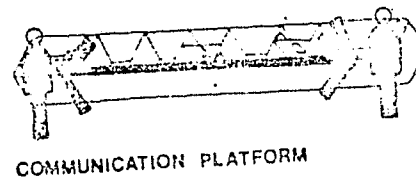
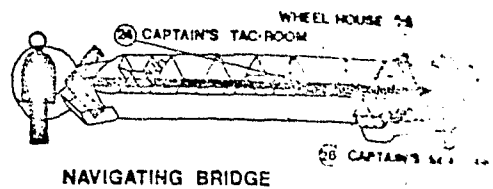
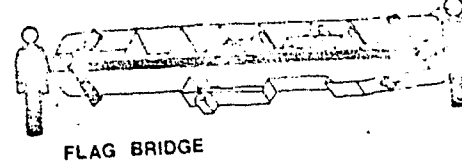
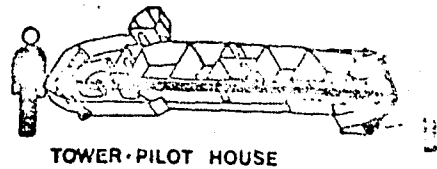
Hangar Deck





- (1) Entry/Exit Position - Full-time officer

USS YORKTOWN
EXISTING DEPLOYMENT
OF SECURITY OFFICERS
 (day-time shift)



Buford Goff & Associates
 Stephen Carter & Associates



-  STATIONED GUARD #1
-  ROVING GUARD #2
-  ROVING GUARD #3
-  CHIEF SECURITY OFFICER
(located at mezzanine level)

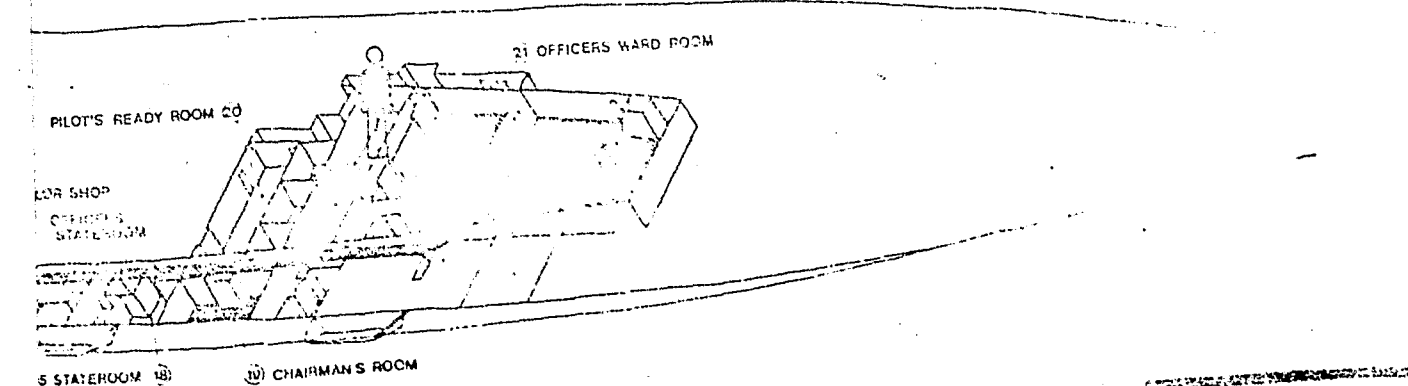
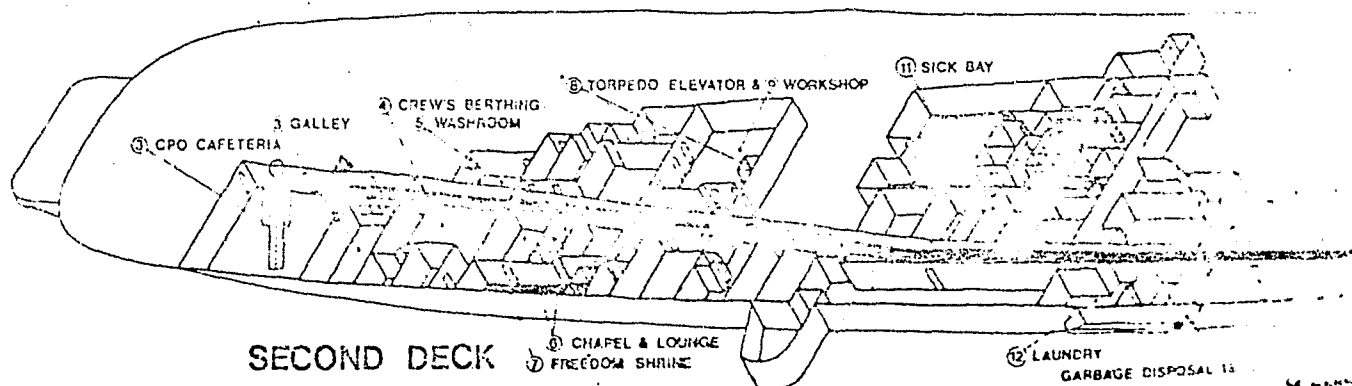
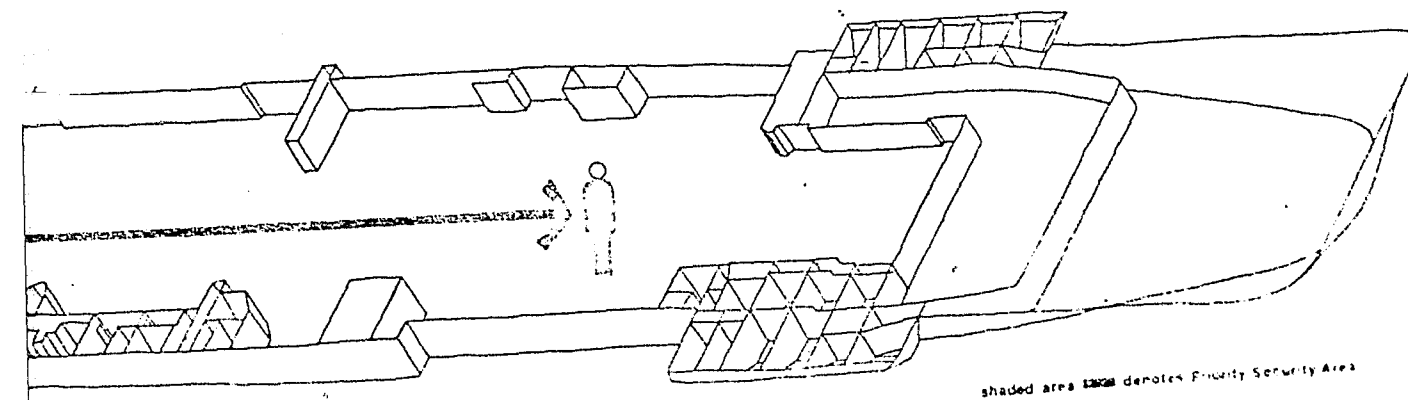
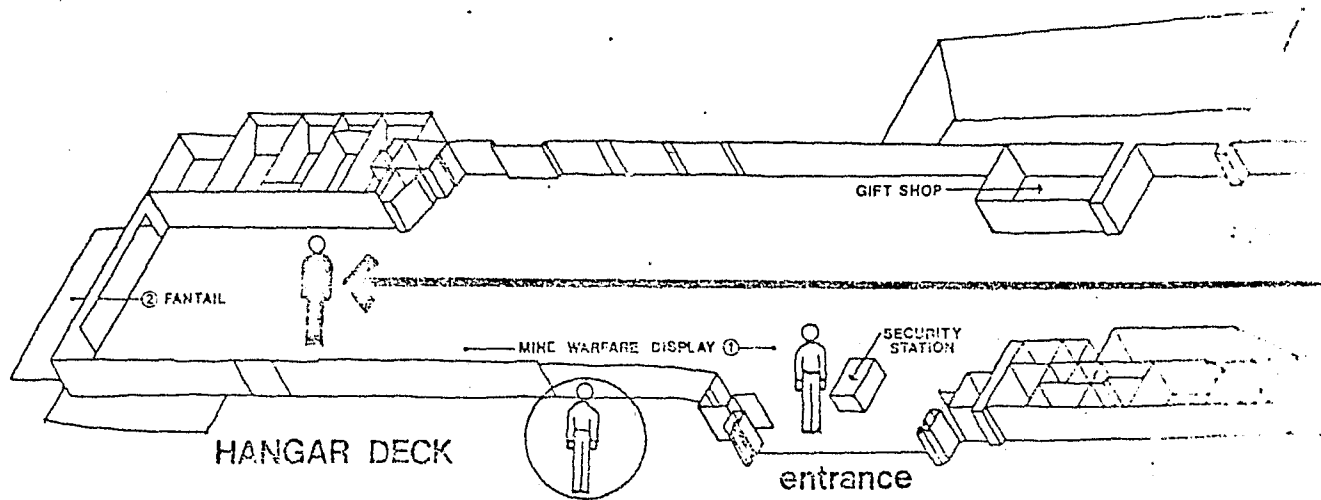
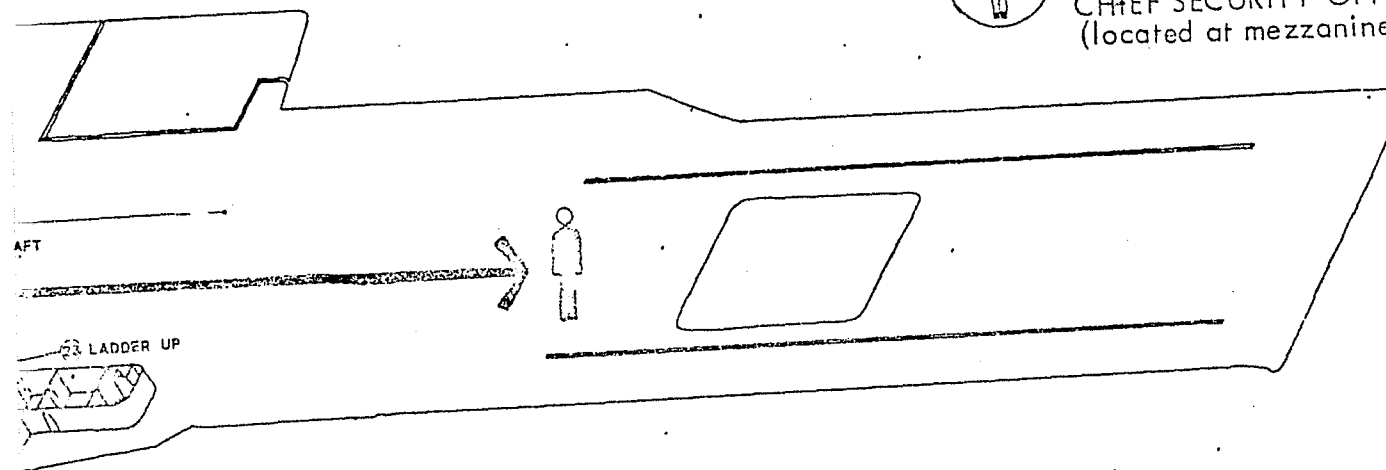
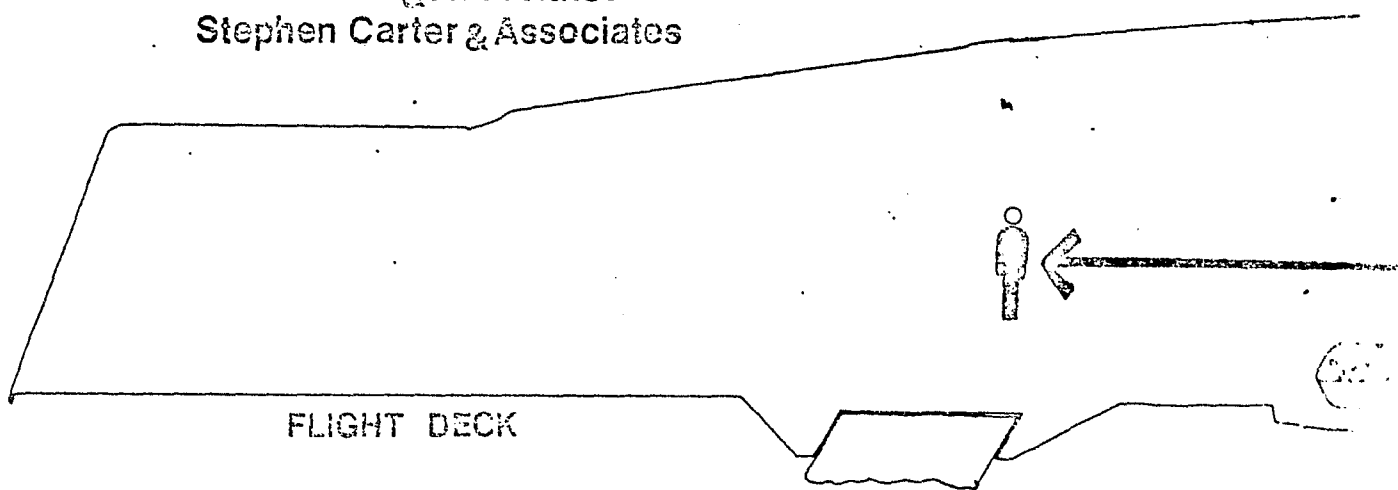


FIG. 2

Flight Deck and Bridge Area

(1) Roving Officer - Full-time officer

General

(1) Chief Security Officer to provide administrative control

The above summary requires four full-time security positions and two support positions during the opening hours, five days per week. Due to increased weekday traffic, an additional roving officer has been assigned to the Bridge Area and Flight Deck. In addition to these six total second shift personnel, the first and third shifts will require two full-time positions each, bringing the total seven-day a week operational component to 12 security positions and two support positions. This component accounts for sick leave and vacation time.

Basic guidelines for determining security personnel per square feet of exhibition suggest the following:

High Value Areas	-	1 guard per 3,000 sq. ft.
Medium to Low Value Areas	-	1 guard per 7,000 sq. ft.

Since the Yorktown is a unique exhibition situation, for the purpose of this analysis a ratio of 1:5,000 square feet was used to determine security needs. The ratio yielded a manpower component of 19. By using the ratio of 1:7,000 square feet, a 14-manpower component resulted. The 1:7,000 ratio more closely approximates the 1:7,900 which exists, considering the 12 full-time security staff. However, if the daytime (second shift) staff component is used to determine the ratio, the relationship increases to a very high one officer per 24,000 square feet.

In a typical museum operation this high ratio would indicate too few security staff, but since the Hangar and Flight Decks are essentially open spaces at the present time, this ratio is not nearly as extreme. However, a potential problem area exists in the Flight Deck and Bridge Area where presently only one roving security officer is assigned.

Future manpower needs will depend upon the volume of additional tour area which is opened and the addition of high value display objects. This, however, can conceivably be accommodated through tour guide staff rather than trained security personnel. Basically, with the addition of a position assigned exclusively to the Flight Deck and a possible additional stationed officer in the Ward and Chairman's Room area, the near and long term security staff needs for the Yorktown have been met. With these additional positions, the recommended manpower positions by shift would be:

First Shift	2 Full-time positions
Second Shift	6 Full-time positions (including Chief Security Officer)
Third Shift	2 Full-time positions
Back-up	4 positions
TOTAL	14 positions

Budget Constraints - An operating budget of \$273,000 for fiscal year 1975-76 was established by the Authority. Of this amount, \$253,000 was allocated for salaries, which included approximately \$64,000 for the initial eight security positions. Under the job description developed for security personnel,

\$10,000 is the ceiling amount for the Chief Security Officer. At the present time a grant from the Law Enforcement Assistance Administration has absorbed the 1975-76 security personnel costs, but after FY 75-76, the full financial burden will rest with the Authority.

Of the original \$3,000,000 bond issue to capitalize the Authority, approximately \$75,000 has been allocated for use as a security system. This will be capital intensive as salaries and operating expenses are included in the \$253,000 1975-76 budget.

The feasibility report prepared in March, 1974 by LBC&W Consultants projected a 1976 patronage of 300,000, yielding a gross revenue of \$900,000. As of this report date, the visitation has just exceeded 100,000 with the primary peak season yet to come. Assuming that the projected attendance is obtained by the close of 1976, then revenues approximating the earlier estimate may be achieved. (This will not be fully realized since the price of admission has averaged lower than \$3.00 per person). Operating costs in the first year were projected to be \$400,000, which allows for the amortization of the \$3.3 million capital indebtedness. Approximately 62 percent of this operating income is projected to be utilized for salaries.

Although revenue is projected to exceed expenses, the revenue in excess of costs is required to retire the capital debt; therefore, every efficiency must

be exercised in minimizing excess staff positions. A more detailed discussion of the manpower cost alternatives is presented in Chapter IV.

Hiring Practices - Since the Authority was created by the State, the hiring practices must conform to State descriptions. In the instance of security positions, the initial employment policy has placed emphasis upon giving veterans first consideration. Beyond that, previous security or law enforcement experience has been a prerequisite for employment.

South Carolina law now requires State certification of security and law enforcement personnel who are armed. Any security force member who is armed and may be in a position of restraining or confining the general public must be bonded. Due to the increasing number of applicants for the Criminal Justice Academy in Columbia where certification is obtained, Patriots Point currently has only two of the twelve security guards certified. It may, however, be possible to conduct "in-house" training programs by using the two certified officers and other local law enforcement agencies. While this may not be as intensive as the Academy training, it will provide the new officers with a general exposure to security procedures and practices. All employment policies must be in adherence with the Civil Rights Act and an approved Affirmative Action plan.

Experience has shown that security personnel are often "job-shoppers," meaning that the attrition rate is often high. Job security is an important consideration which relates to the direct salary, fringe benefits, and other perquisites

which can be offered a prospective employee. The attraction of qualified personnel is achievable only through a proper combination of these three basic remuneration techniques. The tendency with security operations for public and private institutions has been to accept lower professional qualifications in lieu of sheer quantity of manpower. In the long run, this is a dangerous practice and is certainly not recommended as an employment policy for the Authority.

Since the initial hiring of security staff, two officers have left for other higher paying positions. This, once again, emphasizes the "job shopping" tendencies among security personnel and stresses the need for providing career advancement opportunities as well as financial benefits. Since pay raises are controlled by State personnel practices, the Authority will have to explore "in-house" perquisites such as educational leave, improved work environments including a staff lounge, generous uniform supply and replacement schedule, and retirement plans, among others.

EXTERNAL LINKAGES

As an operational naval vessel, the USS Yorktown was a self-contained waterborne community. However, as a naval museum, the facility depends, to a large extent, upon "external" systems and services to ensure the daily operation of the facility. One of these external linkages, while not a daily component but a very significant one, is local law enforcement agencies.

Relationship to Local Law Enforcement - The internal security needs of the carrier must be met by the security staff. However, occasions may arise when supplemental assistance will be required and, therefore, the relationship to local law enforcement agencies becomes increasingly important.

Interviews were held with the Mt. Pleasant Police Department concerning their support role in a comprehensive security plan for Patriots Point. Since the land area known as Patriots Point has been recently annexed, the patrol units now regularly check the ship's environs. Their jurisdiction, however, will be basically limited to the grounds and only in emergency response situations will the Mt. Pleasant Police actually board the carrier.

Presently, the Mt. Pleasant Police Department checks the Patriots Point area approximately twice each shift, totaling six times in a 24-hour period. In addition to this coverage, the Charleston County Sheriff's Department patrols the site on a periodic, but not regularly scheduled basis.

Currently, a need does not exist for participation from the South Carolina Highway Patrol in traffic control. However, after the museum becomes fully operational, it is likely that peak periods will require some support along U.S. 17 to accommodate south-bound left turn movements into the site, and the same movement leaving the site onto U.S. 17 South.

The vital linkage to local law enforcement agencies must be developed through a communications network which allows the internal Yorktown security force access to local law enforcement channels. This problem is discussed at length in the following chapter.

MANPOWER OPERATIONS PLAN

In the first working memorandum presented to the Authority on December 22, 1975, a manpower allocations plan was suggested. Prior to this memorandum the Chief Security Officer had developed a patrol plan. The two were combined to meet the safety and security needs of the opening January 3, 1976. Since that time, the consultant team has had opportunity to evaluate the initial manpower operations plan in effect and to propose adjustments. For the most part, the initial plan is responsive to the security needs. - The major adjustment has been the employment of four additional full-time security personnel to replace the non-security staff who were acting as support. The use of non-security staff was intended as a short-term measure to meet the opening months' demands.

The following is a discussion of the components of the manpower operations plan.

Operational Plan - With the information derived from the manpower needs analyses, an operational plan can be developed. As previously stressed, this plan must be modular in concept to accommodate additional four areas as they

are "brought on line" and flexible enough to be altered as the first several months of operation require changes in the staffing or operation. Several of the key components of the Security Operations Plan are summarized as follows:

1. Administration - The day-to-day direction of the Security Operations Plan (SOP) should be the full responsibility of the Chief Security Officer. All decisions concerning the deployment of staff assigned to security, the use of security oriented equipment, and the confrontation of security infractions by visitors should be made by the Chief Security Officer. He should report directly to the Chief of Operations for the Authority. It is recommended that the security force be organized in teams and that as leadership ability allows, the team captains should rotate. However, in the initial phase of operation, a shift captain should be designated and maintained. Periodic meetings between the Chief and the captains should be held to discuss operational and manpower needs. Since only two of the twelve officers are commissioned by the Academy, these officers (one is the Chief) should work the second and one the third shift so that an armed guard can be available if required. The Authority should send at least one officer to the Academy as soon as possible so that each shift can contain at least one commissioned officer.
2. Training - Since only two of the current security staff have been certified by the State, every effort should be made to get the remaining ten full-time staff included in the Criminal Justice Academy program at the earliest convenience. Due to the waiting list for admission, a substantial delay may result. The Authority should petition the Academy to allow former graduates to offer training programs for the non-certified staff members and grant these staff personnel interim certification. The Authority should investigate the in-house training and refresher courses offered by local law enforcement agencies as a regular training program for the security force. Periodic refresher and update courses should be given by the Authority staff with assistance from the local agencies. Job advancement should be related to performance and participation in regular training sessions.

3. Conduct - All security officers should be uniformed, with a shoulder patch indicating the security force. The Authority should provide the uniforms, patches, and essential personal security equipment. A cleaning and replacement allowance should be provided. Currently, the eleven duty officers are provided complete uniforms.

The display of arms is discouraged at any time during the public hours. Since only two of the twelve security personnel are currently licensed to display arms, this does not present a problem. However, in the future when more of the force are commissioned, the public display of arms should still be avoided. During the first and third shifts arms could be carried if the threat of criminal activity became apparent.

An internal policy and procedure manual establishes the operational policies of the security force. A review of this document and the accompanying communication forms indicated that the appropriate procedures for daily administration are well established.

4. Critical Areas - The operational plan has several key areas which determine the degree, type, and intensity of surveillance. These are summarized as follows:

a. Parking Area - Surveillance of this area should remain primarily an observation function. Gates should be installed at the main entrance which could be secured after closing hours. Any law enforcement patrolling of the site should be accomplished through the Mt. Pleasant and County operations.

b. Ticket Booth - Accumulated cash at the ticket booth should be collected at regular (but not scheduled) intervals by a security officer and transported to the administrative offices. It is not recommended that the short-term security plan include an officer stationed at the booth, but that in peak use periods a regular patrol pattern be established which includes the ticket booth.

c. Main Entrance - A security station has been located at the Quarter Deck which will become the main security communications center. One officer will be assigned to this area 24 hours a day.

d. Roving Patrol - The primary surveillance control for the ship will be maintained through the roving patrol. Critical areas during public hours are on the Bridge and Second Deck. During the evening hours the Flight Deck patrol becomes more important to discourage vandalism. The Flight Deck also is an important safety area within which special surveillance must be conducted to ensure visitor safety.

e. Memorabilia, Artifacts, and Equipment - The two areas containing the higher value displays are the Ward Room and the Chairman's Room. While the current security force does not include an officer stationed in either of these locations, future manpower additions should accommodate an additional officer on the Second Level to oversee the Ward Room and Chairman's Room. The remainder of the ship is dedicated to equipment displays which (excluding airplanes and mines) are not generally considered high value, but are nonetheless vandal-prone for "souvenir hunters." The Bridge area with the communications equipment is particularly prone to this type of vandalism. While not the optimum solution, roving patrols and close observation upon egress from the ship is the most cost effective means of control.

5. Support - It should be the responsibility of the Chief Security Officer to develop a communications and support plan with the Mt. Pleasant Police Department, the Charleston County Sheriff's Office, and the State Highway Patrol. This plan should include procedures for calls and response, holding and arrest, traffic control, and training. It is suggested that the Mt. Pleasant Police Department act as the priority support agency.

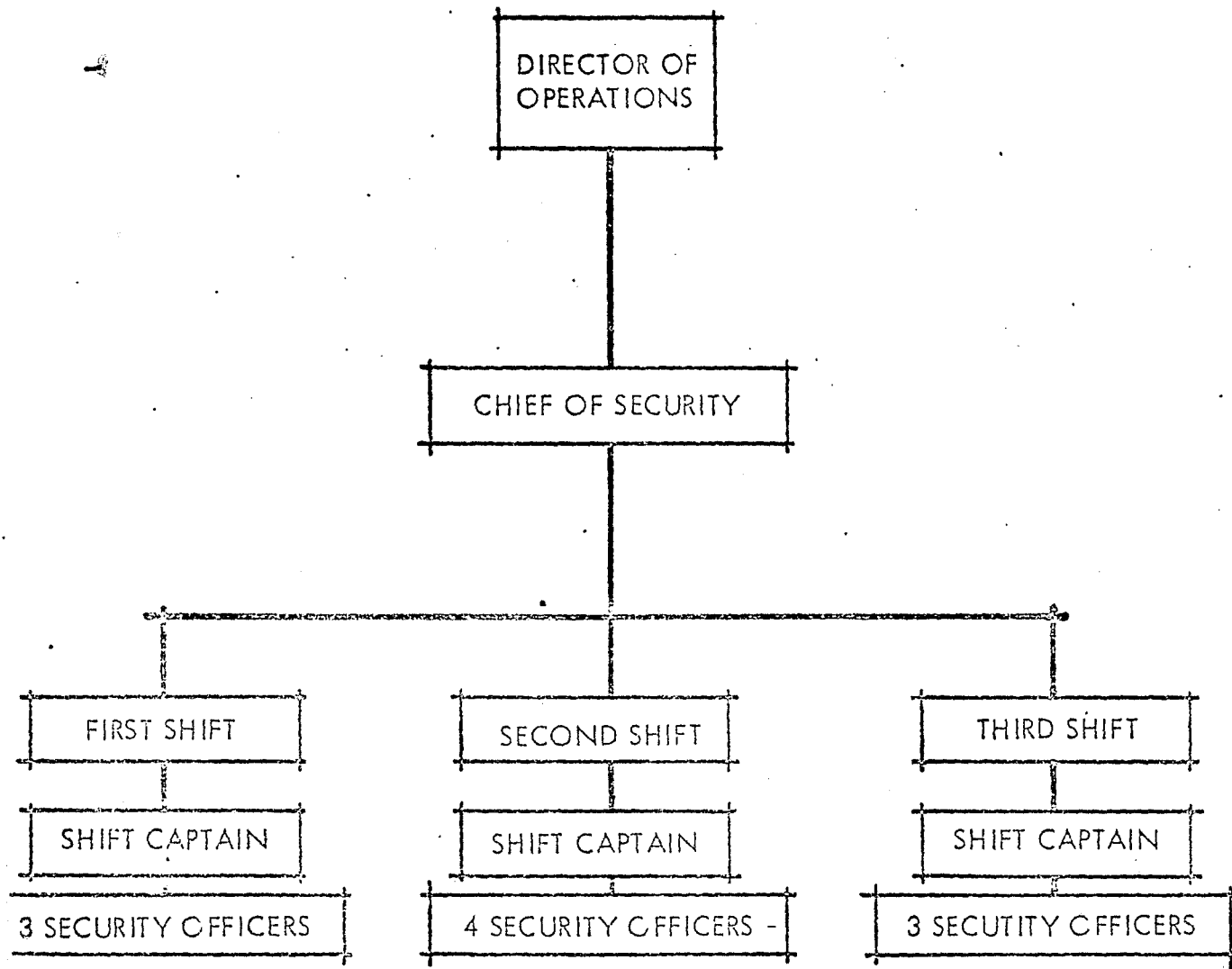
SUMMARY OF THE MANPOWER OPERATIONS PLAN

Although the final security operations plan will include both the personnel and communications components, this chapter has dealt with the allocation of manpower towards the accomplishment of the security and safety objectives. Summarizing these manpower components, the key conclusions include:

1. The current 12-man security force is adequate to meet the present operational needs. The optimum operational manpower component would be two additional full-time staff, bringing the security force to 14.
2. The additional manpower should be allocated to second shift operations primarily on the Second Deck and Bridge Area. The Second Deck officer should alternate between the Ticket Booth and the Second Deck. A stationed position at the Ticket Booth is not seen as a priority as long as sales receipts are removed from the booth on a regular basis.
3. Linkages to the existing local law enforcement agencies are important and should be accomplished through radio as well as telephone equipment. These linkages will be discussed in depth in Chapter IV.
4. The administrative structure of the security force should be such to create positions of greater responsibility and, therefore, career advancement opportunities. Each shift should have a supervisor or captain who in turn reports to the Chief Security Officer. Figure 3 illustrates the proposed organizational structure. The administrative structure includes the following positions:

- (1) Chief Security Officer
- (4) Shift Captains (to include weekend operations)
- (9) Security Officers

A Shift Captain should be on duty during each shift, one additional security officer during the first and third shifts, three security officers on the second shift weekdays, and a fourth on weekends.

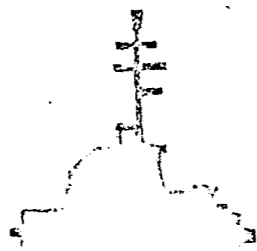


SECURITY FORCE ADMINISTRATIVE STRUCTURE

FIG. 3

SC&a

3 Security Communications Plan



The tasks during this phase include an in depth analysis of security needs as related to physical systems. The following systems were evaluated and recommendations are made concerning each system.

1. Public Address and Paging
2. Intercom
3. Radio
4. Closed Circuit Television
5. Detection and Monitoring
6. Telephone
7. Area Lighting

Where applicable, evaluations and recommendations include considerations for integrating the systems for the Yorktown into a total system for the Patriots Point Facility. It is recommended that the master development plan for the Patriots Point Facility include a central security station for the entire complex. This station would serve the primary function of centralized control for security activities.

For each system identified, the following subjects or items are addressed:

1. System Function - identify need for the particular system and its role in the security plan.
2. Existing Capabilities - identify existing systems or methods used to effect the results of the specific proposed system.
3. Proposed System - functional description of the system and its operational characteristics. Where applicable, phased implementation is addressed.
4. Budgetary Costs - estimate of cost for each system.
5. Equipment Specifications - for systems where hardware can be specifically identified, specifications are included from which equipment can be purchased.

In the following pages each system investigated is analyzed as to its suitability and adaption to the needs represented by the USS Yorktown. The recommended physical systems will, in Chapter IV, be combined with the manpower recommendations to form a comprehensive security operations plan.

Public Address and Paging System

System Function - The primary function of a public address and paging system is for announcements concerning special programming, closed times, location of visitors, and other needs which require disbursement of verbal messages throughout the entire ship or complex.

Initially, paging is required only from selected locations on the Yorktown; however, provisions should be included to interface the shipboard system with a Patriots Point Facility paging system.

Existing Capabilities - A general shipboard announcing system, type IMC, is operable and is being employed to perform the functions described in the previous paragraph. Several stations have been activated from which announcements can be made. The primary station is located on the hangar deck in the general vicinity of the security building.

No provisions have been made to include this system as a component of a total facility paging system.

Proposed System - It is proposed that the IMC system remain in use in its present configuration for paging on board the Yorktown. It is recommended, however, that the transmit station be relocated from its present wall mount near the elevator entrance to the security station.

In order to provide total paging throughout the Patriots Point Facility, it is proposed for future planning that a centralized dial access system be developed for the entire complex. A more detailed discussion of this type system is included in the "Intercom System" section of this report.

Basically, each ship or building could have its own paging system from which local announcements could be made. These individual systems would be interconnected through the dial access switch such that

Yorktown security station. A system of this type will provide the following basic services which are considered to be essential to the development of a coordinated security system:

1. Provide visitors with direct access to the security station from selected points on the Yorktown.
2. Provide security and staff personnel with direct access to the security station from the same points identified for visitor call-in and additional selected stations accessible only by security and staff personnel.
3. Provide an intercom link between a central security station and the Yorktown.

Visitors should be provided with a simple means to contact the security station from points throughout the ship. Requests by visitors for security and medical services are typical uses of this system. It would also provide visitors with a means to respond when announcements are made on the paging system concerning location of persons.

As new sections of the Yorktown are opened, especially in the lower deck areas, portable radio communications between security personnel and the security station may become more difficult and the intercom system will provide the basic two-way voice communication link on the ship. Refer to the section of this Chapter addressing the radio communication system for further details on the capabilities of the proposed radio system.

the following functions could be performed at a central security station or other selected location within the Patriots Point Facility.

1. Make announcements on an all-call basis to each ship or building within the complex.
2. Make announcements to a selected ship or building.
3. Make announcements on a group-call basis such as to all ships.

Budgetary Costs - The only costs associated with the recommendations for effecting the public address and paging system on the Yorktown are those of relocating the transmit station to the Yorktown security station. It is proposed that this work be performed by the staff electrician.

Costs for integrating this system into the proposed dial access system are addressed in the "Intercom System" section of this report.

Equipment Specifications - No additional equipments are required initially to implement the public address and paging system. Equipments will be required to interface the IMC system to the proposed centralized dial access system.

Intercom System

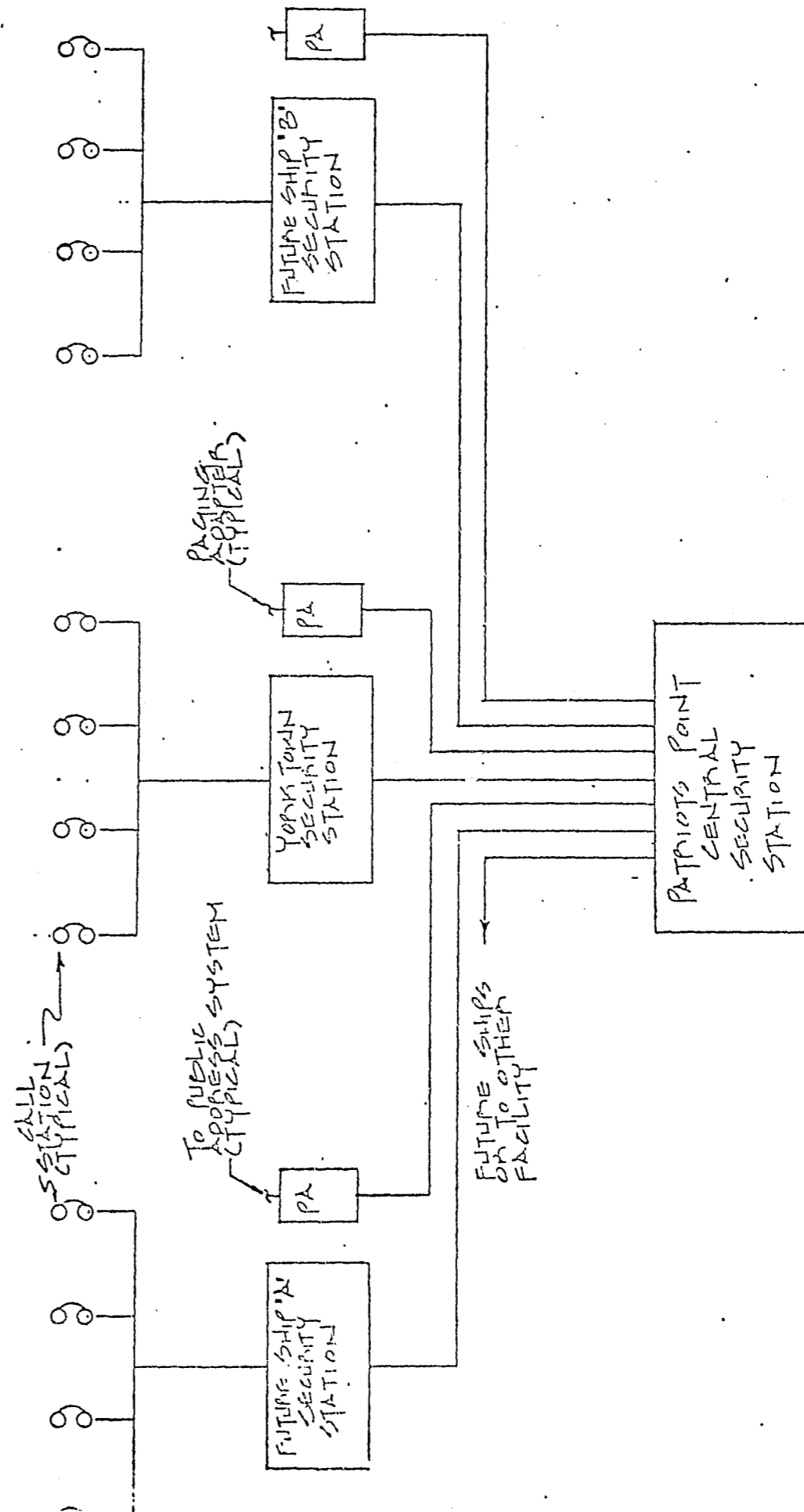
System Function - A basic need exists to provide a voice communications link between selected points throughout the Yorktown and the

As the Patriots Point Facility develops, the need exists to establish an intercom link between the central security station and each satellite system proposed in this report.

Existing Capabilities - There are no shipboard intercom facilities activated to provide the functions as described in the previous paragraph except for a sound powered system between the security station and the ticket booth. A review of the shipboard intercom systems reveals that the cost of activating and modifying the existing systems would be in excess of the system as proposed in this report and would not provide the level of services deemed necessary.

Proposed System - It is proposed that an intercom system be developed on the Yorktown to serve the immediate security needs with provisions for interconnecting the system to a master facilities system as other ships and facilities are added to the complex.

Figure 4 is an Intercom System Master Plan functional diagram showing the basic system components. A separate intercom system is proposed for each ship or facility such as the museum. Each satellite or subsystem would be connected to the central security station.



MASTER PLAN - INTERCOM SYSTEM

Figure 4

Each subsystem, such as would be installed on the Yorktown, would consist of a submaster control station located in the security station of the particular ship. Remote call stations would be placed at selected points throughout the ship. Locations would be determined by tour route and general considerations with regard to accessibility by visitors. Call stations would be located in areas such as the office of the Chief of Security, gift shop, key administrative offices, and other areas where an access line to the security station would enhance security operations.

Basic system components and their interrelationship are shown in Figure 5 titled "Basic Intercom System."

A call station is comprised of a telephone type handset with a cradle hookswitch. Call stations along the tour route will be housed in a wall mounted enclosure pointed red and labeled "Emergency Telephone." In areas such as the gift shop, office of Chief of Security, and ticket booth, the call station would consist only of the handset and hookswitch.

The submaster control station located in the security building would consist of a selector switch with annunciator lamps and audible chime signal, common power supply, and a telephone handset with associated switch.

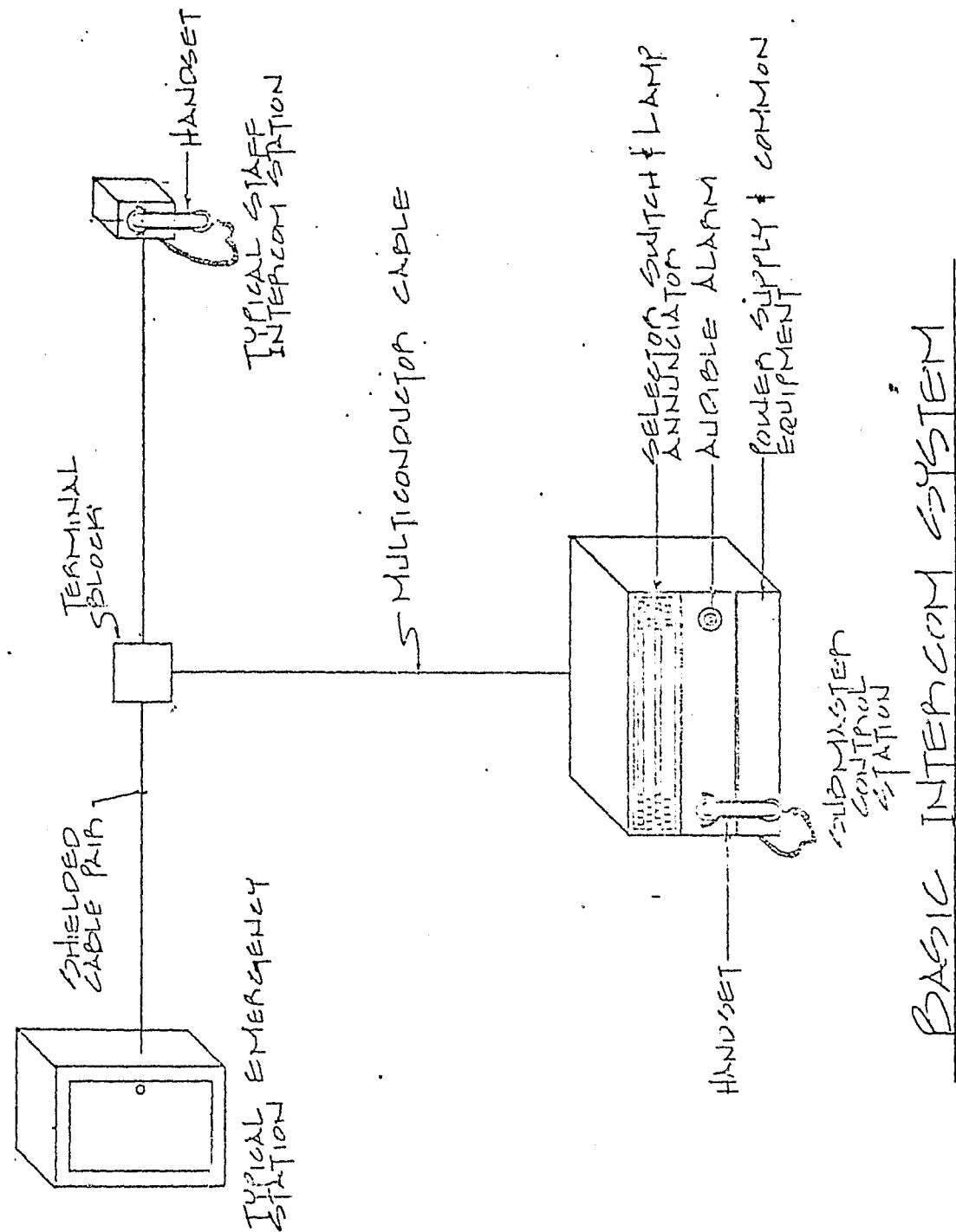


Figure 5

Each call station would be connected directly to a selector switch position by a dedicated cable so that each call station has its own identity at the security office. This equipment would be enclosed in a wall mounted cabinet.

The system operation would be as follows:

1. Anyone desiring contact with the security station on the ship would lift the handset at a call station.
2. Lifting of the handset would sound an audible alarm in the security station and light a lamp indicating the specific station from which the call has been initiated. This automatically provides the security officer with specific information concerning the location of the caller.
3. By means of a selector switch, the security officer answers the call.
4. Should the caller desire communication with another call station on the ship, the officer at the submaster can interconnect two or more stations using the selector switch. Generally, it would be necessary for the security officer at the submaster station to direct the third or called party to a call station by means of the shipboard page system described in a previous section of this report.
5. Upon completion of a call, the officer at the submaster returns all switches to a normal position.

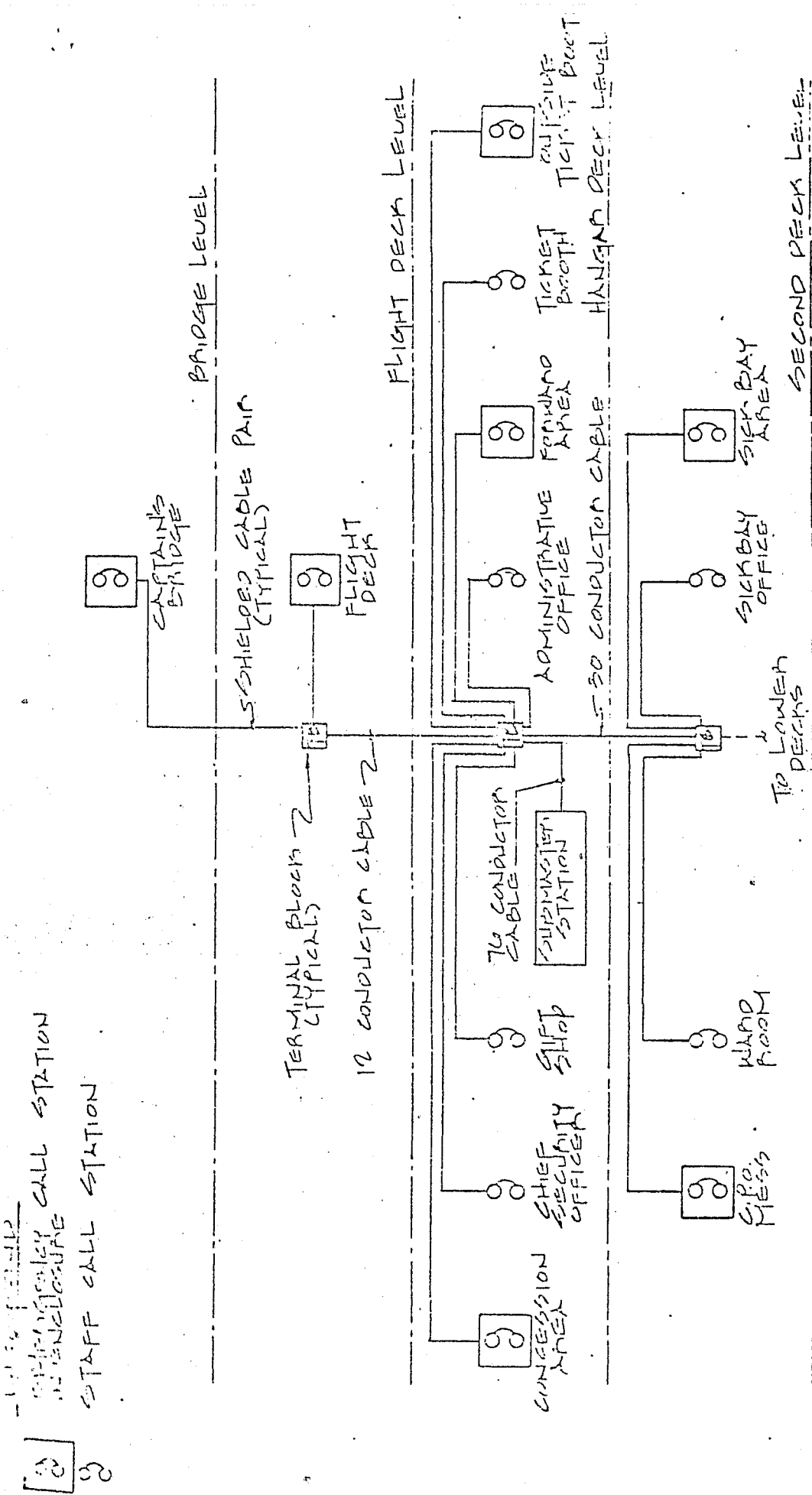
The subsystem as described provides the basic intercom needs for the Yorktown and is a complete operable system within itself. As the entire complex develops and several submaster systems are implemented, it is proposed that these systems be interconnected through a dial access switch.

To accomplish interconnections between submaster stations, a central switch facility would be installed at the central security station and each subsystem connected to the switch by a single telephone type cable pair. At the submaster station this pair would terminate on a bus of the selector switch. Each submaster station would function as a call station for the central dial access system. A security officer at a submaster station would position the switch on the panel to select the central security station and remove the handset from its hookswitch. This initiates a call to the master security station and an audible and visual indication is made at the master station.

The security officer at the master station receives the call and initiates action as required. Should the security officer at the submaster station desire a connection with another submaster, the officer at the master station performs the interconnection via a dial type telephone.

A system as described provides intercom capabilities between key points within the security network with interfacility calls being under the control of the central security station.

Upon development of the central security station and the dial access system, features should be included to facilitate paging from the master security to one or more satellite paging systems. For example,



SIGNAL RISER DIAGRAM
YORKTOWN INTERCOM SYSTEM

Figure 6

if a general announcement is to be made to all stations, the officer at the master station would dial, via the telephone type intercom station, a code which interconnects all paging systems to the central master station. If, however, an announcement is to be addressed only to a specific satellite system such as the Yorktown, a unique dial code would interconnect the master station and the selected satellite paging system.

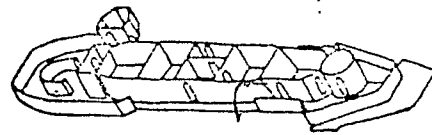
Paging features from the dial access system are implemented by the addition of dial access paging adapters at each satellite system to interface the existing paging system to the master station. Also required is an additional telephone type cable between the master station and satellite paging system.

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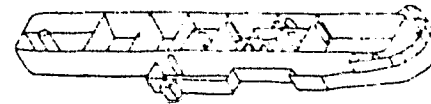
Figure 6 is a riser diagram showing the proposed intercom system for the Yorktown and Figure 7 identifies the location of these stations along the tour route. The submaster station would be located in the

USS YORKTOWN

LOCATION OF INTERCOM SYSTEM



TOWER-PILOT HOUSE



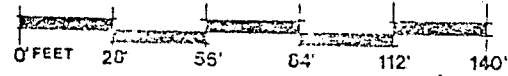
FLAG BRIDGE



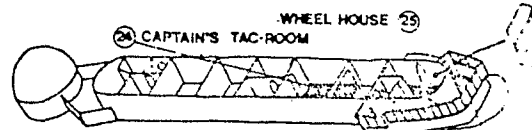
INTERCOM



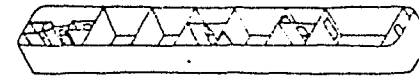
PUBLIC ACCESS TO INTERCOM



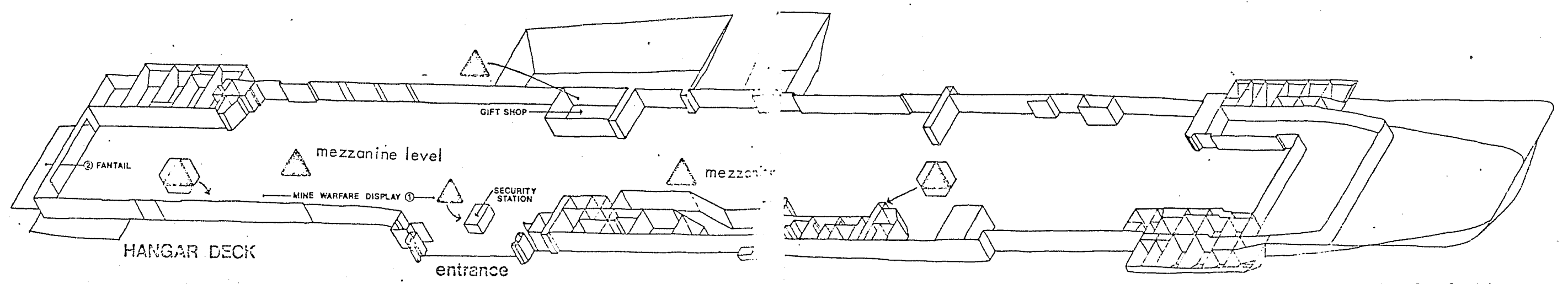
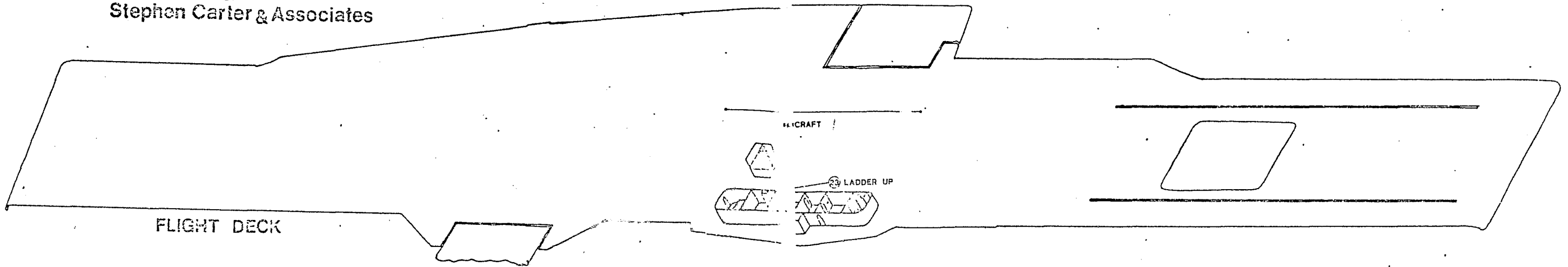
Buford Goff & Associates
Stephen Carter & Associates



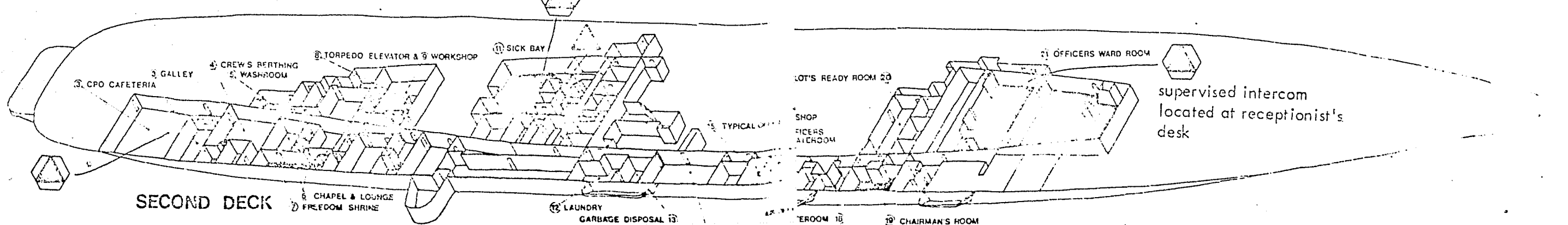
NAVIGATING BRIDGE



COMMUNICATION PLATFORM



shaded area denotes Priority Security Area



security building with remote call stations at the following locations:

1. Captains Bridge
2. Flight Deck - station to be located on flight deck between exit and entrance to bridge.
3. Hangar Deck - locate station in concession stand area at entrance to CPO stairwell.
4. Hangar Deck - locate station in gift shop on wall adjacent to cashier. Station does not require an enclosure.
5. Hangar Deck - locate station in office of Chief Security Officer. Station does not require an enclosure.
6. Hangar Deck - locate station in one of the administrative offices. Station does not require an enclosure.
7. Hangar Deck - locate station in forward area adjacent to entrance to flight deck.
8. Second Deck - locate station in area of CPO mess.
9. Second Deck - locate station in office of sick bay. Station does not require an enclosure.
10. Second Deck - locate station in area outside of sick bay office.
11. Second Deck - locate station in ward room in area adjacent to the attendant.
12. Ticket Booth at Ramp Entrance - locate station within the booth. Station does not require an enclosure.
13. Ticket Booth at Ramp Entrance - locate station on exterior column for access to security station when booth is not manned. This station may be on the same circuit as the station within the booth.

Stations noted above are considered to be the minimum number required to provide adequate coverage of the facility. Additional stations may be added as needs dictate.

The system is easily expandable to include additional stations which will be required as new sections are opened to the public. The basic submaster system proposed is capable of expansion to 25 stations with no additional hardware. Additional expansions beyond this number can be realized by adding an additional 25 channel selector switch at the submaster station, call stations, and interconnecting wiring.

Budgetary Costs - For the proposed Yorktown intercom system shown in Figure 6 this cost estimate will provide a budgetary figure for planning purposes.

It is proposed that installation of the cable and terminal blocks be done by the ship's electrician. This would require installation of a multi-conductor cable for the riser trunk line and individual shielded pair cables between each call station and the riser cable. Splicing of call station conductors to the riser cable would be via punch block terminals located on each level. These terminals would be mounted on a plywood panel located in a space inaccessible by the public.

Upon completion of the cable installation, it is proposed that the supplier of the intercom equipment make all final connections and perform system tests.

Listed below are system elements and associated costs.

1. Submaster Station		
a) Telephone intercom panel	\$ 162.00	
b) 25 position selector switch	206.00	
c) Handset and hookswitch	41.00	
d) Cabinet	45.00	
Total Submaster Station		\$ 454.00
2. Call Stations with Enclosure		
7 @ \$76.00		532.00
3. Call Stations without Enclosure		
6 @ \$41.00		246.00
4. Plywood Backboard - 12"x24"x3/4"		
3 @ \$1.50		4.50
5. Terminal Blocks		
3 @ \$10.00		30.00

6. Cable		
a) 50' - 76 conductor	\$ 75.00	
b) 50' - 30 conductor	10.00	
c) 230' - 12 conductor	32.00	
d) 2300 - shielded pair	115.00	
Total Cable		\$ 232.00
7. System Installation and Test		<u>350.00</u>
Total System Cost		\$ 1,848.00

Future cost to provide a dial access system at the central security station having a capacity of 20 lines with provisions for two simultaneous conversations. This cost does not include the conductors and associated line installation costs. \$ 3,500.00

Equipment Specifications - See Appendix for description and specifications for system components.

Radio System

System Function - The primary function of a radio system for security on the Yorktown and at the Patriots Point Facility is to provide voice communications between security elements regardless of their location within the complex. This function cannot be realized by any of the other systems

proposed. A radio system is considered to be a basic support system for the security force.

The primary functions of a radio communication system on the Yorktown are as follows:

1. Provide radio communications between the security officer located in the security station and an officer at any other point on the ship.
2. Provide a radio link between the security forces at Patriots Point and the supporting municipal and county law enforcement agencies. These agencies are Mount Pleasant, City of Charleston, and Charleston County Police Departments.
3. Provide radio communications between all elements of the security force as other facilities are added.

Existing Capabilities - Presently, no radio system exists for security.

During the period of initial opening of the facility, portable radios were loaned to the Authority by Mount Pleasant.

Proposed System - Radio tests were conducted on the Yorktown using portable radios on a highband channel (155 MHz). The results of these tests were favorable and reliable communications could be realized between a portable radio on the hangar deck and a unit traversing the second deck and flight deck. Tests revealed that radio communication between lower decks and the hangar deck were not reliable.

It is proposed that a radio system be developed for the security forces. Recommendations and/or features of the system are as follows:

1. Initially, provide each security officer on duty with a portable radio. A portable would always be located at the security station on the Yorktown.
2. As additional areas of the Yorktown are opened, extend the capabilities of the radio system to provide coverage in the lower deck area. Methods for accomplishing this are discussed later in this section of the report.
3. As other ships are added to the facility, additional radios would be purchased as required to support the security staff assigned to the particular ship.
4. The portable radio system would provide the necessary control link between the future central security facility and each satellite security force such as the Yorktown.
5. Radios in the system would be equipped for multi-channel operations. This capability provides for a security channel and additional channels to coordinate with supporting law enforcement agencies.

In order to realize, with a reasonable budget, a system which will satisfy the recommendation and have the system features noted above certain basic factors must be considered. These factors are:

1. To coordinate with other law enforcement agencies in the area, the frequency selected must be equipment compatible with those existing systems. Law enforcement systems in the state are developed using specific frequencies which have been allocated by the Federal Communications Commission (FCC) for use by law enforcement agencies. Specific frequency assignments have been made in South Carolina to insure the development of an integrated law enforcement radio network.

2. To provide maximum assurance that the channel assigned for security will be used only for security activities, this channel should be selected from the Police Service band of frequencies as allocated by the FCC.
3. There are no unused Police Service channels available in the Charleston area which are equipment compatible with those systems of supporting law enforcement agencies.

In the Phase I memorandum it was recommended that consideration be given to sharing the 154.000 MHz local government channel presently used by Mount Pleasant. Upon further investigation it has been determined that the use of this channel will require options on the radios to span the wide frequency range between this channel and the channels used by law enforcement agencies. These options are available but reflect an increase in the cost of radio equipment.

To resolve this problem, the FCC and members of the State Law Enforcement Radio Communications Planning Team were contacted to discuss and propose a specific solution to the problem of a frequency assignment for the security system at Patriots Point.

It was mutually agreed by representatives of these groups that a single channel be selected from the Police Service band and assigned for use by all security forces within a multi-county region over which law enforcement radio channels are coordinated. This approach will insure that radio system coordination can be realized and secondly that the nature of the traffic is controlled.

A request has been made to the State Law Enforcement Radio Communications Planning Team to pursue the feasibility of assigning and coordinating security channels on a statewide basis.

The frequency search referenced in a preceding paragraph did reveal that a Police Service channel is being used by the College of Charleston security force. If the recommendation of assigning statewide security channels is accepted, it is most probable that the channel selected for the Charleston area would be the 154.845 MHz channel used by the College of Charleston.

It is anticipated that a decision will be forthcoming in the near future concerning the statewide security channels. If, however, it is deemed necessary to implement the radio system prior to this decision, it is recommended that a frequency search be made for a local government channel which is within the frequency range of 155.000 MHz to 155.620 MHz. A frequency within this range is equipment compatible with the law enforcement radio systems.

Recommended channel assignments for the radio system are as follows:

Channel 1 - frequency to be selected and used for primary operational channel.

Channel 2 - coordination channel with Mount Pleasant Police Department. (frequency 155.610 MHz)

Channel 3 - mutual aid law enforcement channel common to all law enforcement agencies in Charleston, Dorchester, and Berkeley counties. (Frequency 155.070 MHz)

Channel 4 - reserved for future use.

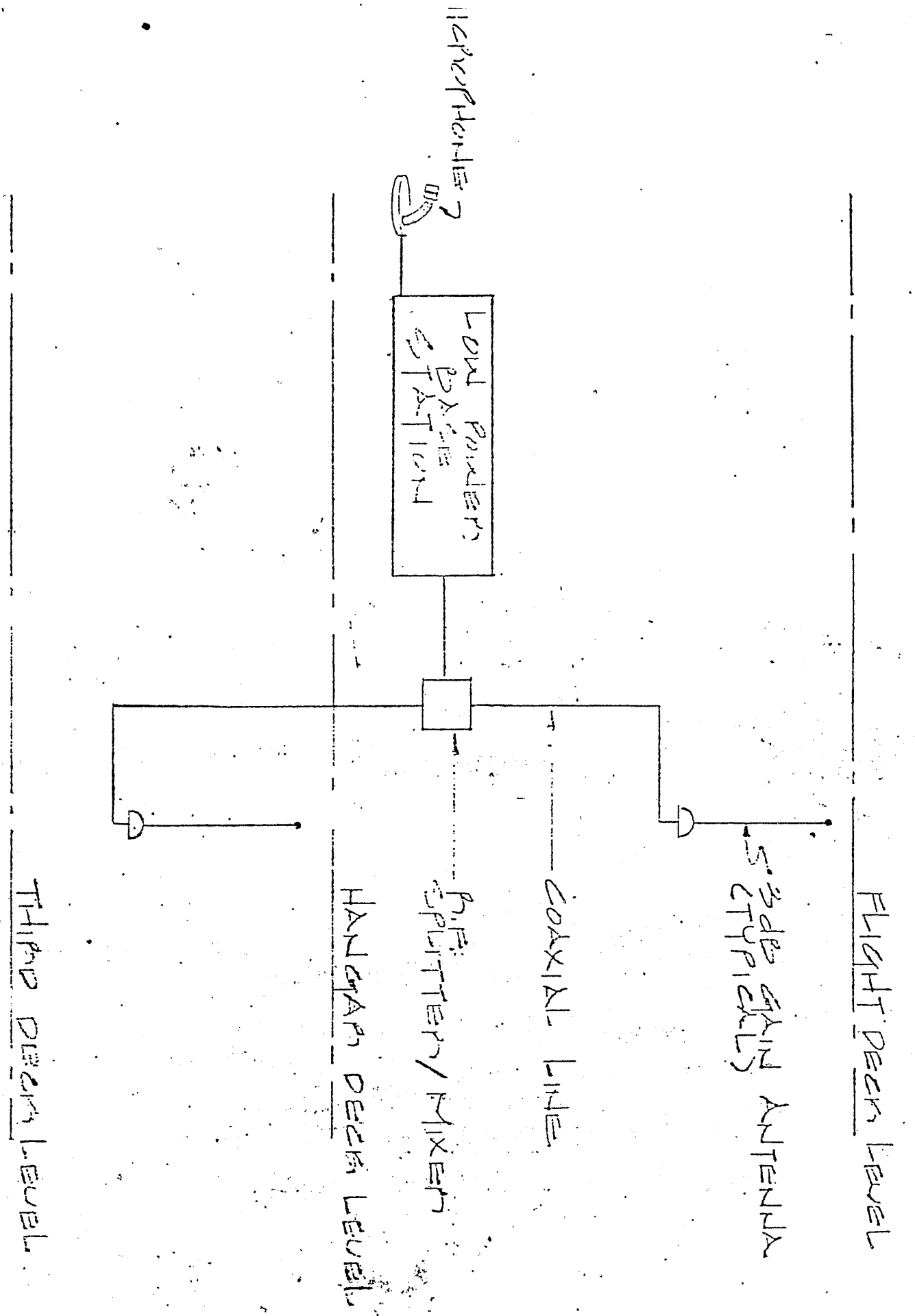
As lower decks on the Yorktown are opened, radio coverage will not be adequate and additional equipments will be required to insure effective coverage. Shown in Figure 8 is a recommended equipment configuration which will provide adequate signal transmission between the security station and each deck.

A low power base station is proposed to be located in the security station. The antenna system will be connected to a mixer/splitter to develop feeds to and from two separate antennas. One antenna would be located on the third deck. This system will increase coverage to the third deck and to parts of the fourth deck.

The use of two antennas feeding a common receiver does introduce the probability that signals from the two antennas could cancel and provide inadequate coverage. The net effect will, however, be an increase in radio coverage throughout the ship.

Budgetary Costs - For the initial system, it is recommended that "top of the line" portable radios be purchased having multi-channel capability.

PROPOSED ANTENNA SYSTEM



the image of an individual may not be discernible on the monitor if the individual is located at the far end of the deck relative to the camera.

2. Constant viewing of the closed circuit monitors. For the system to be effective, the monitors must be continuously scanned.
3. The ability to take action as required when a condition is observed on the monitor requiring special attention.

Existing Capabilities - There are no CCTV systems on the Yorktown.

Proposed System - At the present time, it is recommended that minimum emphasis be placed on the development of a CCTV system.

Except for the flight deck and parking lot, most areas considered for CCTV surveillance would require multiple cameras for effective coverage. The system could become quite large and expensive to install, operate, and maintain. There are no specific areas requiring close visual surveillance for which a CCTV system would be deemed imperative.

Consideration should be given to the future use of a CCTV system to monitor activities on the flight deck during periods of high traffic. Normally, a security officer is on the flight deck; however, a camera mounted on the bridge structure would provide additional visual coverage. The proposed public address and radio systems would be used, for example, to alert a visitor that he or she was beyond tour limits or to alert the security officer of the specific condition.

Four units would provide each security officer with a radio while on duty. It is also recommended that each radio be equipped with a spare set of batteries and a single unit battery charger.

1. Portable Radio with Spare Battery

4 @ \$1,200.00 \$4,800.00

2. Single Unit Battery Charger

4 @ \$75.00 300.00

Total \$5,100.00

Equipment Specifications - Reference is made to the Appendix for detailed specifications on the portable radios and accessory equipments.

Closed Circuit Television System

System Function - The primary function of a closed circuit television (CCTV) system for security applications is to provide visual surveillance of an area from a remote location. The effectiveness of a CCTV system is dependent on many factors, several of which are as follows:

1. Effective coverage area of a camera or cameras. This area is determined by the viewing angle of the camera lens and by the resulting subject image on the closed circuit monitor. For example, a large portion of the Yorktown flight deck may be within the viewing angle of a well located camera; however,

The need for surveillance of the parking lot will be based on the level of vandalism and theft that occurs during the peak traffic months.

As additional facilities are added to Patriots Point, the development of a CCTV system becomes more practical. A central monitoring point would be established at the central security station to monitor many areas throughout the complex. Roving security officers could then be directed via the radio system to a specific area.

Budgetary Costs - Budgetary costs could be determined only upon specific system recommendation.

Equipment Specifications - Same as noted for "Budgetary Costs."

Detection and Monitoring

System Function - A detection and monitoring system for this project is described as a system which would sense unauthorized entry into an area or sense the movement of an artifact. A monitoring station would identify the specific point from which an alarm condition is generated.

Existing Capabilities - There are no existing systems on the Yorktown for providing automatic detection and monitoring. Functions of this system are presently being realized by physically locking doors and mechanically securing artifacts.

Proposed System - At this point in development of the Yorktown project, there are no specific areas which are identified as critical to the extent that a detection system would be considered necessary. Should areas or artifacts require automatic alarm reporting, it is recommended that the annunciator feature of the intercom system described in this report be used.

Each selector switch position at the intercom submaster station includes an annunciator lamp and audible signal. These signals will be activated upon closure of a remote switch. For example, if reporting of illegal entry to the ticket booth is desired, a switch can be placed on the door or window of the booth to close upon illegal entry. A shunt switch is required at each such point to prevent an alarm condition during normal working hours.

This approach is a relatively inexpensive method of providing detection and monitoring should the intercom system be implemented as proposed. A disadvantage of this system is that the circuit is not electrically supervised and trouble conditions could occur which would be undetected.

It is not considered practical to implement a more sophisticated detection and monitoring system until other facilities are added to the complex. Consideration should be given to including a central detection

Equipment Specifications - It is premature at this time to develop specific equipment specifications for a detection and monitoring system.

Telephone System

System Function - For security purposes, a standard telephone system serves a secondary communication role to the radio and intercom systems described in this report. It does, however, provide a communications link to request support for emergency conditions such as the need for medical attention or fire fighting support. An intercom feature on the telephone system provides additional communication capability between selected points on the Yorktown.

Existing Capabilities - Presently, there are two separate telephone stations on the Yorktown. One station is located at the security station and the second unit is in the Ward Room. There is no intercom feature and neither station can provide answering service for the other.

Proposed System - Prior to the moving of the administrative staff to the Yorktown, it is proposed that a key station type telephone system be leased from the local telephone company. This type equipment incorporates standard multi-button telephone sets into a coordinated system.

The primary features of the system are as follows:

1. A central answering point can be developed for all incoming lines.

and monitoring system for the entire complex at a future date. The central monitoring station would be located at the central security station. This station would provide detection and monitoring of all facilities. Alarm conditions would be relayed to a security officer via the proposed radio system.

Detection and monitoring systems are available which provide automatic alarm reporting and are electrically supervised to indicate system trouble conditions, etc. All control functions such as activating or deactivating an area are incorporated into the central station. This feature enhances the effectiveness of the detection and monitoring system.

Selection of a specific system would be made during the detailed planning phase of the central security station.

Budgetary Costs - Extension of the proposed annunciator on the intercom system can be realized for the additional cost of switches and a shielded pair cable to connect the remote switch to the selector switch annunciator. Cost of the switches will depend upon the specific type of switch required but an approximation of \$5.00 to \$10.00 per remote station is reasonable. Cable costs are as noted in the "Intercom System" section of this report.

The specific arrangement of telephones and services to be provided would be coordinated through the local telephone company.

Budgetary Costs - Costs for the proposed system will be dictated by the exact number of incoming lines, telephone stations, and service options provided by the telephone company. The basic type system described offers the most economical approach to satisfy the present telecommunication needs of the Authority.

As the Patriots Point complex develops, needs may dictate modifications to the basic system described.

Equipment Specifications - It is recommended that telephone equipment be leased from the local telephone company.

Area Lighting

System Function - Within the scope of this project, area lighting relates specifically to lighting of the parking area. The primary purpose of the lighting system is to provide a minimum level of illumination to discourage vandalism and "parking" in the parking area. Lighting will provide additional security for the ticket booth and ramp entrance area.

Existing Capabilities - No area lighting is provided other than the canopy lighting at the ticket booth.

2. Telephone stations within a complex can be equipped with intercom features thus allowing intraship communications without using outside lines.
3. Each station can have access to multiple lines thus providing line usage efficiency.

It is proposed that key station equipment be installed with the primary answering position being in the administrative offices during normal working hours. During other periods, all calls would be answered at the security station.

It is recommended that the station provided by the Yorktown Association in the Ward Room be included in the system. Processing of calls to this station can be as mutually agreed upon by both parties.

The need for telephone stations at locations other than in the administrative offices and the security station will be dictated by the policies of the Authority. Implementation of the proposed intercom system will provide shipboard communications and alleviate the need of many telephone stations to support that specific need.

In addition to the key station type system described, it is recommended that public pay stations be located in the concession area and at the ticket booth.

Public Address and Paging

This system provides a means to disseminate vital security and safety information throughout the ship. Implementation on the Yorktown would require minor modification to the existing shipboard paging system.

Intercom

An intercom system is proposed to provide direct access to security from locations along the tour route and from selected staff stations.

It is proposed that a new system be installed in lieu of activating and modifying existing shipboard system.

Radio

The use of personal portable radios to provide direct communications between all security officers should receive high priority with regard to implementation.

Portable radios will support "instant" communication between security elements with the by-product being a more effective security system.

Implementation of this system will necessitate the purchase of portable radios for each security officer.

Proposed System - It is proposed that an arrangement be made with the local utility company to provide two mercury vapor security lights in the parking area until such time as architectural type lighting is developed for the entire complex. It is recommended that one fixture be located near the ticket booth and the other near the entrance to the parking area.

Budgetary Costs - Costs for leasing security lights are approximately \$4.50 per month per fixture. This cost includes installation, operating costs, and maintenance.

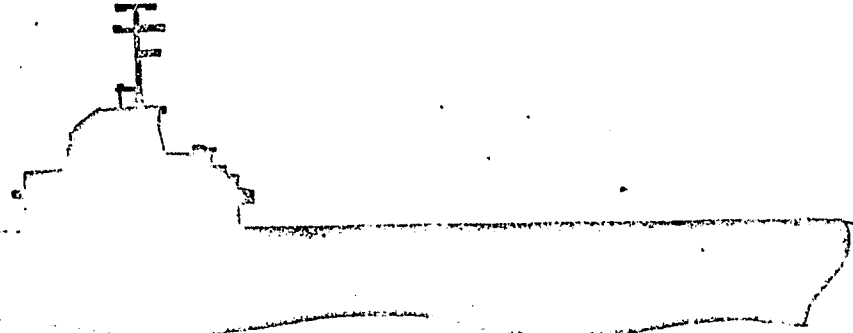
Equipment Specifications - It is recommended that 175 watt mercury vapor security lights be leased and mounted on existing utility poles.

SUMMARY

Development of the security plan for Patriots Point included an investigation of present and anticipated needs of physical systems. It is concluded that several systems are basic to development of an effective security system and should be considered for implementation within the two year planning period.

Recommended systems and a brief functional description are included in the following paragraphs:

4 Recommended Security Plan



Telephone

The primary function of the proposed telephone system is to provide a communications link with emergency support agencies. Requests for emergency medical, fire, and law enforcement services would be by use of the telephone.

Summary

A detailed description of each system described is included in this report. Provisions have been made to integrate systems proposed for the Yorktown into total facility systems as the entire complex develops. Implementation of systems in a manner as described in this report will enhance the effectiveness of the security program and will insure an orderly growth to more sophisticated systems as needs dictate.

The USS Yorktown is Phase I of a multi-phased master development plan.

Due to the unique situation of having a facility in-place and practically ready for operation at the same time of its arrival in the Charleston Harbor, the security system has developed as the ship's improvements were completed. Hence, this project was divided into two parts: (1) the pre-opening temporary security system; and (2) the post-opening permanent plan. The second part of this plan also has two components; e.g. the short-term operations plan and the longer term security master plan. This report has dealt primarily with the short-term plan.

Short Range Plan

The short range plan consists of several key manpower and physical systems recommendations. A priority system should be established to accomplish the recommendations within a two-year period. The following is a suggested priority for the two-year short term security needs:

1. Modify the existing paging system (this has basically been accomplished at this report writing).
2. Install a two-way intercom system as described in this report at an estimated cost of \$1,850.

3. Purchase four (4) portable radio units at an estimated cost of \$5,100 and secure a local government channel which is within the frequency range of 155.000 MHz to 155.620 MHz.
4. Install a telephone system with either a two line rotary system or two separate incoming lines at an estimated initial capital cost of \$300.
5. Enroll a minimum of two security officers in the Criminal Justice Academy.
6. Develop an organizational plan which creates a shift captain for each shift and the weekend. The total number of shift captains would be four.
7. Develop a personnel evaluation plan which rewards meritorious service with grade and salary changes.

These seven priorities should be acted upon within the first two years of operation. The implementation of these recommendations will ensure that a balanced approach to satisfying immediate security demands can be accomplished within a restricted budget.

Summary of Short-Term System Costs

The costs for implementing the recommended two-year security plan are presented according to estimated capital requirements and annual operating needs. Table 1 presents this cost summary. From this analysis it is evident that the two-year security operations costs including purchase and installation of equipment and costs associated with operating the system, will be approximately \$182,000. It is, therefore, recommended that the Authority adopt this amount as a two-year budget for the security operations.

Long Range Priorities

As has been stressed several times in this report, it is important that the security operations plan be developed as a modular concept which can be implemented incrementally as the Master Plan facilities expand. This will require that a high degree of quality control be established both in the early manpower planning program and the physical systems planning. While it is difficult to project the next major phase of the Master Plan to be implemented, the following is a summary of several considerations of long-term planning.

Manpower Considerations - A basic policy question to consider is the cost effectiveness of building in-house security staff as opposed to developing a security system based upon contract security services. The cost comparison of these two approaches is presented in Table 2.

A direct comparison of the in-house versus contract security services indicates that the cost of providing the service in-house is 17 percent greater than contract services. This difference would increase to 34 percent if the Authority paid according to the State wage schedule. Table 3 presents a further comparison of the financial impact of contract services.

Due to the fringe benefits which must be included in the in-house security force, the cost per 24-hour shift is 17 percent greater. In a year's time, the

Table 1

Recommended Short-Term Security System Costs

Capital Costs

Intercom System	\$ 1,850
Radio System	5,100
Telephone System	300
Officers' Uniforms @ \$250/officer	3,000
	<u>\$10,250</u>

Operating Costs

Salaries - 12 Security Officers @ an annual salary for recommended positions as follows:	
(1) Chief Security Officer @ \$8,900 per yr.	\$ 8,900
(4) Shift Captains @ \$7,400 per yr.	29,600
(7) Security Officers @ \$6,240 per yr.	43,680
Subtotal	<u>\$82,180</u>
Fringe Benefits @ \$10.40/month for each officer which includes health insurance and retirement	\$ 1,498
Uniforms and Replacement @ \$35 per officer	420
Office Supplies and Equipment @ \$50/month	600
Telephone (pro rata share of security costs) @ \$20/month	240
Maintenance of Communications Equipment	<u>560</u>

TOTAL ONE YEAR OPERATING COSTS \$85,498

Table 3			
Position Cost Comparison			
In-House		Contract Services	
11 positions to meet 24-hour and weekend duty 365 days/year 4015 mandays/year		7 positions to meet 24-hour and weekend duty 365 days/year 4015 mandays/year	
11 positions @ \$7756/yr.	\$85,316	7 positions @ \$10,512/yr.	\$73,584
1 Chief of Security	8,900	1 Chief of Security	8,900
Total Personnel Costs	\$94,216	Total Personnel Costs	\$82,484
Cost per 24-hour shift	\$100.80	Cost per 24-hour shift	\$86.40

cost for an in-house security force would be \$11,732 greater than contract services. While this difference is not substantial, as the demand for additional security increases with the full development of the Master Plan, the financial advantages of using contract security forces will increase at a more rapid rate.

The often quoted disadvantages of contract security forces is that the officers do not develop a loyalty to or identification with their client. Should this be the case (and it is doubtful that it is), contract services could be used only for the first and third shift operations during which time there is no contact with the public. The in-house force could be used in the more public role. This, however, does not reflect optimum administrative procedures and is not recommended as the best solution.

Table 2		
Cost Comparison - Contract Vs. In-House Security Force		
Cost Categories	In-House	Contract Services
SALARY		
Per Hour	\$3.00	\$3.60
Per Year	\$6240 ⁽¹⁾	-
TRAINING	\$135	
RELATED COSTS		
Uniforms	\$285	-
Health Insurance	\$125	-
Retirement	\$740	-
WORKING DAYS/YEAR	231	365
Annual Leave (15 days)		
Sick Leave (15 days)		
Holidays (11 days)		
COST PER YEAR	\$7756	\$10,512
COST PER DAYS WORKED	\$33.58	\$28.80
COST PER HOUR WORKED	\$4.20	\$3.60

SOURCE: Stephen Carter & Associates.

NOTES: (1) The Authority currently pays \$2.60 per hour for security personnel. It is recommended that salaries be raised to \$3.00 per hour to reduce the propensity for attrition. (Two officers have left in the first six months of operation). The starting salary for a Grade 17 Public Safety Officer of the State is \$3.55 per hour, or \$7400 per year. If this figure were used, the cost per day worked for in-house staff would increase to \$33.52 as compared to \$28.80 for contract services.

defined. Based upon the research which has produced this report, a combination of the recommended manpower and physical systems will fulfill the security needs of the USS Yorktown until a time at which substantially more area is added to the tour route or other facilities are implemented.

It is recommended that for the two-year short-range plan, the Authority utilize the in-house security staff until initial security and safety problem solving can be routinized. After this time, and as the need for additional staff is pressing, the contract security services alternative should be given greater attention.

Physical Systems - The short-range plan has recommended the completion of a radio, telephone, and intercom system in the first two years of operation. Long-term physical system objectives should include the potential use of closed circuit television as other museum facilities are added through the incremental development of the Master Plan. The closed circuit television system could be used to monitor portions of the facilities which are either too remote to effectively cover through stationed or patrolling officers, or too broad in coverage, such as parking areas, to be patrolled with a minimum of staff.

While the detection and monitoring system has potential use in future higher valued museum facilities, it is not cost effective on the Yorktown, given the present artifacts on display.

In conclusion, no new physical systems are proposed in the long-term for the USS Yorktown. At which time other substantial ship or shore facilities are implemented, then a revised physical systems plan should be developed. Immediate priority should be given to accomplishing the short-term goals as previously

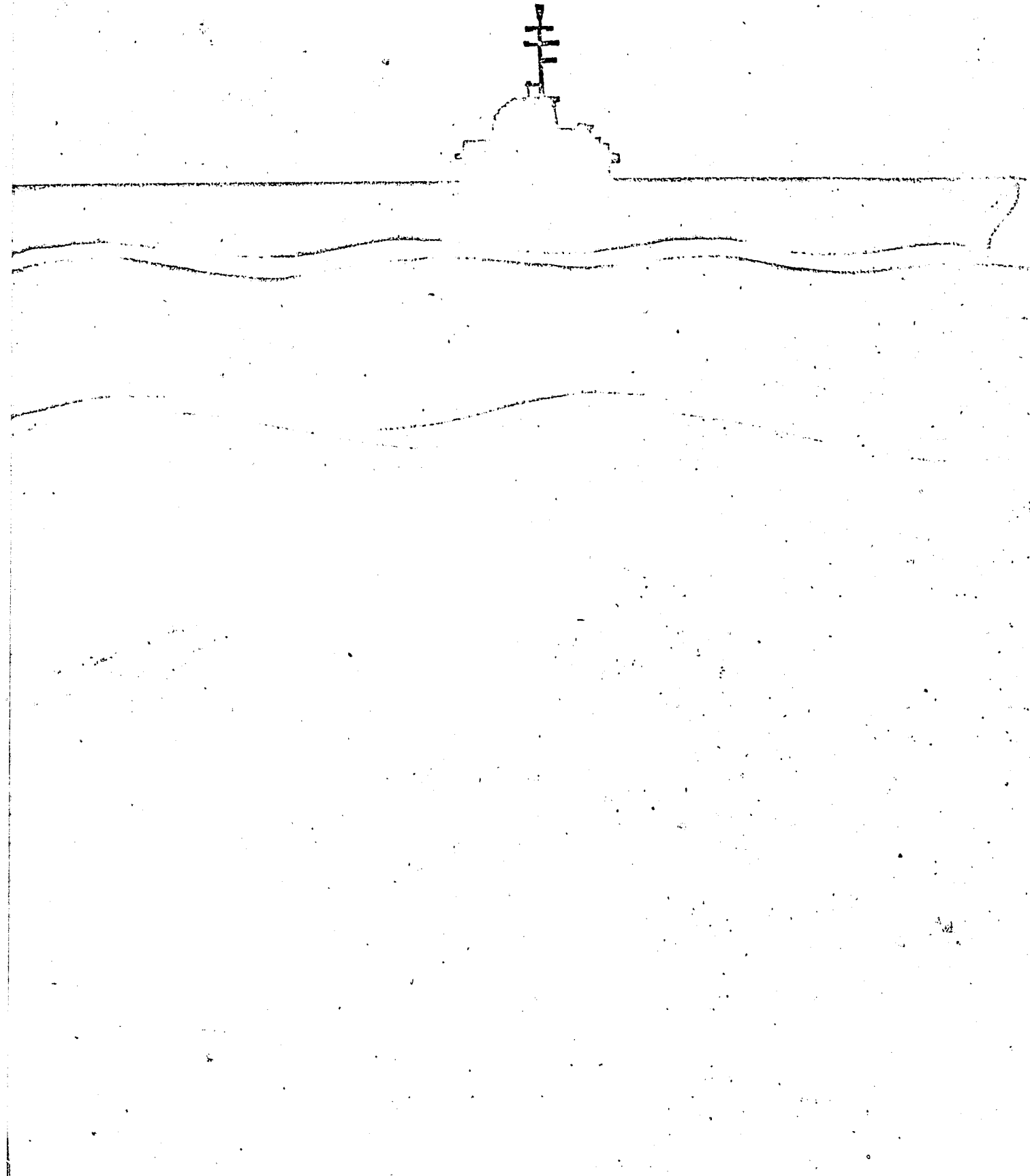
Intercom System Specifications

The following specifications describe the equipments required to implement the intercom system as proposed in this report.

Submaster Station - Furnish and install a submaster intercom station in the security office of the Yorktown. System components shall be housed in a wall mounted enclosure approximately 8" high by 20" wide by 10" deep. System shall be powered by 110 V - 60 Hz.

Submaster station shall consist of the following components:

1. Telephone intercom panel to provide telephone intercom service using the selector switch and lamp annunciator described herein. Panel shall include an audible chime. Unit shall be cabinet mounted in submaster station. Panel shall be Dukane Corporation Model 4A310 or approved equal.
2. 25 position speaker selector panel with three position lever type switches. Positions shall be "OFF," "INTERCOM," and "MASTER." Panel shall be equipped with annunciator lamp field. Unit shall be cabinet mounted in wall cabinet. Panel shall be Dukane Corporation Model 9A1416 or approved equal.
3. Call station shall be telephone type handset and hookswitch assembly. Station shall be equipped with contacts for lamp annunciation. Station shall be mounted on submaster panel. Unit shall be Dukane Corporation Model 7A215 or approved equal.



Remote Call Stations - Remote call stations shall be installed at locations as directed by the Owner and connected to three conductor cables furnished and installed by the Owner.

Remote call stations shall be identical to the call station described at the submaster station except shall be wall mounted in an enclosure or without an enclosure as directed by the Owner. Stations not requiring an enclosure shall be mounted on a 2"x4"x1-3/4" electrical box.

Enclosures, where noted by the Owner, shall be surface mounted. Enclosure shall be painted red and be labeled "EMERGENCY TELEPHONE." Unit shall be equipped with a door having a quality friction catch. Enclosure shall be Soundolier Model L 20-312 or approved equal.

Terminal Blocks - Terminal blocks shall be furnished and installed by the Owner. Blocks shall be Reliable RB-66B3 series or approved equal. Blocks shall be sized for conductors as shown in the intercom signal riser diagram.

Cable - Cable shall be furnished and installed by the Owner. Cable shall be multiconductor type with cable sizes as shown in the intercom signal riser diagram. Cable shall be 22 gauge solid copper with 80 degree C. vinyl insulation. Cable shall be Balden types similar to 6752 and 8744 but with conductors as shown on riser diagram.

Radio Equipment Specifications

Personal Radio Specification (VHF) - Personal radios shall be of a compact and lightweight design. The housing shall be weatherproof and shall pass the minimum EIA design standards. Channel capacity for portable unit and number of channels shall be as specified below. Unit shall be of a completely solid state design. Unit shall include an internal microphone-speaker. Antenna shall be the helical type. Each unit shall be supplied complete with carrying case and strap. Units shall be complete with two sets of rapid charge-rechargeable batteries capable of eight hours operation per charge at a 5-5-90% duty cycle. Unit shall be capable of using external microphone and earphone on an optional basis. Insertion of earphone into jack shall disable internal speaker.

The unit will be designed to operate with or have the following controls:

1. Tone-coded squelch (transmit and receive) on 186.2 Hz.
2. Transmitter and receiver spacing sufficient to ensure maximum efficiency.
3. Capability to operate on four channels.
4. Channel assignments as follows:
 - a) Patriots Point Security Channel - frequency to be selected.
 - b) Mount Pleasant Police Department - 155.610 MHz.

c) Mutual Aid Channel - 155.070 MHz.

d) Spare.

Transmitter Specifications

R.F. Output: 5 wqfts
Spurious & Harmonic Emissions: -46 dB
Frequency Stability: $\pm 0.0005\%$ - 10°C to 60°C ,
 $\pm 25^{\circ}\text{C}$ reference
Modulation: ± 5 KHz for 100% at 1 KHz
FM Noise: -50 dB
Audio Response: $\pm 1, -3$ dB of 6 dB/octave,
pre-emphasis 300-3000 Hz
Audio Distortion: less than 10%

Receiver Specifications

Sensitivity: (EIA 12 dB SINAD) .25 uv
Selectivity: -75 dB (EIA 2-SIGNAL)
Spurious & Image Rejection: -50 dB
Intermodulation: -60 dB
Stability: $\pm 0.0015\%$ - 30°C to $+60^{\circ}\text{C}$,
 $\pm 25^{\circ}\text{C}$ reference
Modulation Acceptance: ± 7.0 KHz
Audio Response: $\pm 2, -10$ of 6 dB/octave,
de-emphasis 300 to 3000 Hz

Audio Output: 500 mw at less than 10%
distortion

Channel Spacing: 30 KHz

Unit shall be G.E. PE series, Motorola HT220 series, or approved
equal.

Single Unit Battery Charger Specifications

Single Unit Battery Charger for personal portable unit. Charger shall
operate on 117V A.C., $\pm 10\%$ Hz and incorporate both rapid charge and
trickle charge modes of operation. The unit shall automatically switch modes
depending on charge condition of battery.

Unit shall be G.E. PE series with fast charge, Motorola series
NLN6897, or approved equal.

END