

MARINE CORPS AIR STATION (HELICOPTER)

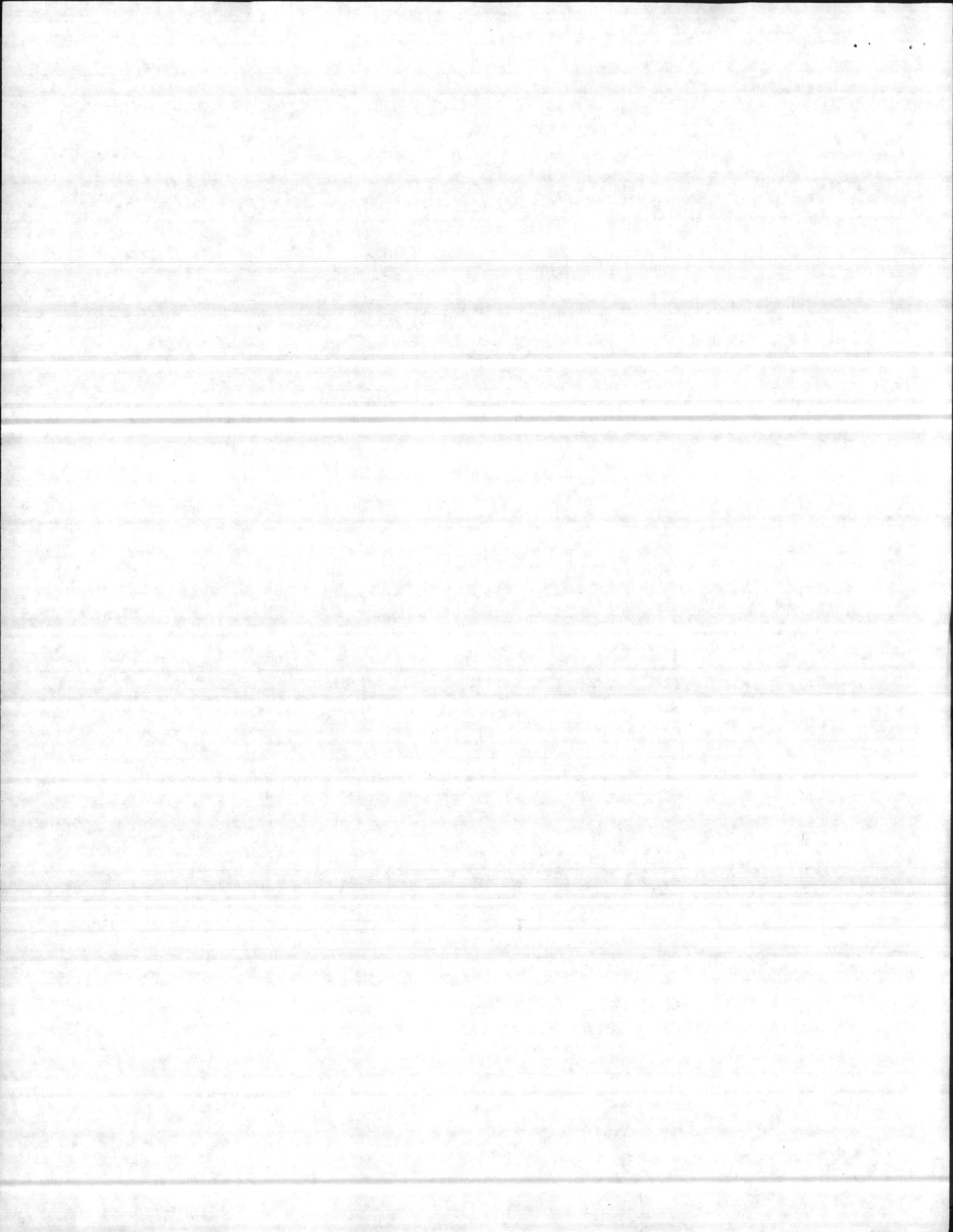
NEW RIVER

JACKSONVILLE, NORTH CAROLINA

FIRE PROTECTION ENGINEERING SURVEY REPORT

1 JUNE 1977

ENCLOSURE (1)



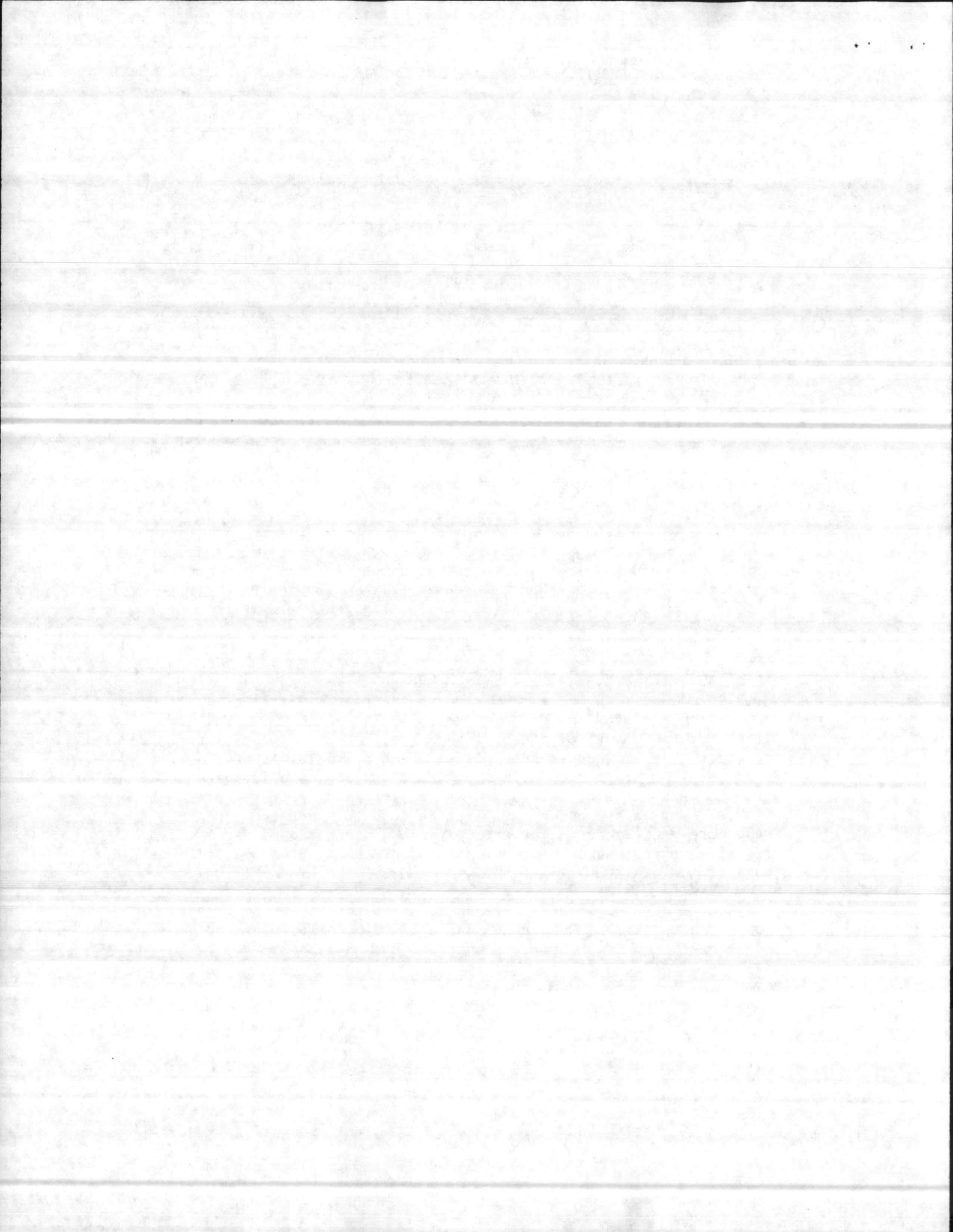
FIRE PROTECTION ENGINEERING SURVEY REPORT

Date of Report: 1 June 1977

1. ACTIVITY: Marine Corps Air Station (Helicopter)
Location: New River, Jacksonville, North Carolina. About 6 miles south of the center of the city.
2. DATES OF SURVEY: 9 - 20 May 1977 (20 Man-Days)
DATE OF LAST REPORT: 23 February 1973
3. SURVEYED BY: E. P. Thomas, Fire Protection Engineer, Atlantic Division, Naval Facilities Engineering Command
APPROVED BY: W. H. Miller, Jr., Head of Fire Protection Branch, Atlantic Division, Naval Facilities Engineering Command
4. SURVEY DISCUSSED WITH:
COL B. R. Wilkinson, Commanding Officer, New River
COL J. Kovacks, Asst. Chief of Staff-Facilities,
Camp Lejeune
Mr. E. Padgett, Deputy Fire Chief, Camp Lejeune
Mr. S. Wells, Chief Fire Inspector, Camp Lejeune
5. SUMMARY OF CONDITIONS:

This activity, an adjunct to the Marine Corps Base at Camp Lejeune, North Carolina, is a moderately sized helicopter air station located about six miles from the City of Jacksonville, North Carolina. Although the majority of the buildings are of noncombustible construction, a number of quonset huts and other combustible structures of World War II vintage remain in use. Most important buildings are equipped with interior fire alarm systems, although a large percentage of these systems are out of service due to both vandalism and inadequate maintenance. Water supply and distribution is generally adequate except in the 800 Area, across the runway from the principal areas of the station.

Water distribution system consists of 16-inch to 6-inch, generally looped, mains. A 300,000 gallon and a 350,000 gallon elevated tank floats on the system. Water is supplied from a number of wells to the Water Treatment Plant, which includes a 400,000 gallon aboveground reservoir.

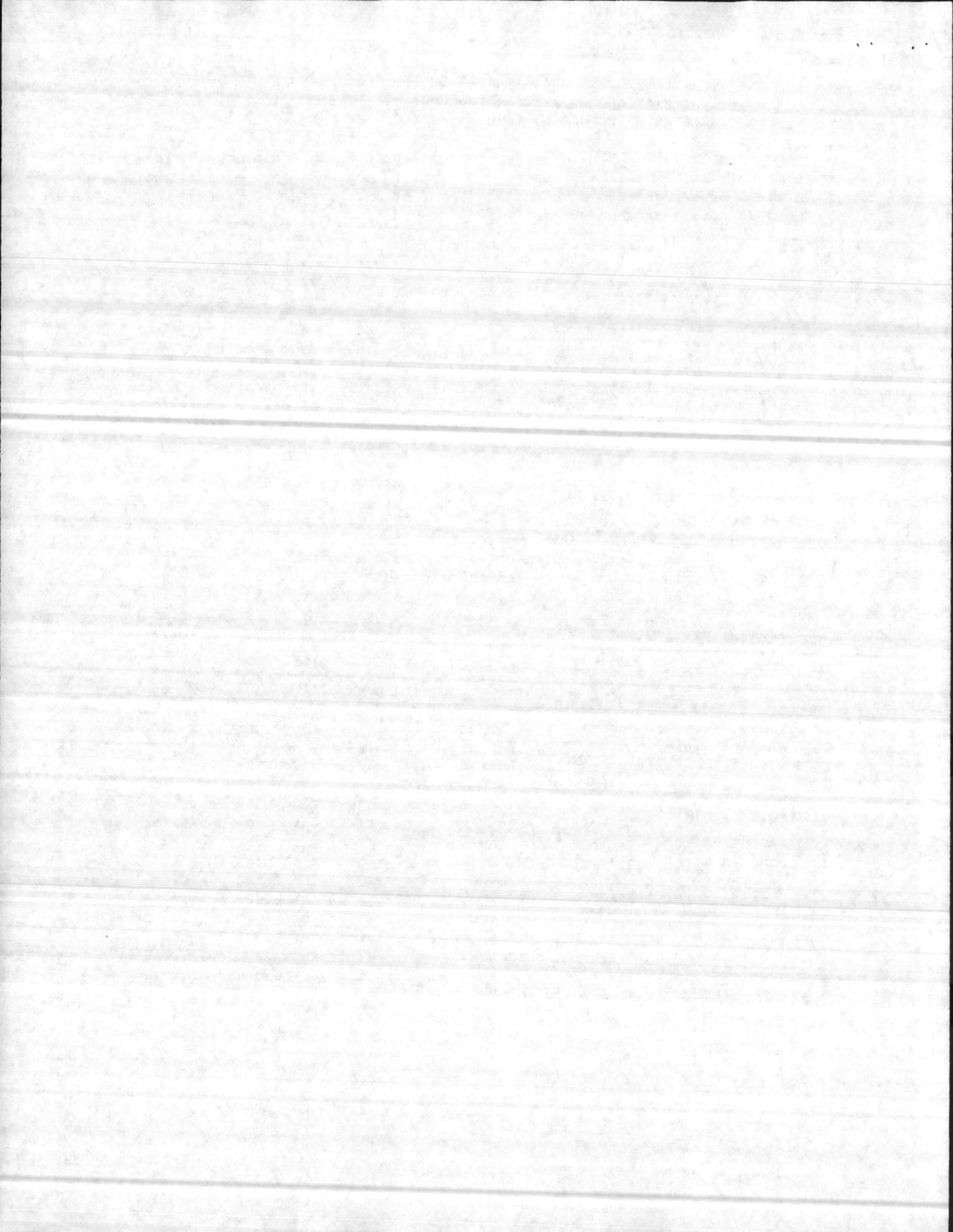


Fire alarm system is a Gamewell 0.50 milliamp shunt non-interfering system, using telephone pairs as conductors. Trouble is being experienced with grounds on this system.

Alterations to buildings by building occupants, including the use of combustible materials, continues and, in the hangars, these alterations have succeeded in negating important fire protection features of construction that were initially provided.

6. COMPOSITE FIRE PROTECTION ENGINEERING EVALUATION: POOR

a. Comments: The grading of "Poor" (formerly "Good") is assigned due to the overall disregard of the basic rudiments of fire prevention and protection. Flammable liquids, such as Methyl Ethyl Ketone, lacquer thinner, acetone and gasoline, are used indiscriminately without any precautions in numerous important buildings. Although flammable liquid lockers are generally available, it appears to be more common to store paints and thinners in the janitors' closets within the buildings. No safety cans are provided for flammable liquids when they must be stored or used within buildings. In general, these hazardous fluids are also being incorrectly used. Partitions, enclosures, and offices have been constructed and continue to be constructed in many areas, notably the hangars, using plywood on wood stud. In several areas, "self-help" construction has resulted in rendering required exits unusable, or is so arranged that additional exits are required. Maintenance of fire alarm systems and emergency lights within buildings is inadequate and unsatisfactory, and a high percentage of building alarm systems are out of service. Some of these systems have been out of service for over four years. Emergency lights, particularly in barracks, are not being maintained. Electrolyte levels in batteries of these lights are generally near zero. In many emergency lights, batteries have been removed or stolen and never replaced. One sprinkler system, controlling an office/shop area at one hangar was damaged by freezing in January 1977. The 4-inch O.S. & Y. valve was cracked during this freeze-up. Although such parts are normally readily available, this system remains out of service (over 4 months) "awaiting parts". Fire doors at stair enclosures in most hangars have had their latch sets removed and have been converted to "free swinging" types by the installation of push and pull plates. This is a violation of the requirement that fire doors must positively latch in the closed position. Roll-up type steel fire doors in these hangars have also been damaged by boring or cutting through the steel to create "peep holes" for use when the doors are in closed position. Considerable difficulty is being experienced with the station fire alarm system, primarily due to cable problems inherent in the telephone-gauge wire used with this system. No emergency power supply is now provided for this system and the system is out of service whenever AC power is lost. The time/date stamp on the print-out recorder of the fire alarm system, located in the fire station, has been out of service



for many years. Fire prevention inspections by fire department inspectors are being properly made, but compliance with recommendations resulting from these inspections is lacking.

7. RECOMMENDATIONS: (In descending order of priority)

Note: Cost data included in these recommendations represent only a probable range of expenditure and are not intended as an exact estimate of the cost of correction.

a. Category "A" - Critical

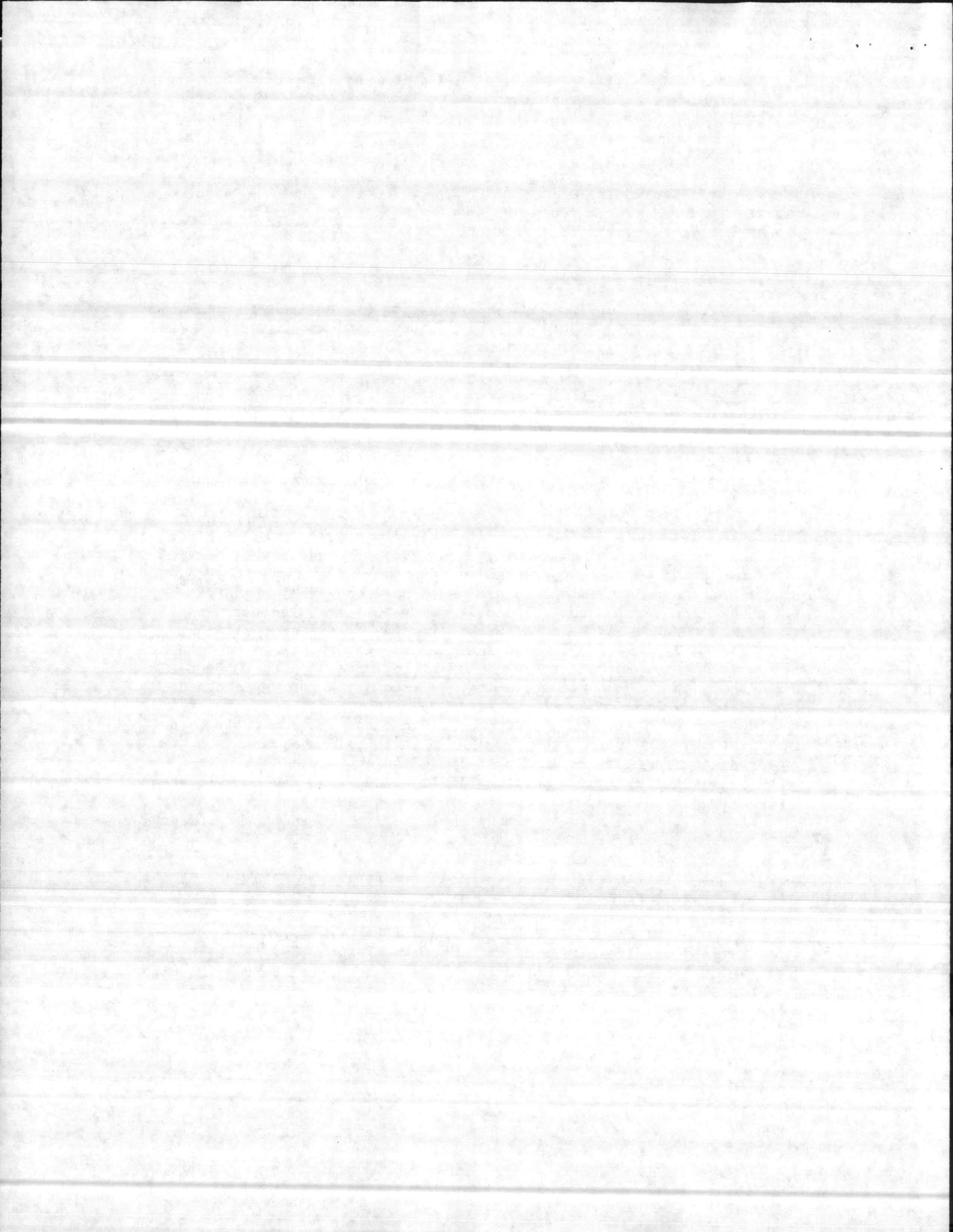
(Recommendations for the correction of conditions which involve serious life safety hazards or which have a serious impact upon the ability to perform vital missions.)

A-1-(77): Initiate a campaign of education and enforcement in the requirements, precautions and hazards of flammable liquid use, storage, and dispensing.

Justification: Dangerous flammable liquids are used, dispensed, and stored throughout much of the station (notably in and around the hangars) without even the most elementary safety precautions. In one instance, an individual was found to be hand-brush painting the interior of a room in a hanger with white lacquer thinned with Methyl Ethyl Ketone, without any ventilation, and with ordinary electrical and electronic gear in operation in the same space. Open two and five gallon ordinary stock cans of such hazardous flammables as MEK, acetone, lacquer thinner, flammable paint thinners, lacquer, and gasoline abound. Although flammable liquid lockers and buildings are generally in evidence near the hangars, it appears to be general practice to use these structures for miscellaneous storage and to leave the paints and flammable liquids within the various shops or, occasionally, in janitors' closets. Spray painting is routinely accomplished in areas not designed nor intended for such operations. Long-standing criteria requires that flammable liquids shall be stored and dispensed from only UL-listed safety containers within any building, that spray painting shall be accomplished only in areas properly designed and equipped for such uses, and that the quantity of flammables within any building shall be limited to that necessary for one day's operation.

(1) Approximate Cost: Limited largely to the purchase of safety cans where needed.

(2) Monetary Justification: If left uncorrected, present conditions could result in major damage to a hangar and the aircraft and other contents of the structure. It is estimated that such damage could reach or exceed \$1.5 million.



(3) Life Safety: Severe. The flash fire and explosion hazard of the liquids involved, coupled with the overall careless use, is such that anyone in the immediate area of ignition would have little, if any, chance of survival.

(4) Strategic Importance: Not a direct factor.

A-2-(77): Remove the prohibited restrictive hardware on required exit doors and restore exit doors to their designed operational function as follows:

(a) BEQ 4010: Remove throw-bolts on door at end of south-east corridor, first floor; northeast corridor, second floor; north-west corridor, second floor; southeast, southwest, northeast and northwest corridors, third floor.

(b) Mess Hall 4012: Remove crossbar from rear exit door of dining room (in place during noon meal).

(c) Training Building 4120: Remove the concrete block wall near the north end of the cross-corridor, which was erected to form the "Armory", and restore this area to full use as an exit facility.

(d) Exchange Building 4126: Restore the rear exit door from the Sales Area to service as an exit.

(e) Hangar 4108: Remove the "Coffee Mess/Snack Bar" table from the south end stair tower area. Table is too large and blocks the exterior exit door.

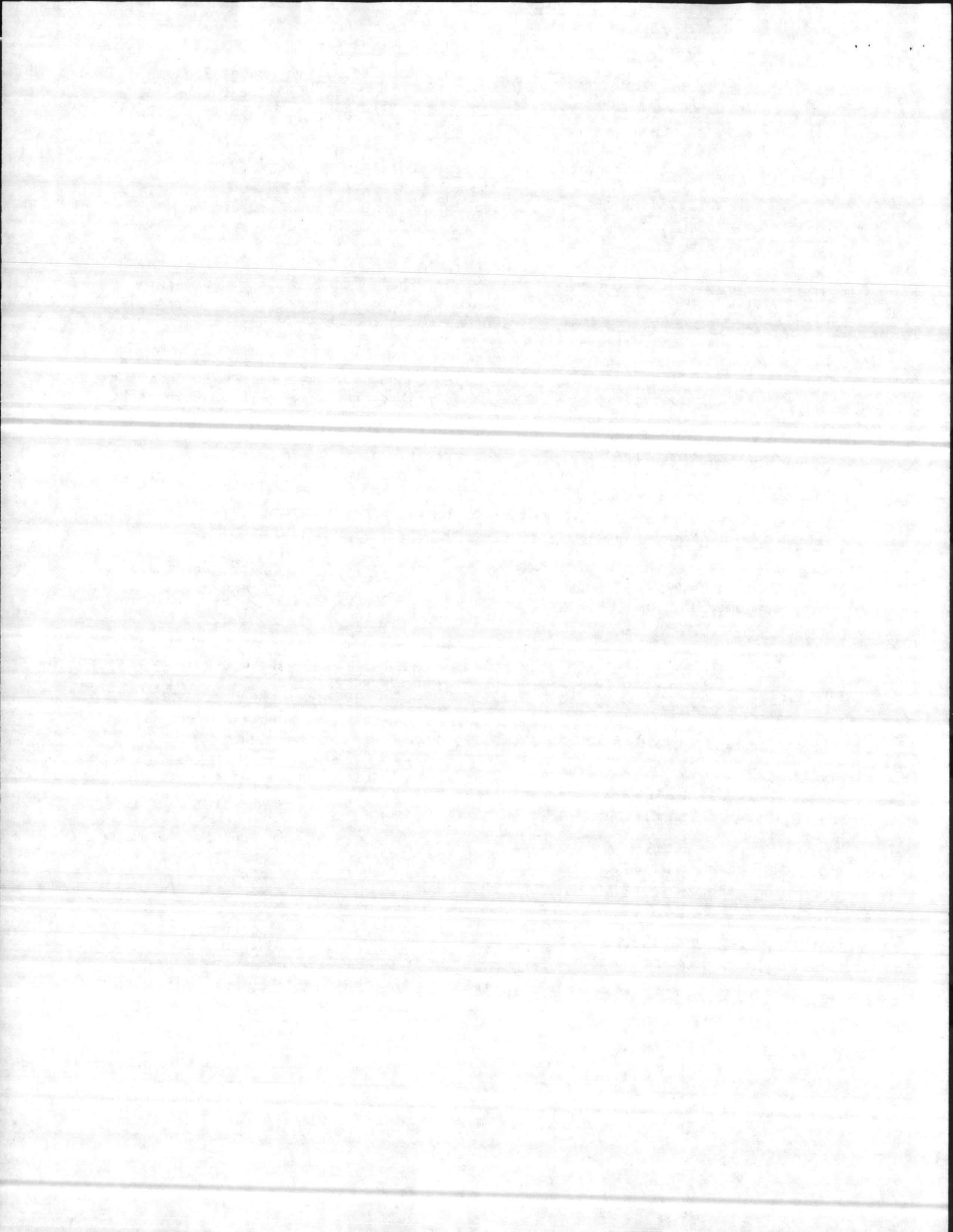
(f) Hangar 4108: Shorten the counter in the Maintenance Control Shop of the east end lean-to to permit the required 44-inch clearance between the exit door from the hangar bay and this room.

(g) Hangar 4108: Remove throw-bolts on both rear exit doors to outdoors from Maintenance Control Office of HML-268.

(h) Gymnasium: Discontinue chaining and padlocking exit doors. All exits from the playing floor (except main entrance) were found locked although the playing floor was in use.

(i) Gymnasium: Remove the steel bar securing the rear exit from the Weight Lifting Room. This door found secured while the room was in use.

(j) Building 216: Either make the first floor exit door at easterly end of the Law Center available to all occupants under all conditions and remove the throw-bolt from this door on the inside and padlock and hasp from the exterior (located in an office), or provide a separate exit to outdoors, accessible directly from the



central corridor, at the easterly end of the Law Center.

(k) Building 216: Remove the throw-bolt and padlock hasp on the inside and the padlock and hasp on the exterior of exit door from the westerly end of the Courtroom in the first floor Law Center.

(l) Building 216: Remove the throw-bolts from the exit doors at both ends of the second and third floors.

Justification: While the necessity for physical security is recognized and understood, it is, in the majority of instances, essentially a problem of personnel control and cannot be permitted to abrogate considerations of life safety. DOD criteria requires that any required exit door shall be available and operable from inside under all conditions by either turning a single knob or by depressing a single bar. The use of unauthorized restrictive hardware assumes that no emergency will ever occur or that, in the event of an emergency, personnel can readily unlock these devices and use the exit. This is fallacious since it does not take into account panic, reduced visibility and smoke inhalation. For example, a simple crossbar, normally easily removed, was directly responsible for six deaths in one fire in recent years. Readily available door operating hardware, such as 2-point (top and bottom) latching panic hardware, without exterior door operating hardware, can often be effective in solving both the life safety and physical security problems, when properly installed and maintained.

(1) Approximate Cost: About \$250 per door leaf for removing present restrictive hardware and providing proper panic hardware. It is estimated that about \$1,000 will be required, plus relocation of the "Armory", to correct the condition in Training Building 4120.

(2) Monetary Justification: Not a factor.

(3) Life Safety: Moderate to Severe.

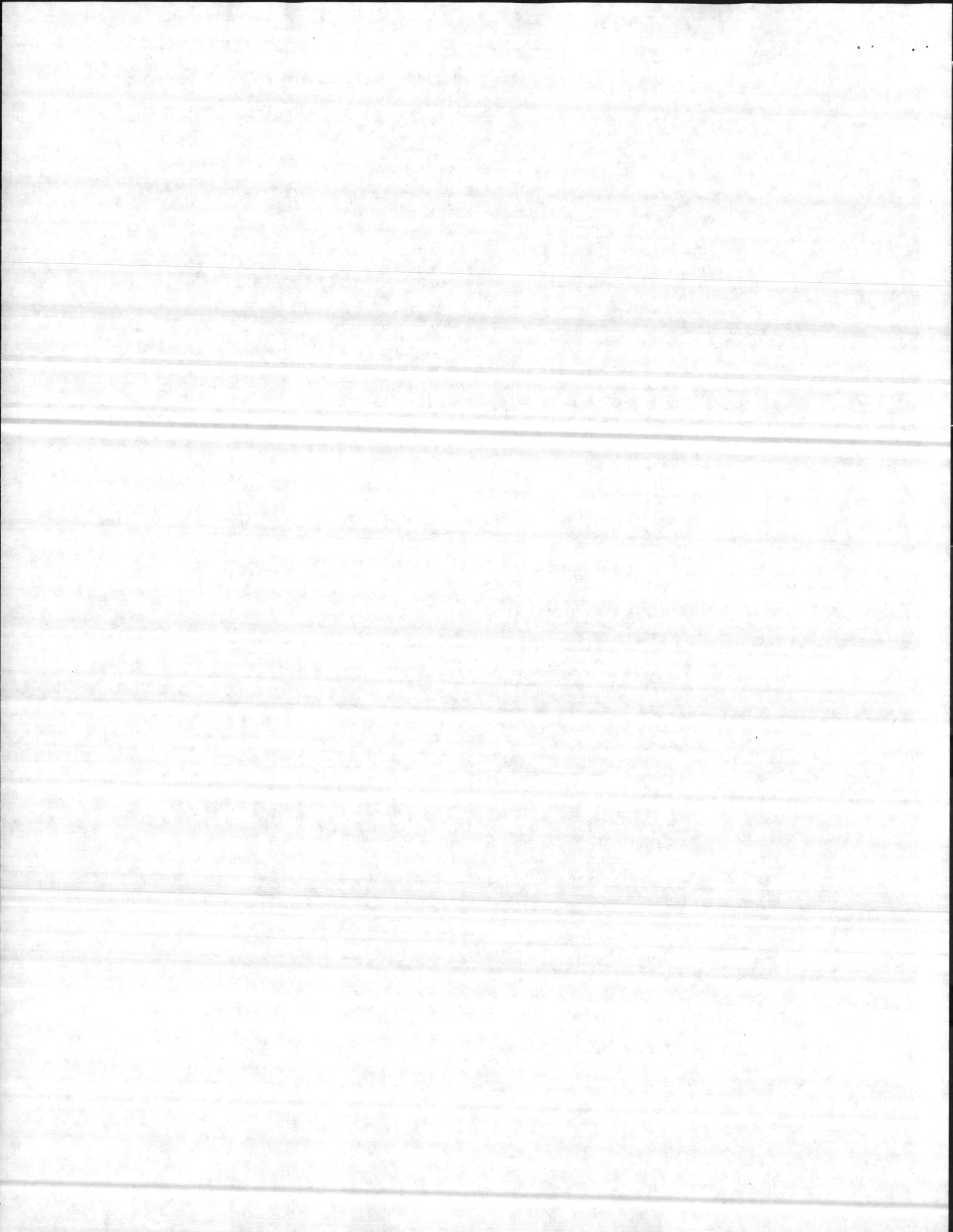
(4) Strategic Importance: Not a factor.

A-3-(77): Overhaul, repair and replace missing latch sets, door closers and door operating hardware on the following fire doors:

(a) Hangar 4108: Latch assemblies and door operating hardware have been removed from all fire doors to stairways on second floor of "lean-to".

(b) Hangar 4108: Door to janitor's closet, second floor of "lean-to" near Room 239, must be properly rehung.

(c) Hangar 4108: Door closer inoperable on fire door between easterly end of hangar bay and east end stair vestibule, first



floor.

(d) Hangar 4108: Panic hardware and latch set on fire door at entrance to stair, first floor, adjacent to HML-268 Avionics is inoperable.

(e) Hangar 4108: Replace panic hardware and latch set on fire door between stairwell and exterior vestibule, second stair tower from west end, first floor.

(f) Hangar 4108: Panic hardware and latch set inoperable on fire door between hangar bay to stair tower, first floor, second from west end stair.

(g) Hangar 4108: Latch set has been removed from fire door between hangar bay and HML-269 head.

(h) Hangar 4108: Latch set and panic hardware has been removed from fire door between hangar bay and west end stair.

(i) Hangar 518: Door closers on all fire doors between hangar bay and shop areas are inoperative or have been removed.

(j) Hangar 518: Repair or replace all roll type steel fire doors and shutters in fire wall between hangar bay and shops which have had "peep holes" (1" - 1½" dia.) cut in them.

(k) Hangar 518: Replace door closer on fire door from shop area to center stair enclosure on first floor.

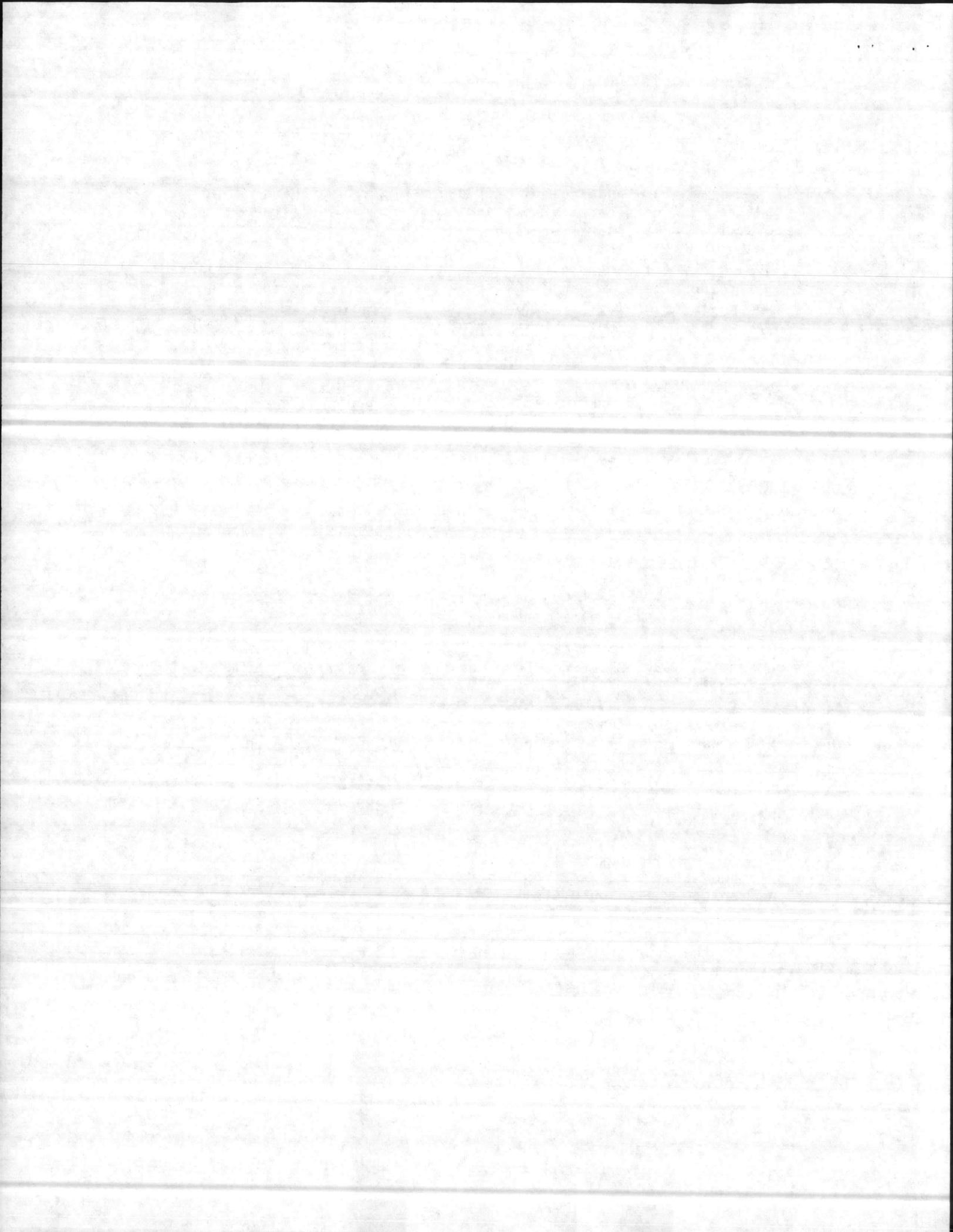
(l) Hangar 518: Replace the fire door between hangar bay and "Armory" which has been damaged by cutting in a homemade "peep hole".

(m) Hangar 518: Repair the fire doors at the south end stair tower, first and second floors, which will not latch closed.

(n) Hangar 518: Replace the missing latch set and door operating hardware on the fire door at the second floor entrance to the center stair.

(o) Hangar 518: Repair or replace the door closer of the fire door at the second floor entrance to the northerly stair tower, and replace the latch plate.

(p) Hangar 515: Replace the missing latch set and hardware on the fire door between hangar bay and stair, first floor, adjacent to Mechanical Room 111.



(q) Hangar 515: Repair and restore to full operating condition the fire door on second floor at entrance to end stair (261 Area).

(r) Hangar 515: Replace missing panic hardware and latch sets on the fire doors to stairways, second floor, near Room 326 and Room 226.

(s) Hangar 504: Provide positive-latching hardware on the stairway fire doors, both floors of both lean-to areas.

(t) Hangar 504: Provide UL-listed Class B (1½ hour) fire doors in the existing frame between the hangar bay and Sqdn. 461 Hydraulic Shop.

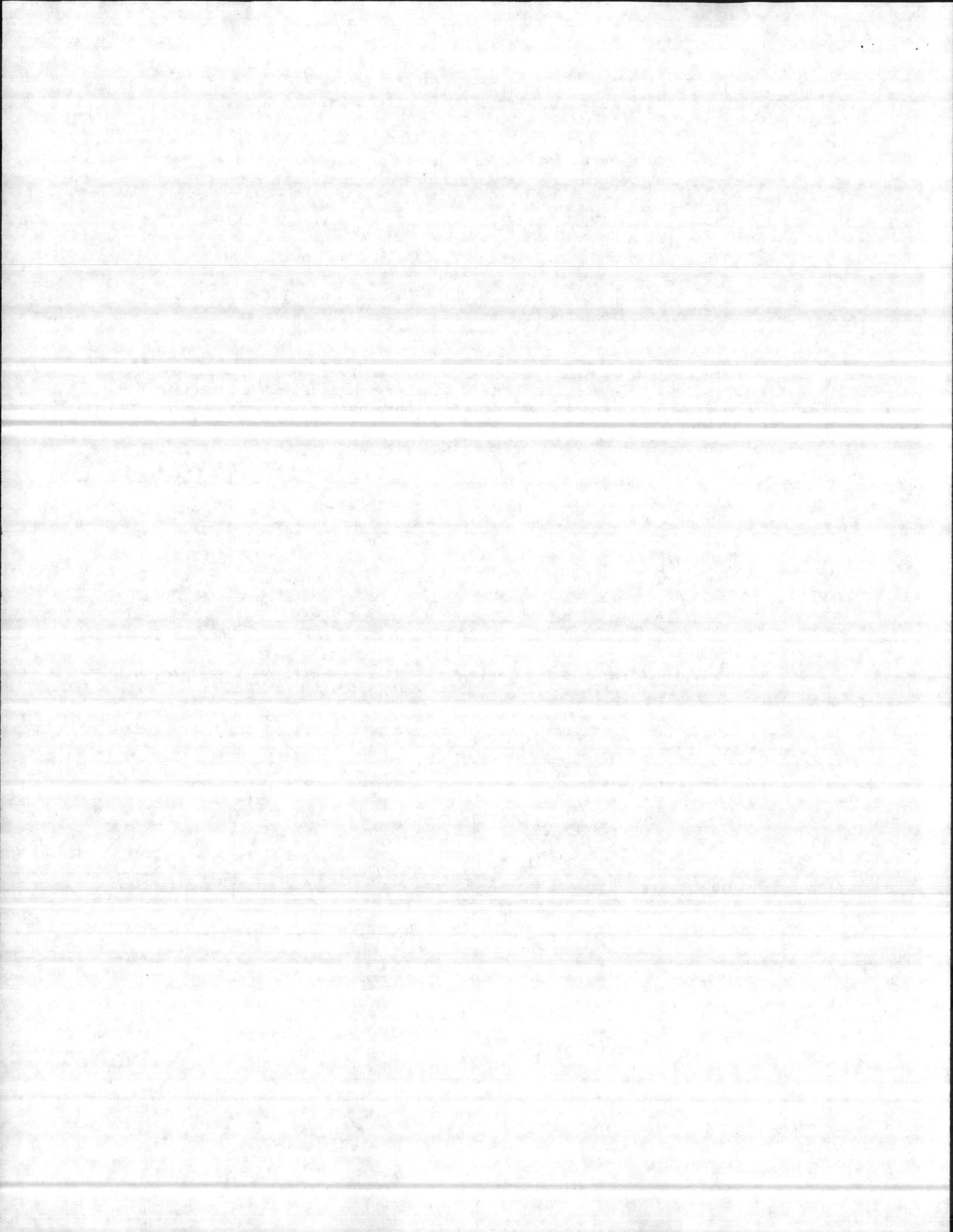
Justification: Rated fire doors are provided as a means of preventing, or delaying, the spread of flames, smoke and toxic gases from the area of fire origin. Vertical openings, such as stairways, form ideal flues or chimneys for the rapid upward spread of fire and toxic gases. Without properly operating, properly maintained fire doors at the entrance to such vertical shafts, a fire originating on a lower floor will very rapidly spread smoke and toxic gases up to the upper levels, rendering stairways untenable as exits, trapping occupants of upper levels and substantially increasing the potential for severe injury and death. It is equally essential that high-hazard areas be separated from other areas and that properly arranged and operating fire doors be provided in communicating openings not only to prevent fire spread but also to protect occupants of areas outside of the area of fire origin until they may safely exit. It is essential that fire doors be arranged to be self-closing and to latch positively in the closed position. Without positive latching capability, heat pressure and drafts experienced in fires will force fire doors open, completely negating their intended function.

(1) Approximate Cost: An overall average of \$250 per door leaf is estimated for restoration of panic hardware and latch sets. Replacement or provision of new fire doors is estimated at \$350 per single leaf and up to \$1,500 for a large size roll-up type.

(2) Monetary Justification: A major fire in a hangar bay without the subdivision by fire doors between hangar bay, shops, and stair towers could result in damage in the above \$2 million range.

(3) Life Safety: Severe

(4) Strategic Importance: Probably slight.



A-4-(77): Either strictly prohibit spray painting in the various shops of the hangars or provide properly arranged spray painting areas, fully complying with NFPA-33, "Spray Application", and confine all spray painting to these areas.

Justification: Sheet metal shops and hydraulic shops appear to be the areas in which spray painting is done most frequently. However, painting of various items was found being accomplished in most shop spaces of the various hangars. Little or no attention is being given to the need for adequate, properly arranged mechanical ventilation, explosion-proof electrical equipment, or to the care of flammable liquids. An attempt has been made to create a paint spray room in Hangar 4106, but the exhaust fan does not draft from floor level as is necessary to remove the heavier-than-air flammable vapors. The extremely hazardous arrangements now in use, coupled with the excessive amounts of improperly cared for flammable paints, solvents, and thinners, can easily result in a major fire or explosion. Should this occur, serious injury to personnel, or death, should be anticipated.

(1) Approximate Cost: \$10,000 per area.

(2) Monetary Justification: With the present deficient state of fire doors and lack of separation between spray painting operations and other areas, a fire originating in, or adjacent to, spray painting could result in a loss in excess of \$100,000.

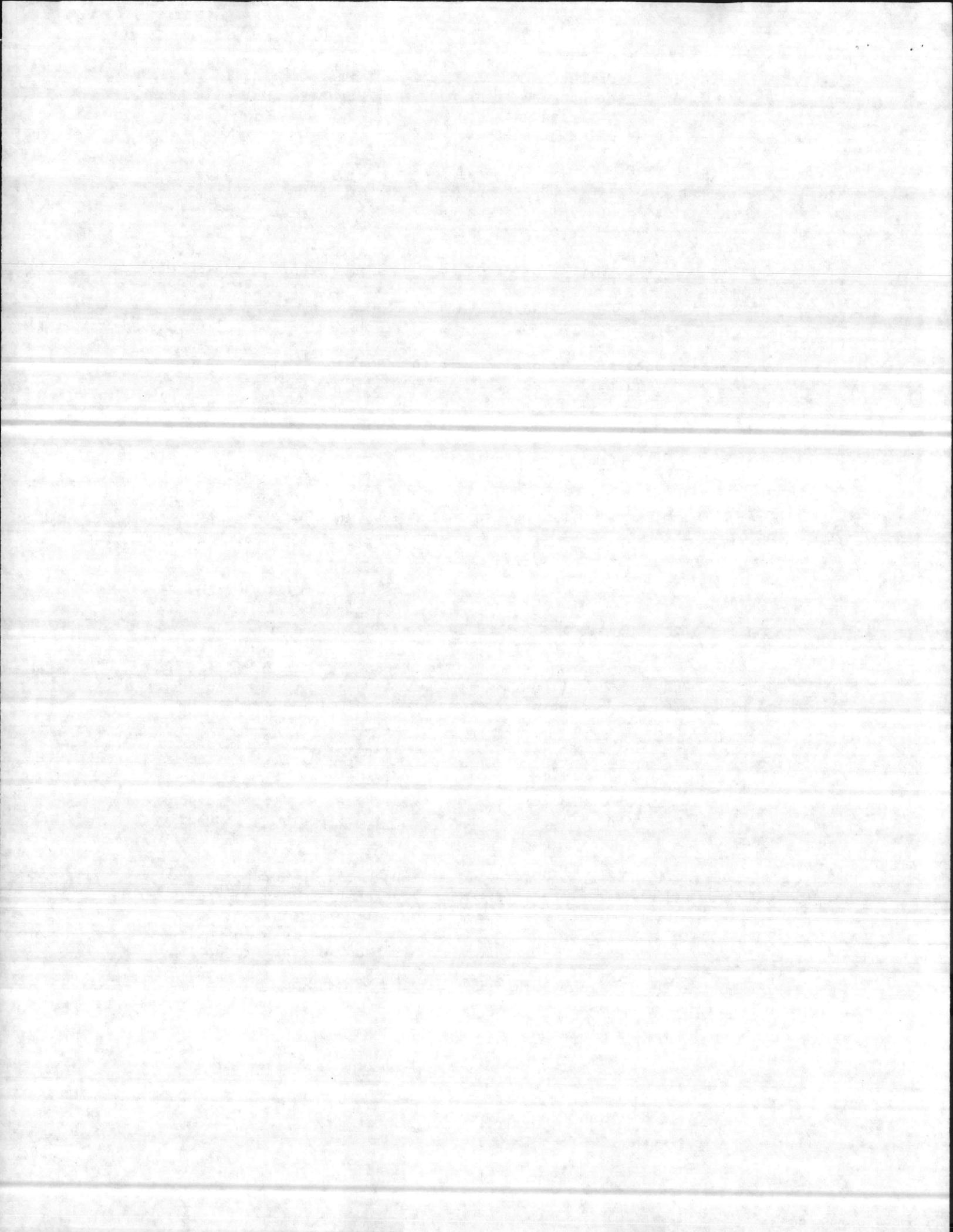
(3) Life Safety: Severe

(4) Strategic Importance: Not a direct factor.

A-5-(77): Improve the maintenance and service of fire evacuation alarm systems in all buildings where such systems are provided. To improve required maintenance to an acceptable level, it may be necessary to either employ a full-time civilian fire alarm electrician or to contract this work out to a qualified firm. The following are typical deficiencies noted:

(a) BEQ 4020: System out of service. Batteries discharged. Manual pull stations missing on third and first floors of southerly stair tower.

(b) BEQ 4015: Fire alarm annunciator in Mechanical Equipment Room will not restore to normal. Fire alarm bell gong shell missing in lounge, west end of first floor. Smoke detectors in lounges have been relocated from center of ceilings to side walls on second and third floors. Detectors now mounted so close to ceiling that outer shell cannot be properly placed on the detectors. Detectors must be either relocated to center of ceiling or lowered



to provide at least 6-inch clearance between ceiling and upper edge of detectors.

(c) BEQ 4010: System out of service. Batteries discharged. Manual pull station near main entry on first floor missing. Alarm bell in northwest corridor on first floor damaged.

(d) Hangar 4106: Batteries dead. Trouble bell gong shells missing.

(e) Hangar 518: Batteries nearly dead. Charger in "high-rate" position. Trouble bells out of service.

(f) BOQ 705: The original key-operated reset switch has been removed from the Simplex panel and an unenclosed light switch hung on the outside of the panel to replace it.

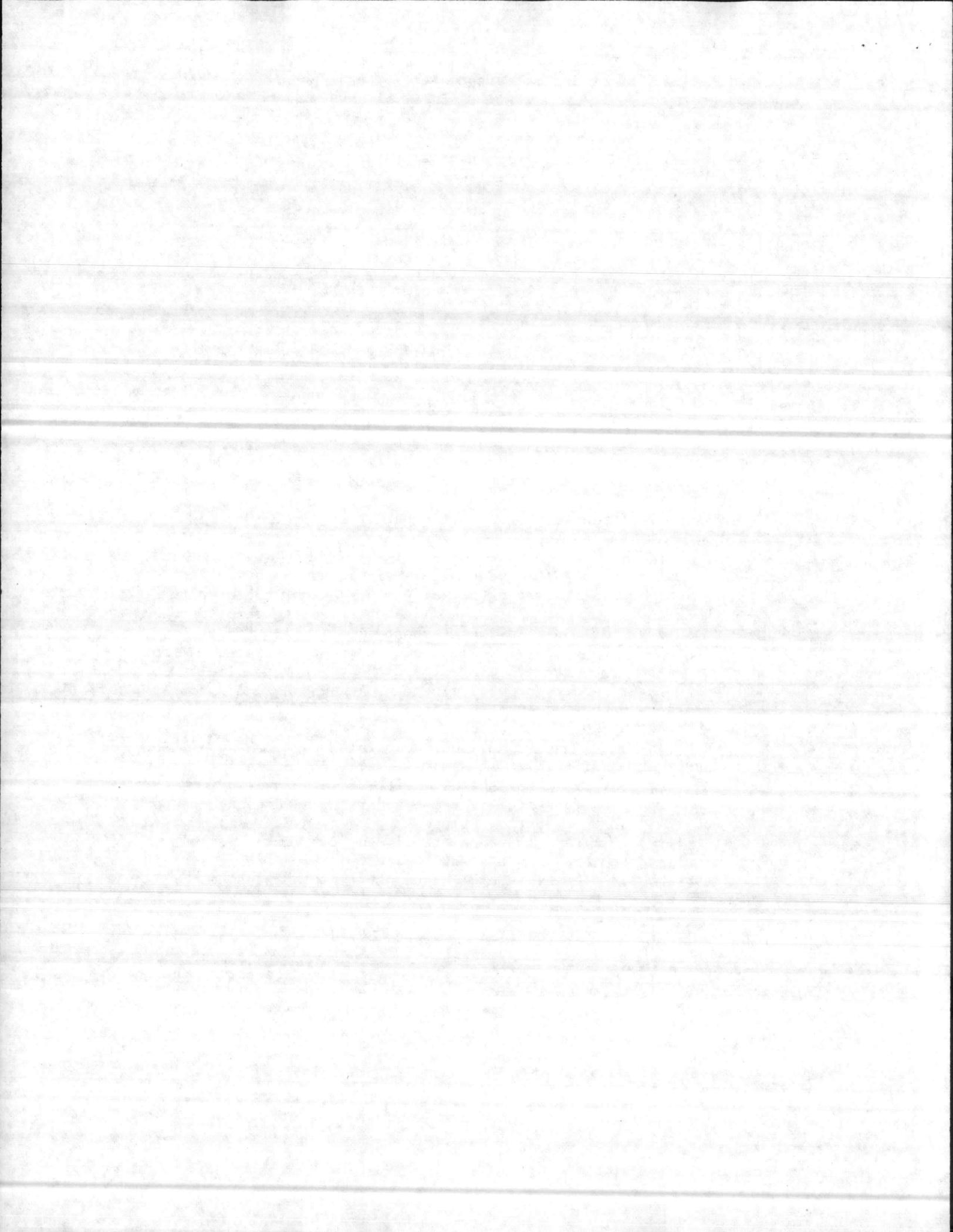
(g) BEQ 211: Alarm bell gong shells missing on first and third floors. Striker mechanisms damaged. Manual pull station missing at East end of first floor. Fire alarm relay panel removed. System direct-wired to coded transmitter. (Appears to be 120V AC system wired to 24V DC transmitter.)

(h) Dispensary 302: System out of service. Step-down transformer missing from control panel.

Justification: Fire evacuation alarm systems provide the means of simultaneously alerting building occupants of the need to vacate the building and to alert the fire department to respond to a fire emergency. Not only is the response time of fire fighters critical in minimizing property damage and reducing the potential for loss of life, but the evacuation of all occupants of the building is of even greater importance. In sleeping occupancies and in buildings where there may be moderate to large numbers of people, the problem of occupant notification of emergency situations is increased. For these reasons, DOD has established requirements for the provision of these systems. Maintaining these systems in full operating condition is at least as important as their initial provision. An inoperable or unreliable system is false security and dependence upon it can lead to injury or death. At present, maintenance is the responsibility of military telephone repairmen from Camp Lejeune. Unfortunately these repairmen are subject to transfer before gaining sufficient expertise in the several makes of fire alarm systems installed.

(1) Approximate Cost: \$250 per building.

(2) Monetary Justification: Not a direct factor, although speed of response by fire fighters is essential in minimizing loss due to fire.



(3) Life Safety: Moderate to Severe.

(4) Strategic Importance: Not applicable.

A-6-(77): Remodel at least one bedroom window in each bedroom of each living unit in the MEMQ area to comply with DOD and HUD requirements.

Justification: Most serious fires, from a life safety standpoint, occur in family housing during the nighttime hours. Frequently, normal paths of egress from bedrooms are untenable due to smoke and fire. The only other means of egress, or for entry by would-be rescuers, is bedroom windows. For these reasons, the "Life Safety Code" and HUD requirements, both a part of DOD criteria, have established the following requirements for housing units:

(a) Each bedroom shall have at least one window in an exterior wall.

(b) At least one window in each bedroom shall:

(1) Be operable from inside without the use of tools.

(2) The bottom of the window shall not be more than 4-feet above the floor.

(3) The window shall be openable to provide a clear opening of not less than 20-inches in width and 24-inches in height and not less than 5.7 square feet in total area.

(1) Approximate Cost: \$200 per bedroom.

(2) Monetary Justification: Not applicable.

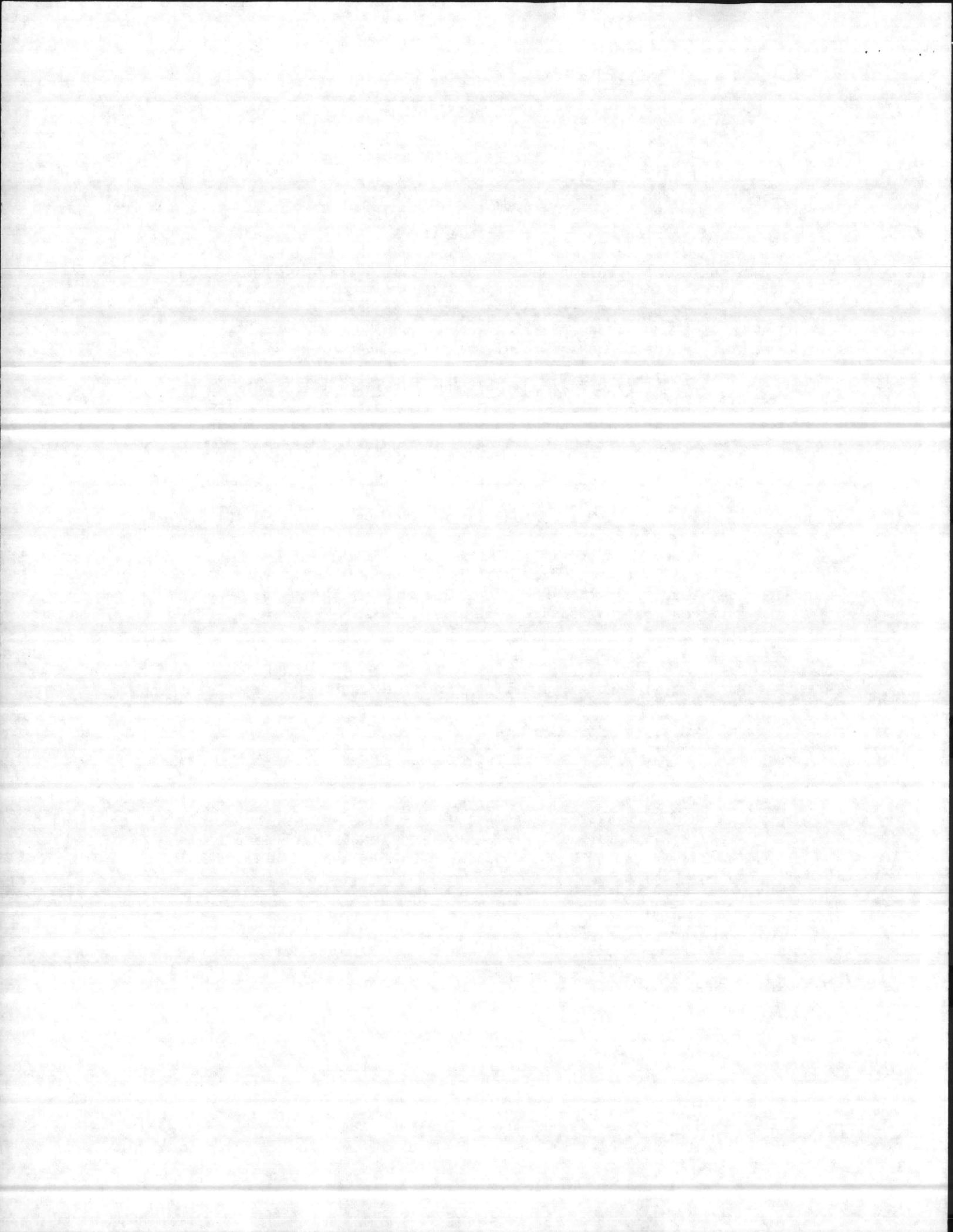
(3) Life Safety: Severe

(4) Strategic Importance: None

A-7-(64)(Revised): Construct and equip in accordance with NFPA-33, "Spray Finishing", a well detached building to house all spray painting operations for the facility. Until such a building is provided, properly arrange the paint spraying operation in Building 116 as follows:

(a) Enclose both windows with masonry units the same thickness as the wall.

(b) Replace the combustible ceiling material with a noncombustible material.



(c) Install an exhaust system with metal ducts terminating approximately 6-inches above the floor. The exhaust duct should discharge through the side wall of the building and extend above the roof.

(d) Replace all electrical wiring and fixtures outside of the spraying area with that approved for Class I, Division 2 hazardous locations.

(e) Remove all electrical wiring and equipment from the adjoining 1-story wood frame lean-to. The wiring in this area is extremely poor and completely unsafe.

Justification: The ordinary electrical systems and improper exhaust system for the spray painting operation present life safety hazards to all personnel in or around the building.

(1) Approximate Cost: \$30,000

(2) Monetary Justification: Building original cost is \$1,501.

(3) Life Safety: Severe

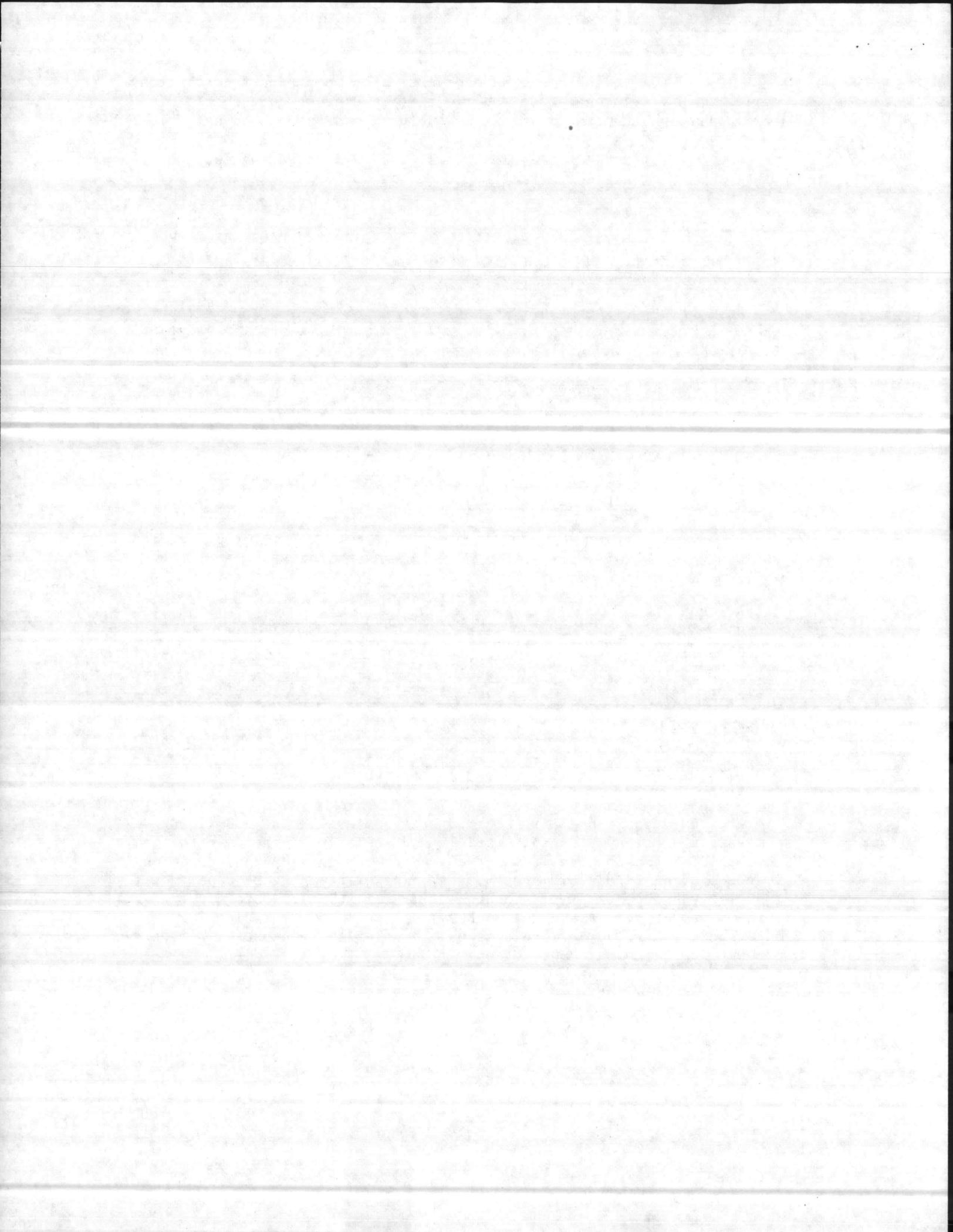
(4) Strategic Importance: None

A-8-(77): Provide complete, or extend to cover throughout the building, fire alarm systems in the following buildings:

Building	Approximate Cost	Remarks
"O" Club 710	\$3500	Complete system required
Commissary 414	\$2500	Complete system required
Exchange 232	\$1500	Extend existing
Service Club 208	\$1000	Extend existing

Justification: Fire alarm systems are required in buildings as a means of alerting occupants rapidly and reliably of the need to leave the building due to fire or other emergency. When properly connected to the station fire alarm system, they also alert the fire department, reducing response time with consequent minimization of loss due to fire. Current DOD criteria requires such systems in other than sleeping occupancies where 50 or more persons may normally be expected to be present during normal hours of operation.

(1) Approximate Cost: See table.



(2) Monetary Justification: Not a direct factor.

(3) Life Safety: Moderate

(4) Strategic Importance: None

A-9-(77): Rework all LP gas heating system installations and fuel cylinder arrangements throughout the station to comply with the pertinent requirements of NFPA-54, "National Fuel Gas Code", and NFPA-58, "Liquefied Petroleum Gases". Important items which should receive priority attention are as follows:

(a) All LP gas cylinders must be mounted on a firm, level foundation (preferably concrete or masonry) free from the possibility of settlement and so situated as to not be subject to the possibility of mechanical injury from vehicles or other causes.

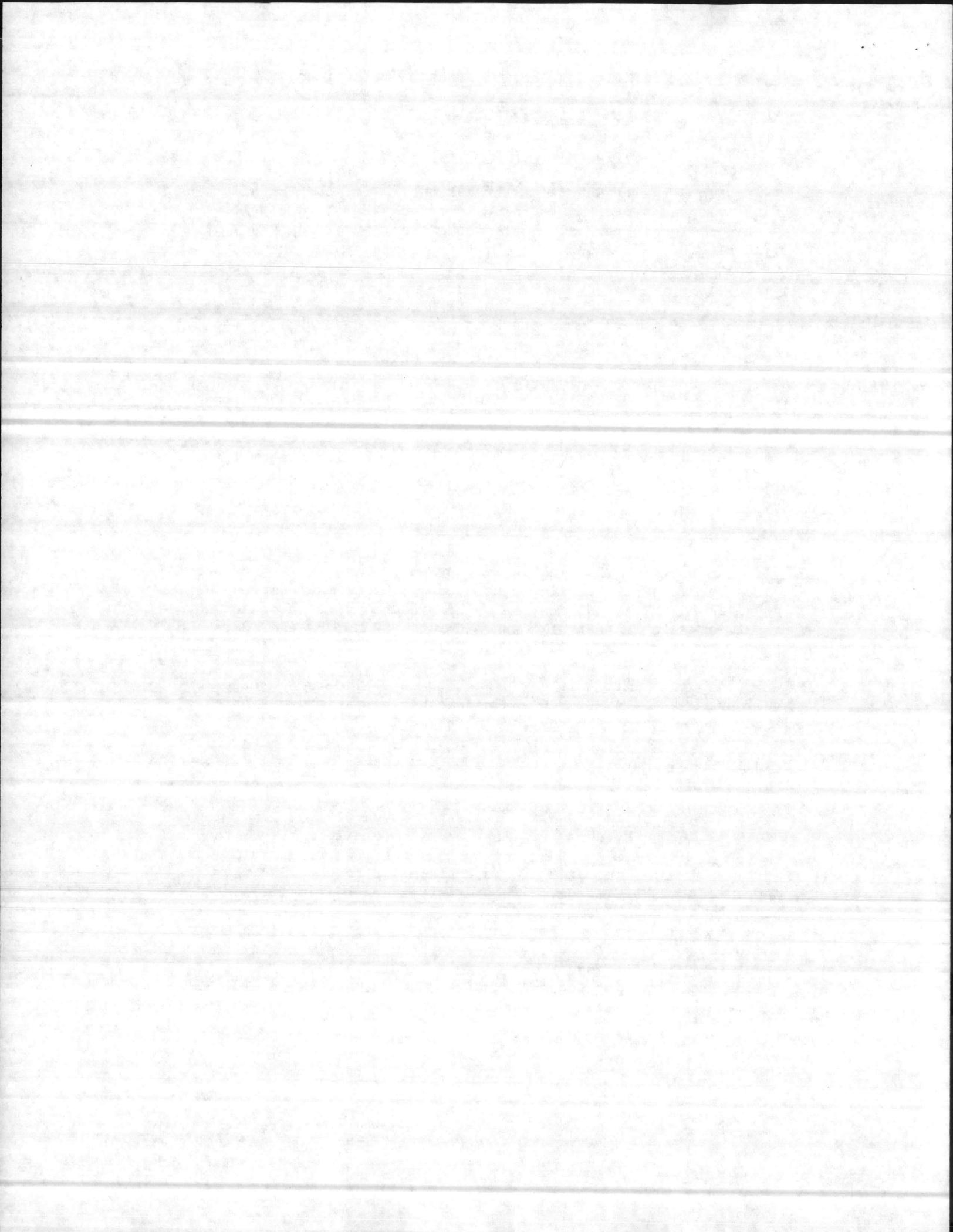
(b) All LP gas cylinders must be located and arranged so that the discharge of the safety relief device is at least 3-feet horizontally from any building opening below the relief device and at least 5-feet in any direction from any ventilation system intake.

(c) Regulators on all LP gas cylinders must be securely attached to the container valves or containers, or to supporting standards or building walls.

(d) All piping between cylinders and appliances should be as short as practicable, consistent with considerations of possible settling and location. The present practice of leaving a coil of 3 to 10 feet of copper tubing between the cylinders and the exterior of the building is undesirable and potentially hazardous.

(e) All supply piping between cylinders and exterior of building must be protected against mechanical injury either by location and support or by housing the existing copper tubing inside of 1/2-inch steel pipe. Protection by steel pipe should also be provided wherever it is necessary to run copper supply lines exposed on floors within buildings.

Justification: While it is not known what, if any, local codes exist in the Jacksonville area, it would appear that the local LP gas supplier is not adhering to the practices required on Government installations. The large LP gas cylinders are installed wherever convenient without adequate regard for land condition or contour. Regulators attached to cylinders are frequently without support other than that furnished by the 6 to 10-inch length of 3/8-inch copper tubing between shutoff valve and regulator. Supply tubing between regulator and exterior of building is generally excessive and left in a loose coil, subject to and experiencing mechanical injury. Complaints of gas leaks are common.



(1) Approximate Cost: Undetermined. It is not known to what extent the local supplier has control of each installation, An examination of the supplier's contract should fix the extent of his responsibility. Interior correction of deficiencies is expected to average less than \$100 per installation.

(2) Monetary Justification: Gas leakage, cylinder tip over, and supply line breakage can result in the formation of an LP gas cloud either inside a building or exterior to the building. The numerous, ever-present sources of ignition, particularly within a building, can result in ignition and explosion. Dependent upon the precise building under consideration, a loss of up to \$100,000 could be anticipated.

(3) Life Safety: Moderate

(4) Strategic Importance: Undetermined

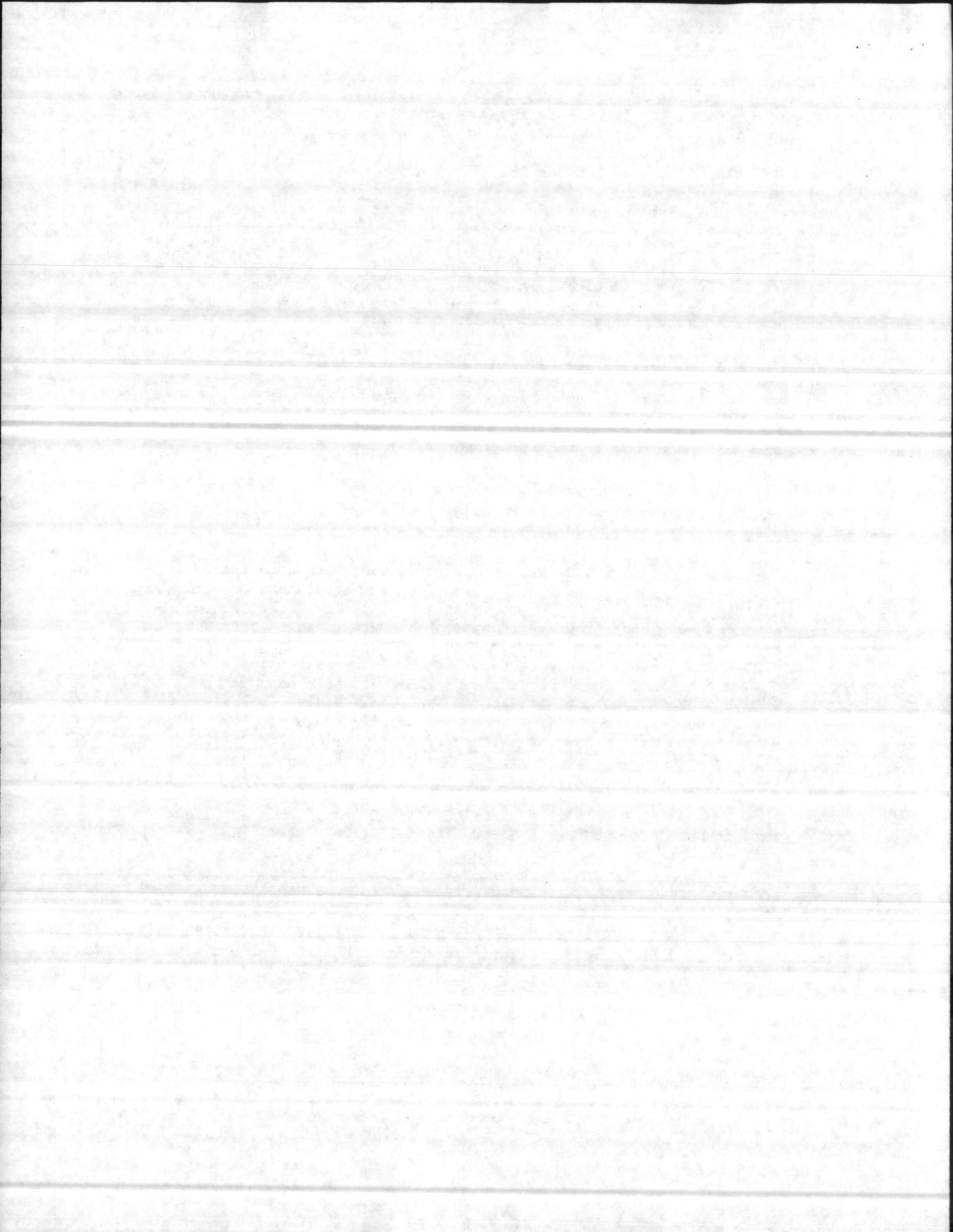
A-10-(77): Where BEQs have been remodeled from open squad bays to individual 2-4 man rooms by the erection of concrete block walls, creating a central corridor, extend the corridor walls to tight against the floor or roof deck assembly above with materials which will provide at least a one hour fire resistance rating. BEQs 212, 213, 214, and 4010 are examples.

Justification: Current DOD criteria requires corridors in BEQs and similar occupancies to have 1-hour fire resistance ratings. In the event of a fire in one of the sleeping rooms, the central corridor must stay free of flame, smoke and toxic gases to permit the occupants of the building to escape. The existing construction stops just above the suspended ceiling. The concealed space above the suspended ceiling is approximately 2-feet deep, adequate to permit occupants to move from their own room to above the ceiling, across the corridor, and into rooms of other occupants. As a result, many ceiling panels have been removed, completely negating even the minimum protection afforded the suspended ceiling (which has very little fire resistance rating).

(1) Approximate Cost: Continued use of concrete block is desirable because of its permanency. It is estimated that the work could be accomplished in BEQs 212, 213, and 214 for about \$5,000 per building and for about \$15,000 in BEQ 4010. The use of 5/8-inch gypsum board on metal studs would reduce this cost approximately 50%.

(2) Monetary Justification: Slight. Some reduction in smoke and water damage due to fire should be anticipated due to improved confinement.

(3) Life Safety: Moderate



(4) Strategic Importance: None

b. Category "B" - Important

(Recommendations for correction of conditions which involve important life safety hazards, which present significant monetary loss potentials, or which affect mission capabilities of a noncritical nature.)

B-11-(77): Replace sprinkler heads, which have been removed and outlets plugged, in the following areas:

(a) Hangar 4100 (VMO): All outlets in the Air Receiver/Transformer Room, first floor to lean-to. The use of 286°F sprinkler heads is recommended.

(b) Hangar 518: All outlets in Electrical Switchgear Room, first floor of lean-to. 212°F sprinkler heads are recommended.

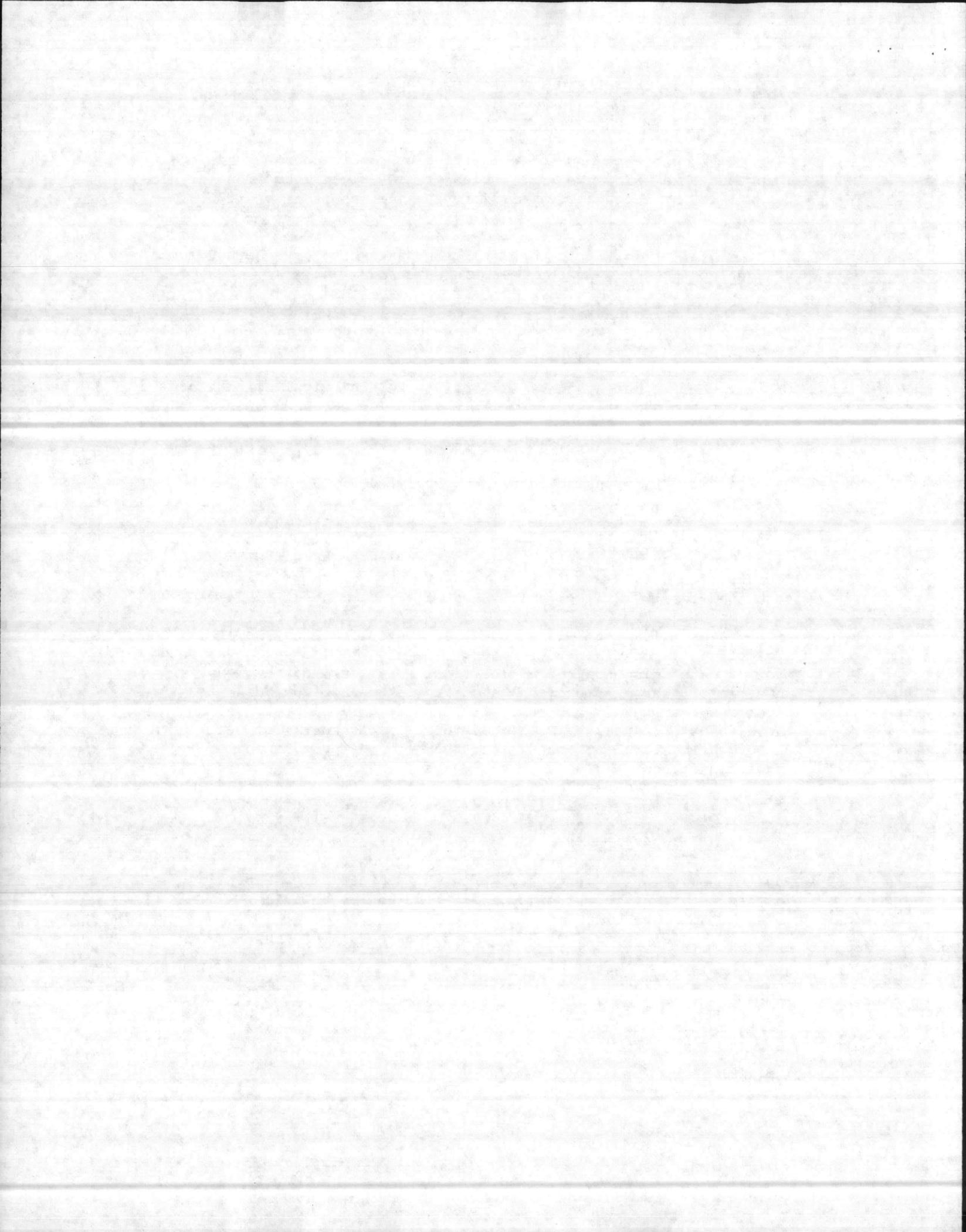
(c) Hangar 515: Replace sprinklers and branch line piping which have been removed from Electrical Room 211, first floor of lean-to. 212°F sprinkler heads are recommended.

(d) Hangar 504: Extend sprinkler protection to cover throughout the presently unsprinklered spaces within the Communications Center on second floor. Replace sprinkler heads which were removed from both electrical switchgear rooms on the first floor of both lean-tos. 212°F sprinkler heads are recommended.

Justification: In each of the above locations, sprinkler protection was originally provided. The unjustified and unwarranted fear of water discharge onto electrical apparatus and the equally unwarranted fear of electrical shock to personnel from such water discharge resulted in the removal of the required protection from these rooms and areas by station forces. It is worthy of mention that one of the most reliable and effective means of protection for large industrial transformers, for many years, continues to be automatic water spray systems. The order of failure, with consequent discharge of water, of modern sprinkler heads, except when damaged through mechanical injury, is so low that it is practically nonexistent. The removal of sprinklers from these areas has failed to consider the fact that the rooms involved are not constructed as transformer vaults and that, without the required sprinkler protection, a fire occurring in the electrical room can jeopardize the entire building.

(1) Approximate Cost: \$25 per sprinkler head.

(2) Monetary Justification: The absence of automatic alarm transmission and consequent delay in discovering, coupled with the



absence of water discharge, could result in severe structural and operational damage to a multi-million dollar building.

(3) Life Safety: Not a direct factor.

(4) Strategic Importance: The critical effect of the loss of one hangar upon the mission of the activity is not known.

B-12-(77): Remove the combustible partitions (generally plywood on wood stud), enclosures and interior wood or wallboard combustible paneling in the following areas:

(a) Exchange Building 4126: Plywood wall paneling, tempered hardboard and pegboard used as interior finish.

(b) Hangar 4108: Plywood partition in Avionics Shop of enclosed 1-story lean-to at easterly end. Plywood partitions subdividing former heads on first of 2-story lean-to, now occupied as HML-268 Avionics, and HML-269 Avionics.

(c) Hangar 4106: Plywood partitions in GSE Area, first of lean-to. Plywood walls of Production Control Office. Plywood exterior wall at east end lean-to.

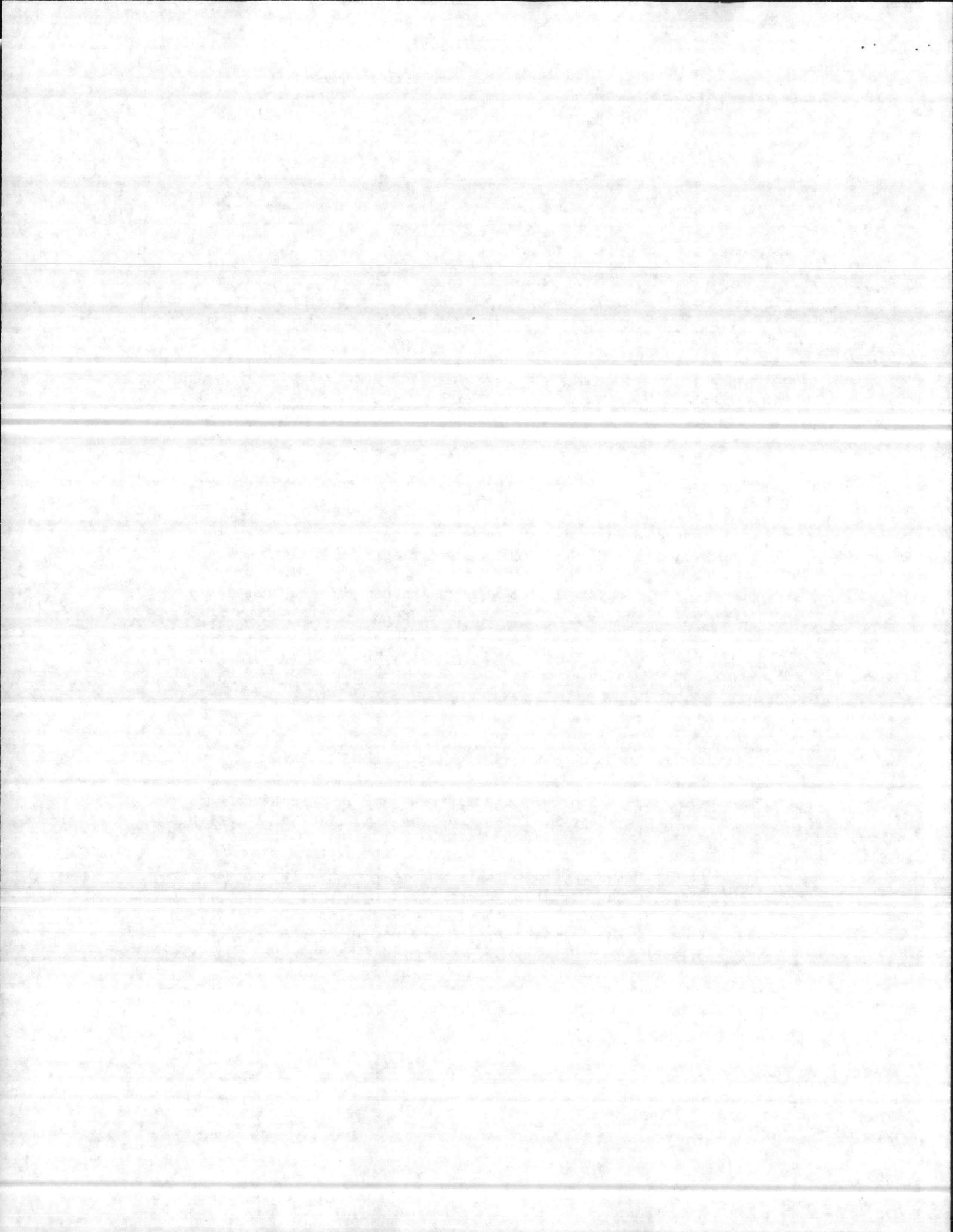
(d) Hangar 515: Plywood partitions in shops of Sqdn. 261. Plywood partitions in Room 120, second floor.

(e) Hangar 504: Wood paneling in the undercab level of the control tower. The high percentage of highly combustible low density cellulose acoustic tile on walls and ceilings of the Communication Center on the second floor. All plywood partitions and enclosures in the many shops.

(f) Ground Electronics Building 849: The numerous plywood enclosed shop and office partitions.

(g) Flying Club 831: The combustible enclosure for the gas-fired heating furnace. (Note: This building is entirely sheathed on the interior with combustible material and technically should be 100% sprinklered. However, the value and importance of the structure is inadequate to warrant the expense.)

Justification: Combustible materials not only increase the fire potential of any building by providing materials very susceptible to ignition, but also are a major factor in the spread of any fire. Many materials burn with extreme rapidity and many generate dense quantities of smoke and/or toxic gases under heat or during combustion. In addition to the obvious potential toward increasing the physical damage to the building, the severe adverse life safety characteristics of many materials have resulted in very specific criteria relating to



permissible flame spread and smoke development characteristics being issued by DOD. It is recognized that much of the criticized construction is in the "self-help" category. However, the "self-help" program does not permit violations of any construction or life safety criteria. Further, no alteration should be undertaken without the specific approval of the station Facilities Engineer.

(1) Approximate Cost: Removal of material involves principally labor only. Replacement with acceptable materials, in those relatively few areas where actually essential, is dependent upon the specific materials purchased.

(2) Monetary Justification: Direct monetary considerations are indeterminate, but the removal of the combustible materials cited could reduce fire spread up to 50%.

(3) Life Safety: The removal of the combustible material, with the consequent decrease in the ability of fire to spread, can have an important, although indeterminate, effect upon the life safety potential.

(4) Strategic Importance: Although there is no definite overall strategic importance, the increased fuel loading represented by the cited materials could have an important bearing upon the ability of the station to perform its assigned mission in the event of a serious fire.

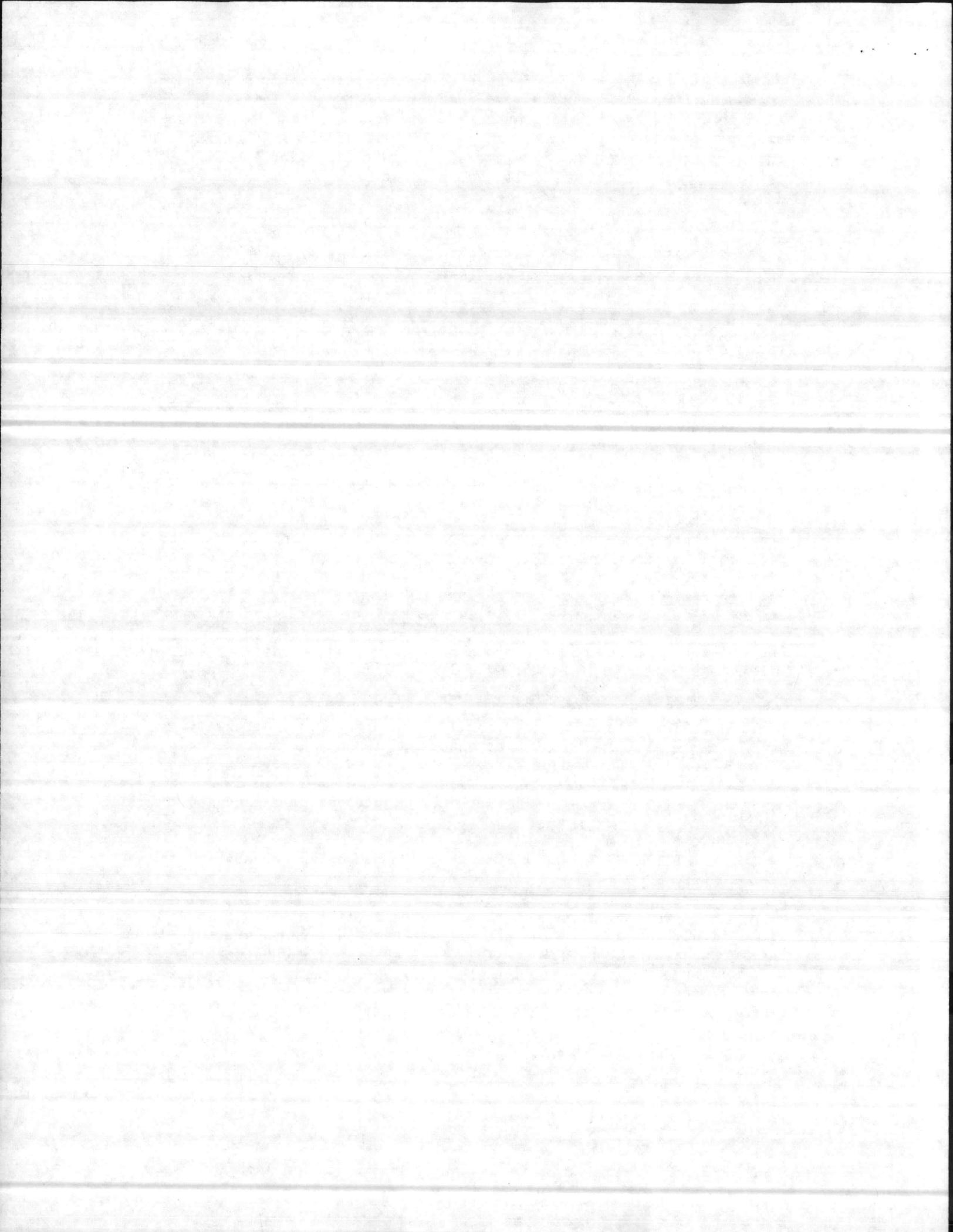
B-13-(77): Repair or replace all damaged emergency light units and establish a schedule of maintenance to insure that batteries are properly serviced and the lighting units are maintained in reliable operating condition. Damaged, out of service, and vandalized emergency lights were noted as follows:

(a) BEQ 4010: Southwest corridor, first floor. Northwest corridor, first floor. Center corridor, first floor. Northeast corridor, first floor. Southeast, northeast, and northwest corridors, second floor. North end of center corridor, third floor.

(b) BEQ 214: All emergency lights on the second and third floors.

(c) BEQ 213: All emergency lights on the second and third floors.

(d) Hangar 4100 (VMO): Emergency light in the Pump Room is wired into the room lighting circuit so that when lights are turned off the emergency light turns on. This unit must be wired between the panel and the light switch so that it comes "on" only upon power failure. Batteries are constantly discharged at present.



Justification: Emergency lighting units and systems are required by NFPA-101, "Life Safety Code", to be provided in buildings and areas where, when normal illumination is lost, the pathways to the exits are no longer visible. Such units are also provided in operationally critical areas so that essential functions can continue. In sleeping occupancies, nighttime fires, coupled with loss of AC power and obscuration due to smoke, can result in panic, injury, and death due to panic and confusion generated by the lack of visibility.

- (1) Approximate Cost: \$250 per unit.
- (2) Monetary Justification: Not applicable.
- (3) Life Safety: Moderate
- (4) Strategic Importance: None

B-14-(77): Provide UL-listed, pre-engineered, automatic and manual, dry chemical extinguishing systems in the range exhaust hood and exhaust duct systems in each of the following areas:

(a) Exchange Building 4126: Over the grill and deep fat fryer in the Snack Bar.

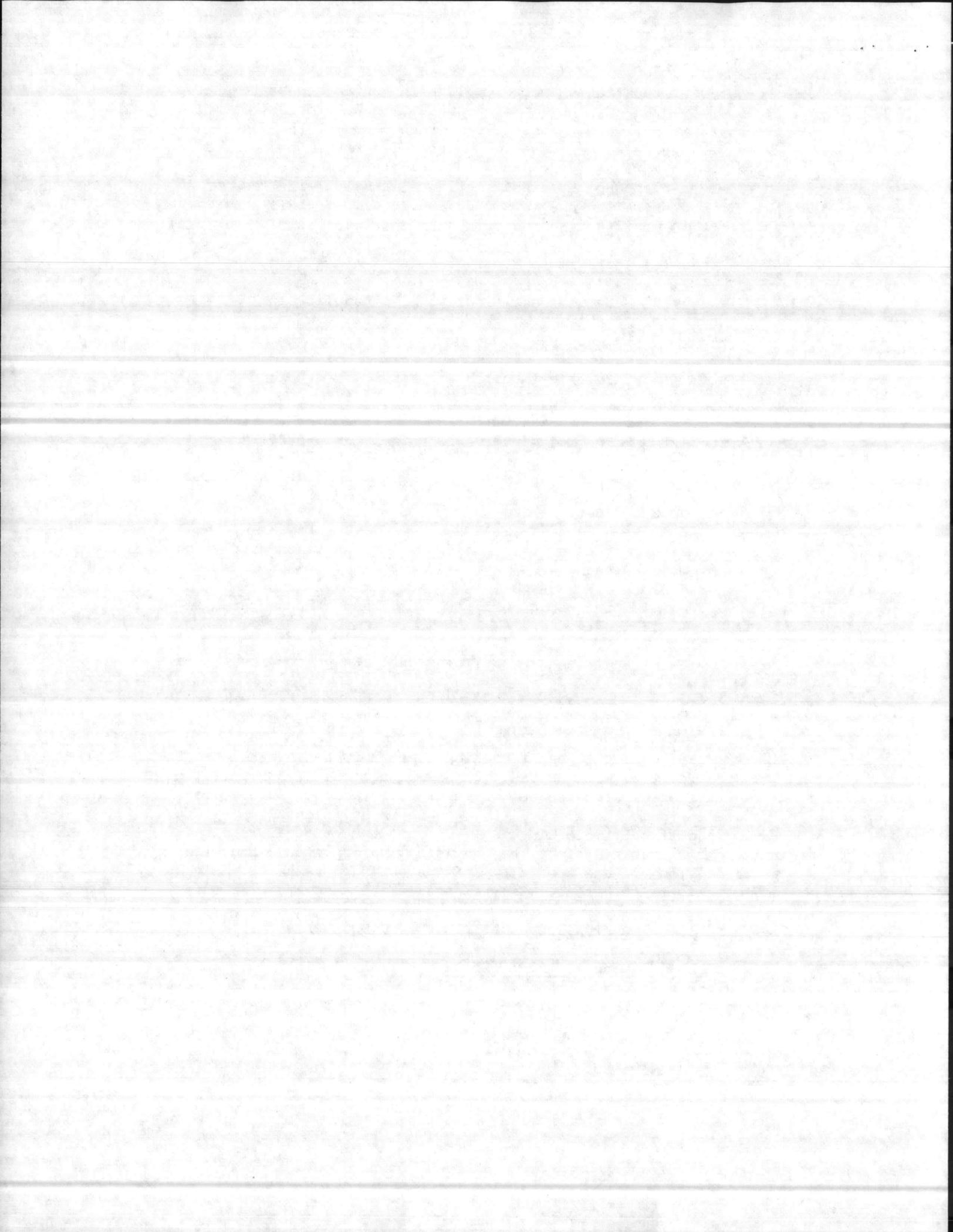
(b) Officers' Club Building 710: In range exhaust hood system of main Kitchen.

(c) Service Club Building 208: Range hood system in Snack Bar.

(d) Bowling Alley Building 205: Range hood system in Snack Bar.

Justification: Commercial-type cooking fires have been a matter of major concern and frequency for many years. The preponderance of grease-producing types of cooking appears to be increasing rather than the reverse, with emphasis on hamburgers and french fries. When fires occur, the grease accumulation in hoods, filters, and exhaust ducts is usually ignited, producing an intensely hot fire which is difficult to extinguish. Current DOD criteria requires range and filter systems to be provided with approved extinguishing systems. The pre-engineered type is recommended as being the most economical, fully effective system available.

- (1) Approximate Cost: About \$1,000 per system.
- (2) Monetary Justification: While it is not anticipated that a grease fire in any of the building in question would result in a total loss to the building, it is anticipated that upwards of \$15,000



worth of equipment would be damaged and the station deprived of the use of the facility of 3 months or longer.

(3) Life Safety: Not a direct factor.

(4) Strategic Importance: Not a factor.

B-15-(77): Remove, and prohibit further use of, the damaged, unguarded and unsafe small, bottled gas-fired space heaters used to heat "line shacks" and numerous other buildings throughout the station.

Justification: The small space heaters in question are not supported or attached to prevent accidental movement, and are attached to the fuel supply cylinder by soft copper tubing which is easily kinked or broken by repeated accidental movement of the space heater. Even more hazardous is the lack of a guard, or screen, on the radiant face of the heater to prevent accidental contact with combustible material. Mostly located in structures lined with combustible material and in areas subject to poor housekeeping, their continued use involves a high potential for fire.

(1) Approximate Cost: \$750 to replace present unit by an acceptable heating device, per location.

(2) Monetary Justification: In most locations, total destruction of the containing building, averaging \$8,000, should be anticipated.

(3) Life Safety: Light

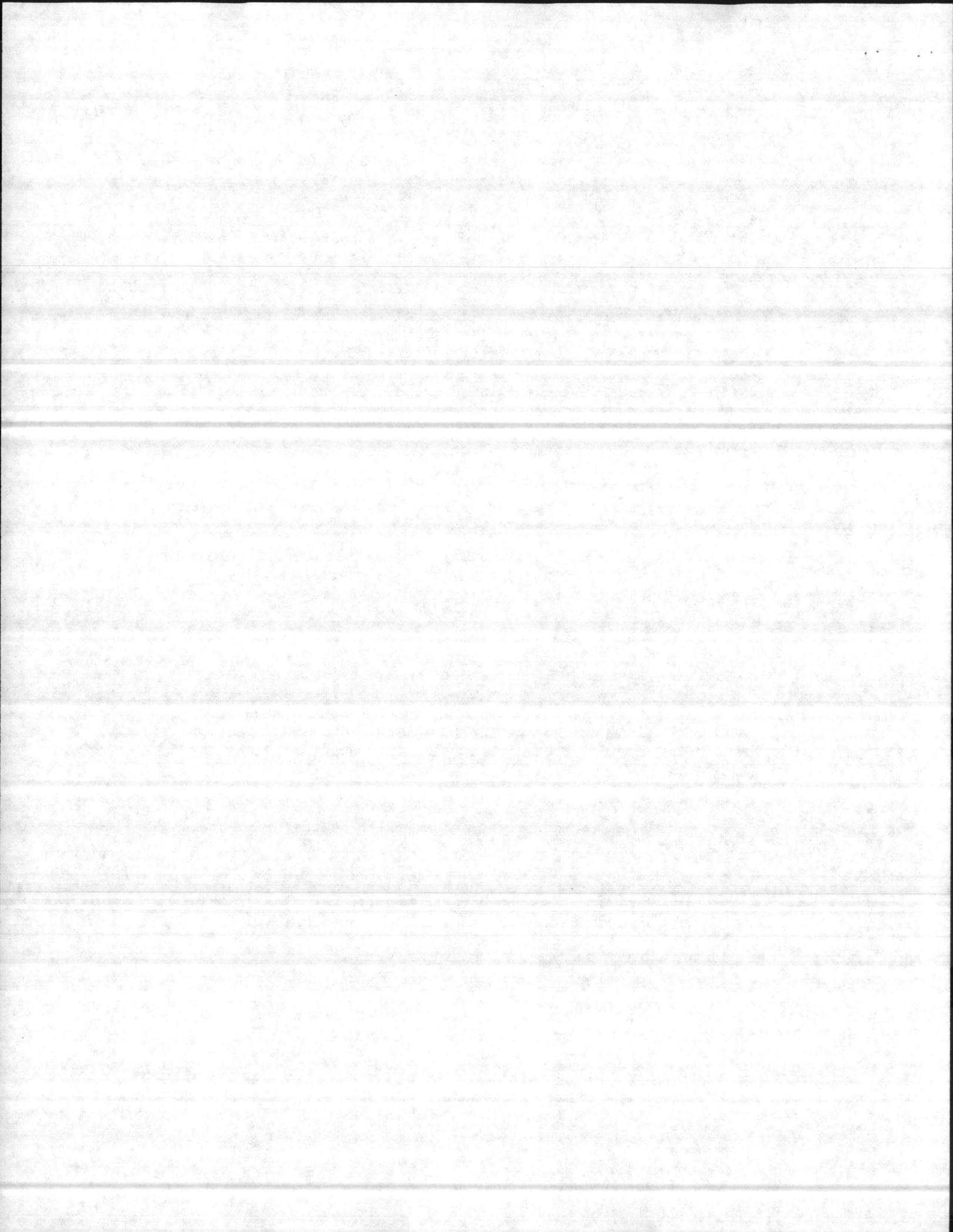
(4) Strategic Importance: None

B-16-(64) (Revised): Provide a water supply system in the 800 Area capable of delivering the fire flow requirements established by NAVFAC DM-8. One method of accomplishing this is to make the existing fire pumps in Building 2003 available to the 800 Area by the following means:

(a) Remove the present check valve in the 8-inch main near southwest side of the Pump House, Building 2003.

(b) Provide a post indicator valve to control the fill line for the 300,000 gallon aboveground water reservoir, Building 2002. Valve to be normally kept closed and opened only to fill reservoir.

(c) Provide audible, properly identified signals at the Water Treatment Building 110 to indicate when the fire pumps in



Building 2003 are operating.

(d) Overhaul and restore to full operation the controller for the electric motor driven fire pump, which has been out of service since early 1973.

(e) Complete the control wiring for the new gasoline engine controller and place this auxiliary drive system into full automatic operation.

Justification: Present arrangement of the pumping facility at Building 2003 permits these pumps to supply only the MOQ area and the area immediately adjacent to the recently completed MABS Warehouse 3525. The recommended alterations would permit the pumps to supply the 800 Area, which includes several important buildings, where the available water is currently approximately 50% deficient.

(1) Approximate Cost: About \$7,500.

(2) Monetary Justification: Recommended changes would provide substantial fire fighting water supply improvement to an area where values may reach as high as \$900,000.

(3) Life Safety: Not a direct factor.

(4) Strategic Importance: Not a direct factor.

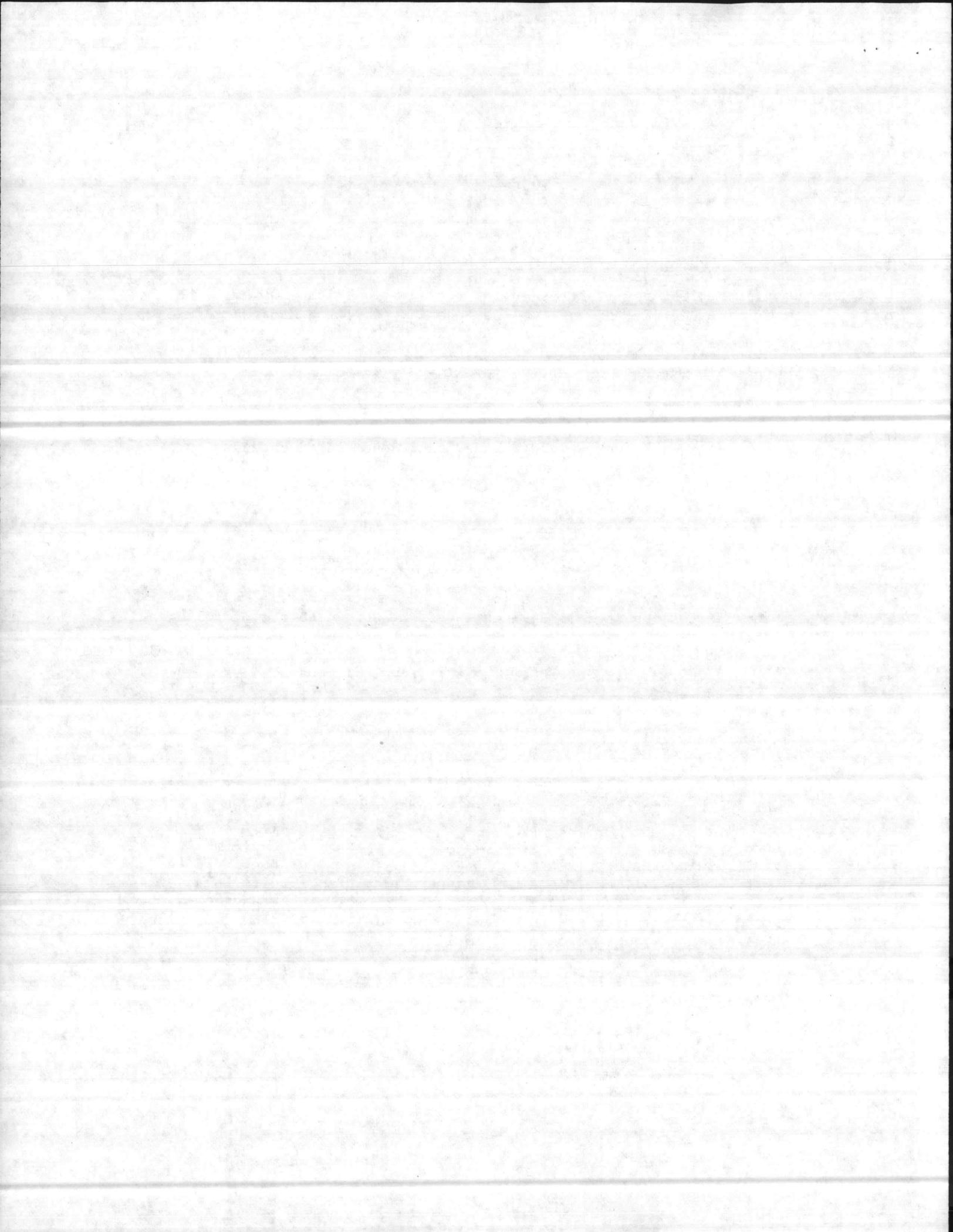
B-17-(77): Remove unit air conditioners in fire walls and brick up the openings to full wall thickness in each of the following locations:

(a) Hangar 4106: In stair tower fire wall, first floor of west end stair tower.

(b) Hangar 504: In fire wall between hangar bay and both lean-to areas.

Justification: It is essential that penetrations of any fire wall be kept to a minimum in order to confine fire and smoke to the area of origin. When openings must be made, it is essential that these openings be protected by automatic closing fire doors or fire shutters in order to maintain the integrity of the protection afforded by the fire wall. Unit air conditioners afford no fire resistance. When installed so that they take in air from the hangar bay to cool shops and offices, they can actually suck heat, smoke and flames into the spaces they are intended to cool.

(1) Approximate Cost: \$50 per unit.



(2) Monetary Justification: As installed, the units violate the fire integrity of buildings valued in excess of \$2.5 million.

(3) Life Safety: The unit air conditioners can contribute to flooding shops and offices with smoke and toxic gases which could be a contributing factor in a loss of life.

(4) Strategic Importance: None

B-18-(77): Replace all missing sections of balcony guardrail on the second and third floors of BEQ 4015.

Justification: Guardrails and their accessories and appurtenances are provided on balconies, stairways, landings, etc. for the sole purpose of preventing injury and death. The stainless steel mesh sections, each approximately 3' X 4', are not solely a decorative device, but are required by the "Life Safety Code" in order to prevent personnel from falling, or being pushed, through the space between the balcony deck and the upper guardrail. There appears to be a possibility that the missing sections are the result of a type of vandalism.

(1) Approximate Cost: \$3,000

(2) Monetary Justification: None

(3) Life Safety: Light

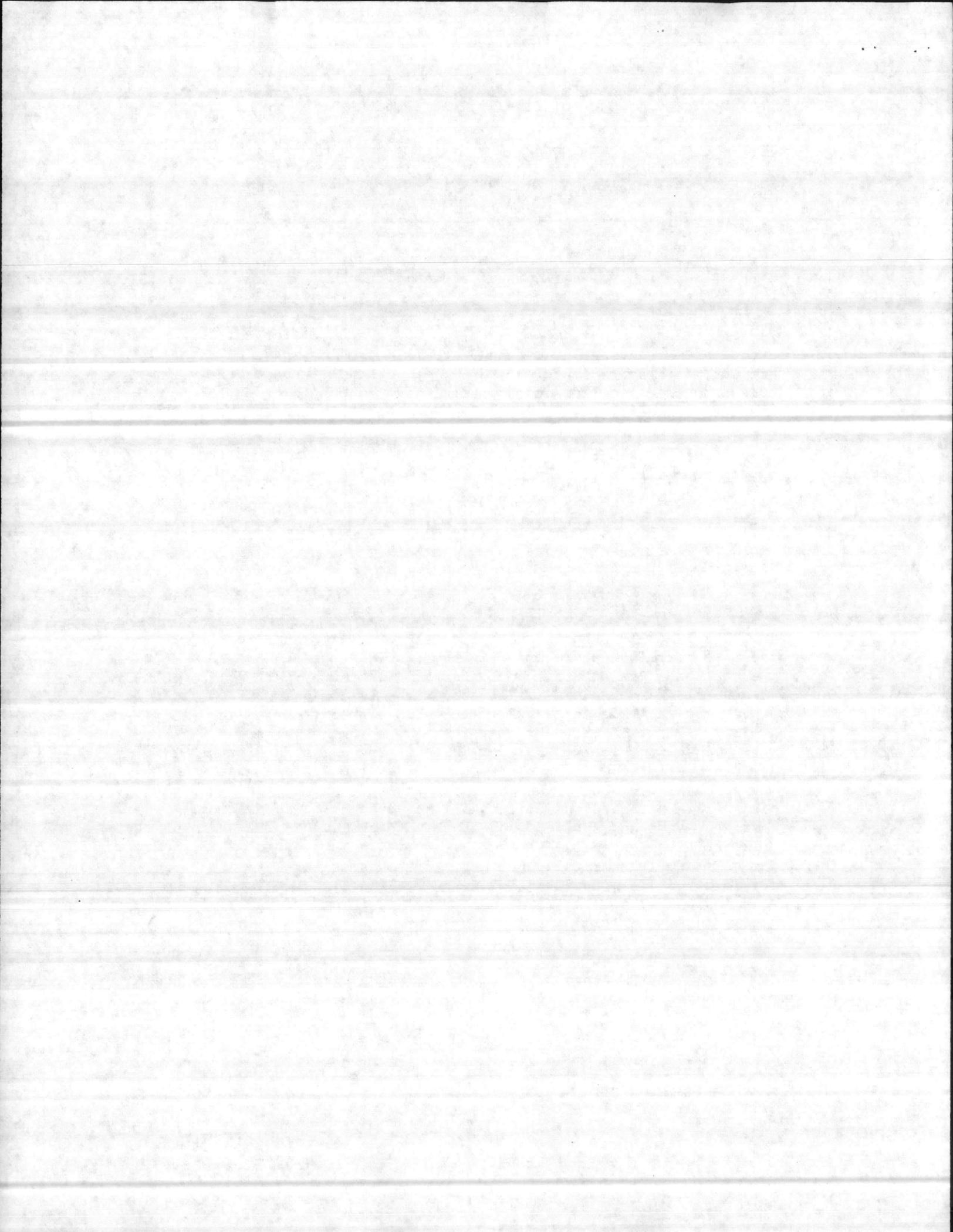
(4) Strategic Importance: None

B-19-(77): Repair or replace the time/date stamp unit for the base fire alarm system recorder in the fire alarm headquarters of the fire station. Present unit no longer advances and "year" wheel ran out several years ago. All alarms over the telegraphic system are now automatically dated "May 37, 11:55 P.M., 1958".

Justification: NFPA-72D, "Proprietary Signaling Systems", is the governing standard for the type of base fire alarm system provided at this activity. One of the several requirements of this standard is that the alarm recording device shall be arranged to automatically record the time and date of each alarm. In the event of a serious fire, it is oft-times essential to the investigation to pinpoint the precise time of alarm transmittal. Further, this automatic record may be very important in pinpointing equipment malfunctions, delayed transmissions or similar maintenance-type incipient problems.

(1) Approximate Cost: \$250

(2) Monetary Justification: Not a direct factor, although proper recording may be a very useful tool in the investigation of the



increasing incidence of incendiary fires.

(3) Life Safety: Not a factor.

(4) Strategic Importance: Not a factor.

B-20-(77): Provide an automatic emergency power system for the station telegraphic fire alarm system and fire alarm headquarters radio, either by wet cell battery stand-by or by connection to two or more automatic emergency generators, as is required by NFPA-72D, "Proprietary Signaling Systems".

Justification: At one time, a secondary power supply for the base fire alarm system was available from an automatic engine-driven generator. Due to the failure of a component in the electrical system from the generator, a number of years ago, the generator output became incompatible with fire alarm system requirements and the connection was discontinued. As a result, the entire base fire alarm system and fire department radio is out of service during any power outage. It is for this reason that NFPA-72D requires automatic stand-by power to be instantly available. If battery stand-by power is provided, it must have sufficient capacity to operate the system for 24 hours.

(1) Approximate Cost: It is estimated that sufficient batteries, recti-charger, controls and installation would be in the \$5,000 range.

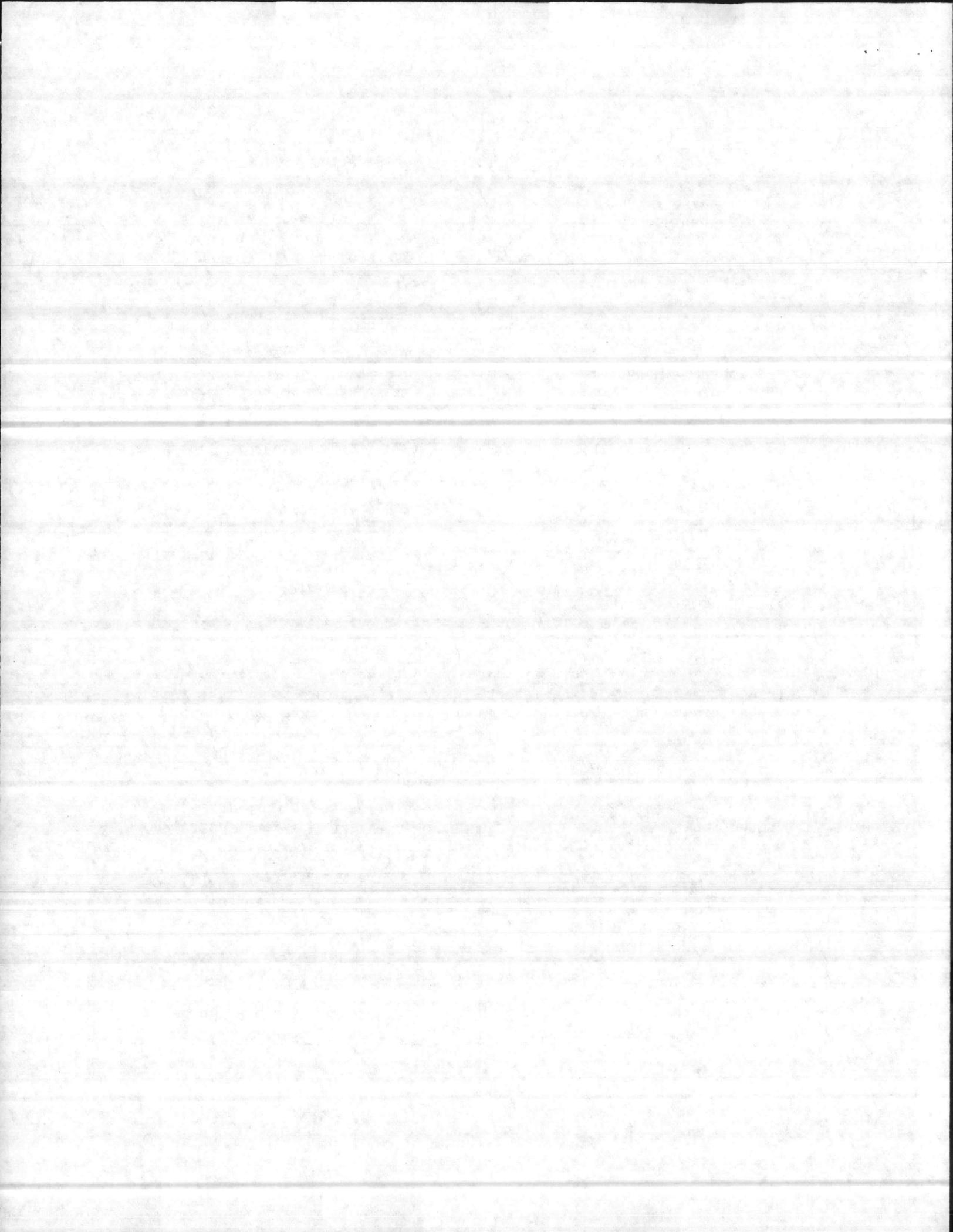
(2) Monetary Justification: Failure to provide the stand-by power system could result in a \$100,000 loss due to delayed alarm.

(3) Life Safety: Not a direct factor, but failure to transmit an alarm and consequent delayed response by fire fighters could be a contributing factor in loss of life in certain types of fires.

(4) Strategic Importance: Not a direct factor.

B-21-(54)(Revised): Provide complete automatic sprinkler protection throughout each of the following buildings, and connect the systems electrically to the station fire alarm system:

Building	Approximate Contents Value	Acquisition Cost of Bldg.	Approx. Cost of Compliance
Hangar 840	\$900,000	\$88,000	\$35,000
"O" Club 710	Not a factor	\$188,000	\$25,000
Exchange 232	\$400,000	\$165,000	\$40,000
Commissary 414	\$90,000	\$45,000	\$17,000
Warehouse 416	Variable	\$11,000	\$9,000



Justification: Sprinkler protection continues to be one of the most effective means of fire detection and loss minimization. Where substantial amounts of combustibile wood paneling and similar highly combustibile interior finish materials exist, good sprinkler protection appreciably reduces the life safety hazard present in such materials. Current DOD criteria requires sprinkler protection throughout aircraft hangars, warehouses, and combustibile morale, welfare and recreational facilities as well as in structures representing high monetary values or housing critical materials.

(1) Approximate Cost: See table.

(2) Monetary Justification: See table.

(3) Life Safety: Deemed potentially moderate in "O" Club 710. Not a major factor in the other buildings.

(4) Strategic Importance: None

B-22-(77): Either completely clean out and cleanup Auto Hobby Shop Building 828, bringing wiring, heating and conditions of use up to current acceptable good practice, or prohibit further use of this building until such time as it can be demolished.

Justification: Building 828 is a very old, mostly 1-story wood frame structure. It is termite-ridden, dilapidated, grease-saturated in part, trashy, and with little or no consideration given to fundamental housekeeping or trash and junk removal. In the condition in which it was found during this survey, it constitutes one of the more severe fire hazards on the station.

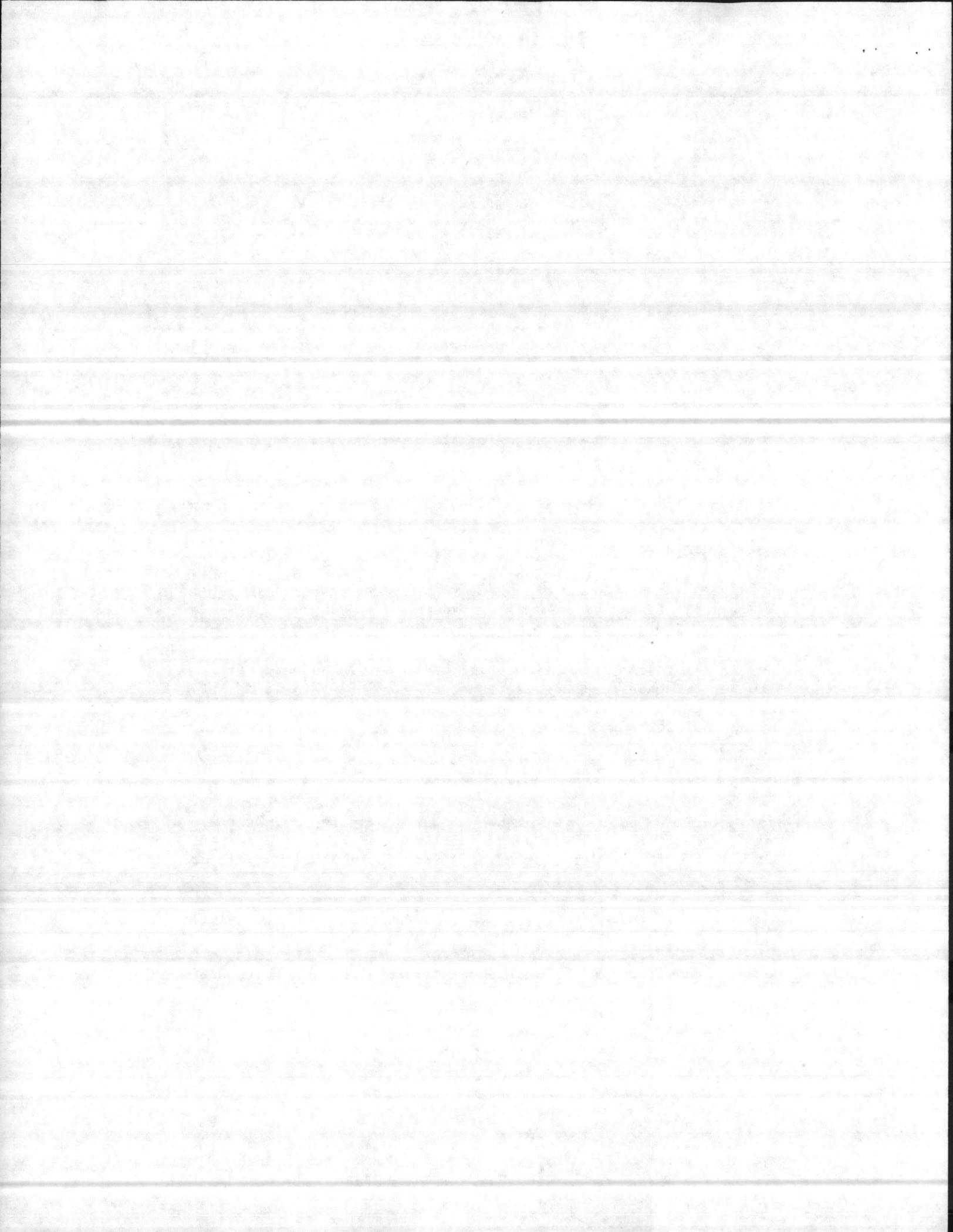
(1) Approximate Cost: Built in 1952 as a temporary structure, the initial acquisition cost was \$27,757. It is estimated that to restore the building to acceptable condition would cost in the \$35-50,000 range.

(2) Monetary Justification: Building acquisition cost is \$27,757.

(3) Life Safety: Due to the generally "open" status of the structure, life safety potential is deemed slight. However, the possibility of fire fighters or spectators being seriously injured in the event of a fire should not be discounted.

(4) Strategic Importance: None

B-23-(77): Prepare a project to replace the telephone pairs used as conductors in the station exterior telegraphic fire alarm system by heavier gauge wire with heavier insulation.



Justification: Numerous problems are being experienced with continuing grounds in the telegraphic fire alarm cable system. The telephone pairs used in this system are very susceptible to grounding due to moisture and to mechanical injury because of the small gauge wire and lightweight insulation. It appears that cable replacement is the only long-term solution.

(1) Approximate Cost: \$75,000

(2) Monetary Justification: The telegraphic fire alarm system is the "first line" means of notification in many important buildings where values exceed \$1,000,000.

(3) Life Safety: Moderate

(4) Strategic Importance: None

8. MAJOR CHANGES:

A noncombustible, sprinklered Ground Support Equipment Building is nearing completion in the 4000 Area of the station. This facility is intended to serve as a maintenance and storage facility for all ground support equipment used on the station.

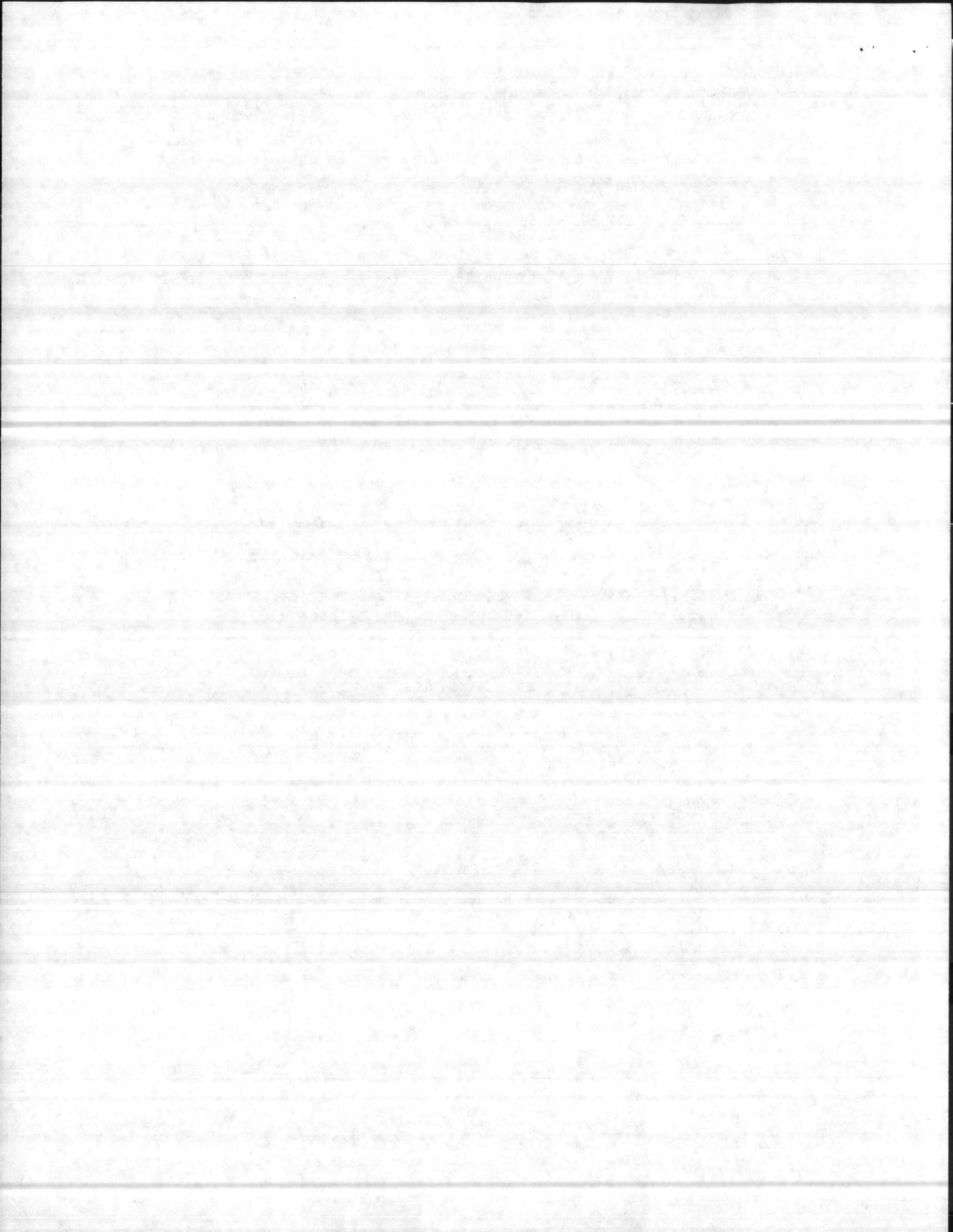
Hangar 4100, a single-module hangar, previously reported as under construction has been completed. This hangar is provided with a foam/water deluge system and a fire evacuation alarm system. Two 2000 GPM diesel engine driven automatic fire pumps, rated at 120 PSI, supply the necessary water for sprinkler protection.

A new noncombustible Flight Simulator Building is under construction near Dispensary 302. This building will be sprinklered and be provided with a fire evacuation alarm system. CO₂ hose reel and underfloor flooding systems are being provided for electronics areas.

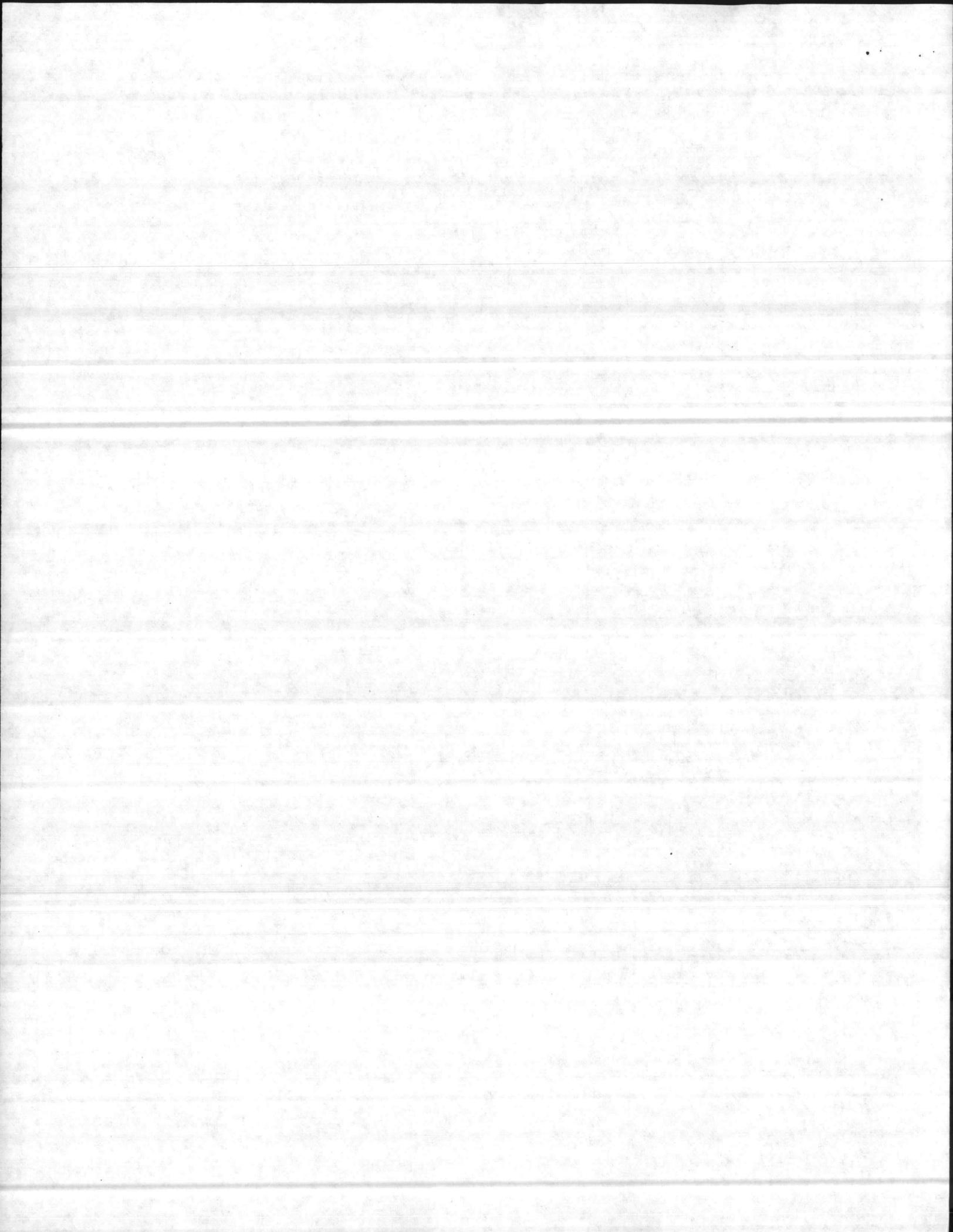
The station Water Treatment Plant has been enlarged to also handle the needs of adjoining Camp Geiger.

9. WATER FLOW TEST DATA:

Area	Static PSI	Residual PSI	Flow GPM	Required @ 20 PSI	Available @ 20 PSI
3000	60	(See Note 1 Below)		1000 GPM @ 40 PSI	
4000 BEQ's	62	52	1125	750	2400
100 BEQ's	65	60	1240	750	4000
MEMQ	67	37	860	500	1100



- Note 1: Tests in the 3000 Area could not be completed due to the large quantity of rocks and gravel in the 8-inch water main. Recommendation made.
- Note 2: The one operational booster pump in Building 2003 was tested. This pump, rated at 750 GPM at 85 PSI, met the 150% test satisfactorily by producing 1125 GPM at 52 PSI.
- Note 3: Fire pumps in Hangar 4100 were tested and produced 2800 GPM each at 60 PSI. These pumps, oversized for their need, are only operated at about 50% of rated RPM and with relief valves deliberately set low to enable the pressures to properly match at the "mix-point" of the water and AFFF systems.



LOCAL RECOMMENDATIONS

MARINE CORPS AIR STATION (HELICOPTER)

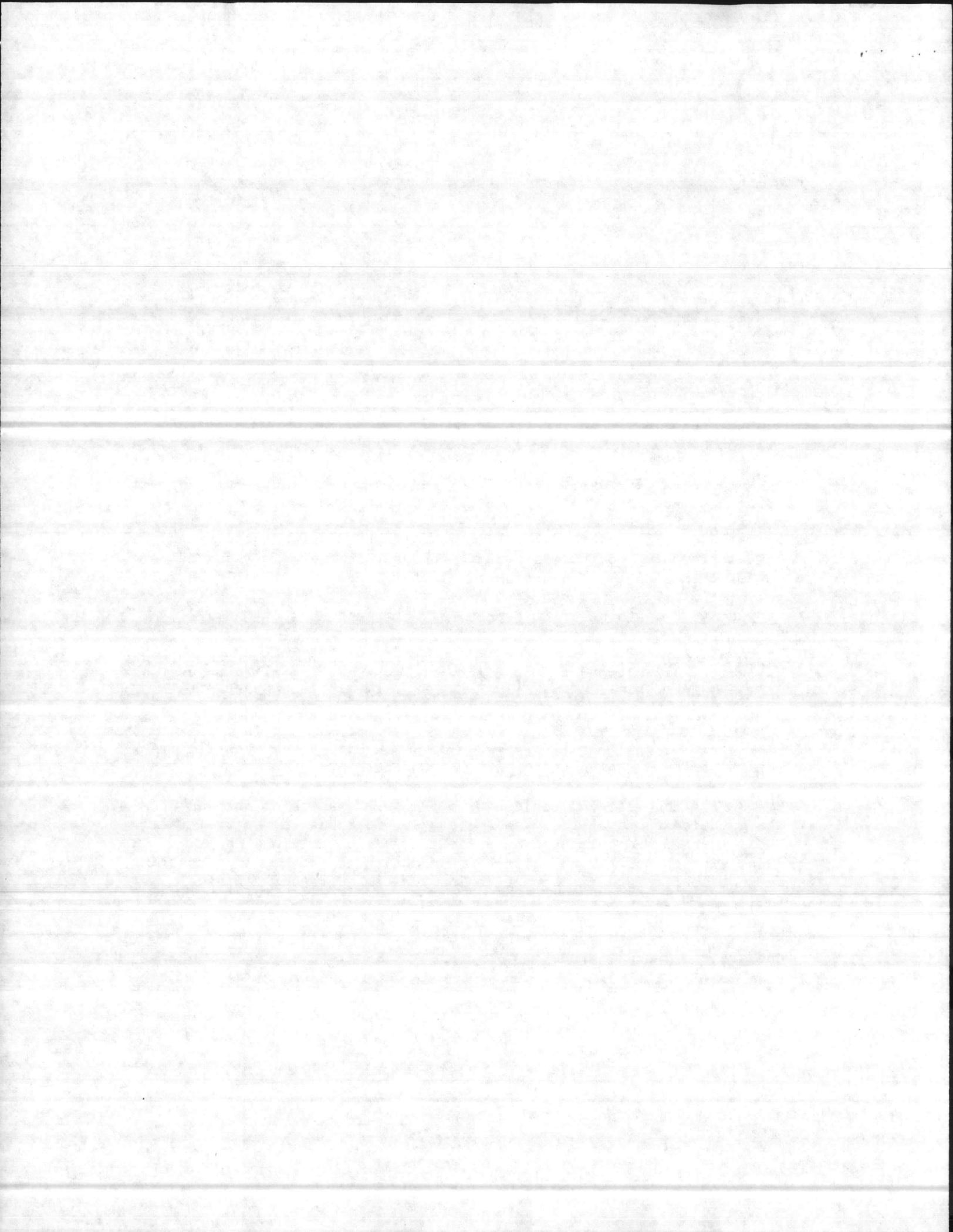
NEW RIVER

JACKSONVILLE, NORTH CAROLINA

1 JUNE 1977

1. Overhaul, repair or replace as necessary, and restore to full service the exit lights in BEQs 4020 and 4025 which have been severely vandalized.
2. Improve the maintenance of exit lights throughout all buildings on the station.
3. Reconnect all dryers to the exhaust vent system in Laundry Rooms of BEQ 4010.
4. Remove all storage of surfboards, saw horses, plywood, etc. from Mechanical Equipment Room in MAG-29 Headquarters Building 4122.
5. Remove, and strictly prohibit the further use of plastic trash containers throughout the station. Combustible trash is required to be disposed of only in noncombustible containers with metal covers.
6. Remove all storage from Mechanical Equipment Room of MAG-29 Warehouse 4110.
7. Remove all plywood from the security mesh ceiling of Warehouseman's Office in MAG-29 Warehouse 4110 or provide sprinklers under this ceiling.
8. Repair or replace all damaged elbows and wind-driven ventilators for the valve pit exhaust systems in the Fuel Farm.
9. Remove the latching devices from the fuel dispensing nozzles of the gasoline pumps at the gasoline station adjacent to the Fuel Farm. These latches are permitted on automatic nozzles only when all dispensing is done by the attendant on duty. At the gasoline station in question it is common practice for vehicle operators to refuel their own vehicles even though an attendant is on duty.
10. Replace the painted sprinkler head in the ceiling of the west end stair of Hangar 4108.
11. Immediately replace the damaged shutoff valve and missing supply piping at the dry pipe sprinkler valve which controls protection in

ENCLOSURE (2)



the enclosed 1-story lean-to at the east end of Hangar 4108. This system was damaged by freezing during January 1977 and is still out of service "awaiting parts", although the needed parts are readily obtainable.

12. Remove the plywood deck over the security mesh enclosure housing locker area in Flight Equipment Room WC-130 of Hangar 4108, or provide sprinklers under this deck.

13. Remove all storage from the top of the locker cage in Flight Equipment Room of HML-268 in Hangar 4108, or provide sprinklers within the cage.

14. Remove the wooden platform over the sprinkler valve in the west end 1-story lean-to of Hangar 4108.

15. Discontinue the practice of blocking, wedging, or tying open the fire doors to the stair towers on second floor of Hangar 4106. These doors must be kept normally closed.

16. Either remove the ceiling of the Production Control Office in Supply Area of Hangar 4106, first floor, or provide sprinkler protection throughout this office.

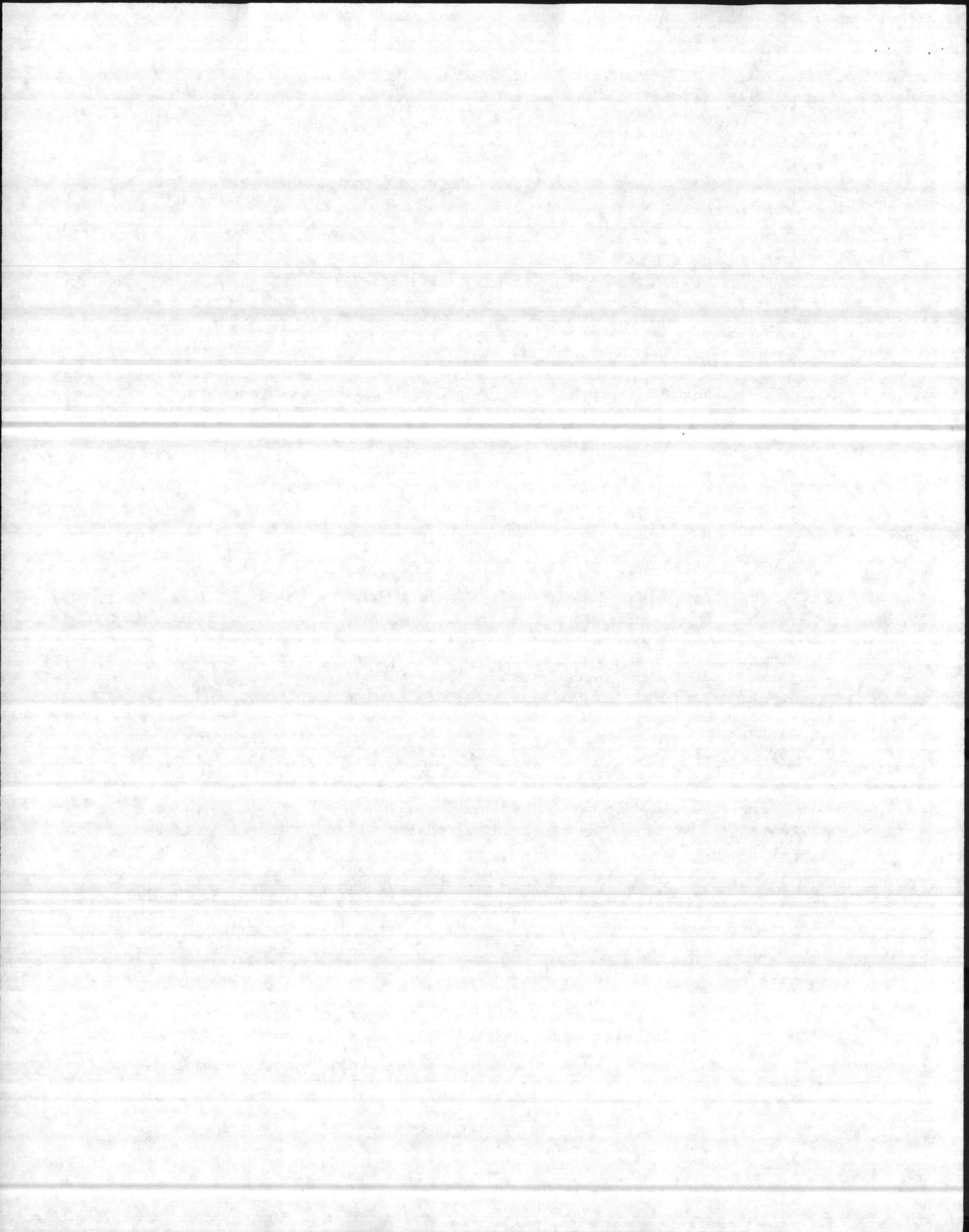
17. Remove the motorcycles from the Hydraulic Test Stand Room and from the Metal Shop in Hangar 4106. Housing of private vehicles in hangars and shops is prohibited, and the legal liability aspects emphasize this prohibition.

18. Remove the coffee mess/snack bar at east end stair tower of Hangar 4100. This is presently housed in a room opening directly into the stair tower necessitating that the fire door between the snack bar and stair tower be kept open. This jeopardizes the fire integrity of this required exit facility.

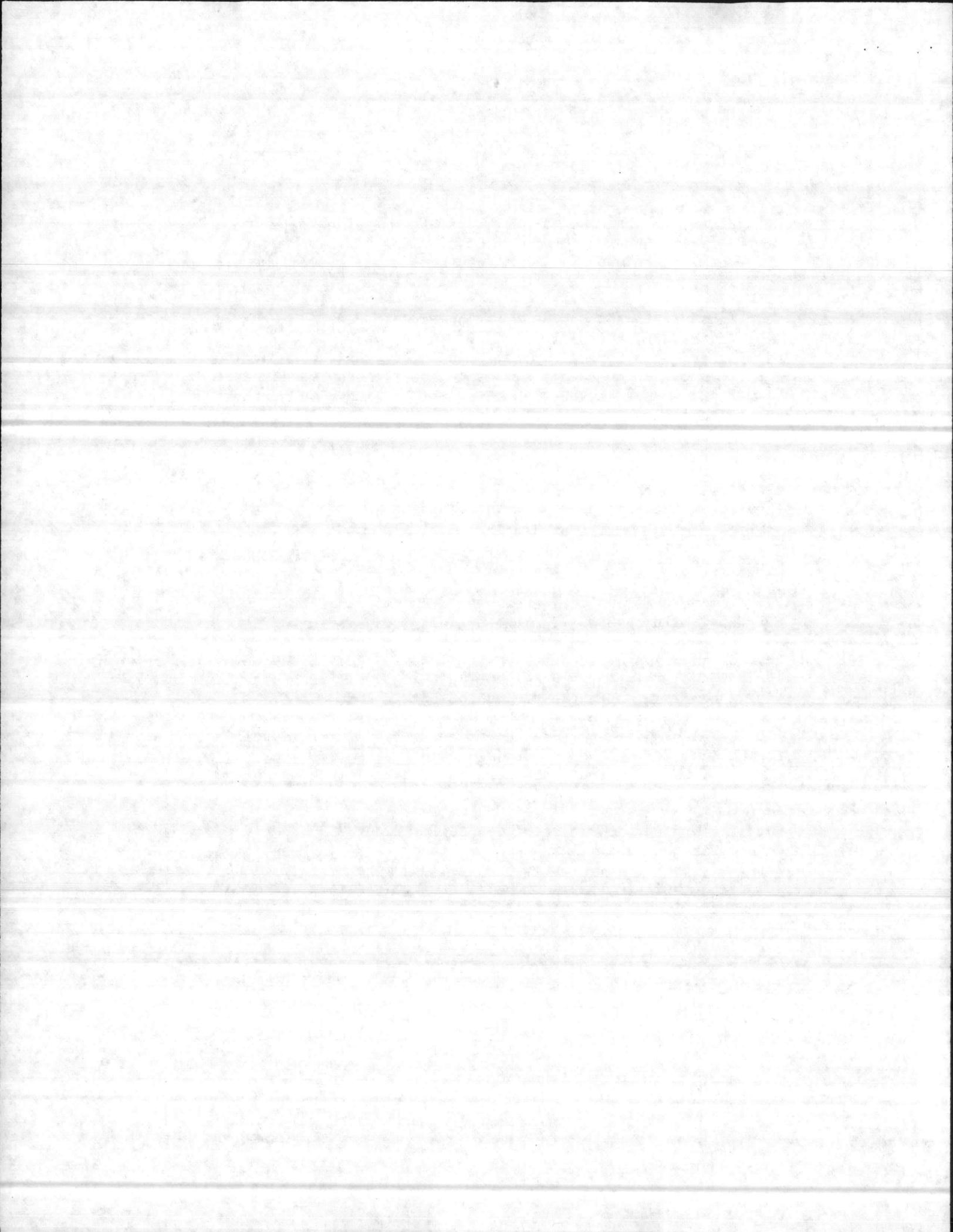
19. Replace the missing gong shell on the low air trouble bell of the southerly deluge sprinkler system valves in Hangar 518. This audible alarm device is essential to give warning of low air pressure in the system in case of compressor failure, or leakage, to enable corrective action to be taken before the systems trip and flood the hangar bay.

20. Remove all paints and thinners from the Hydraulic Shop in Hangar 518. Any essential amounts within the shop to be kept only in UL-listed safety cans.

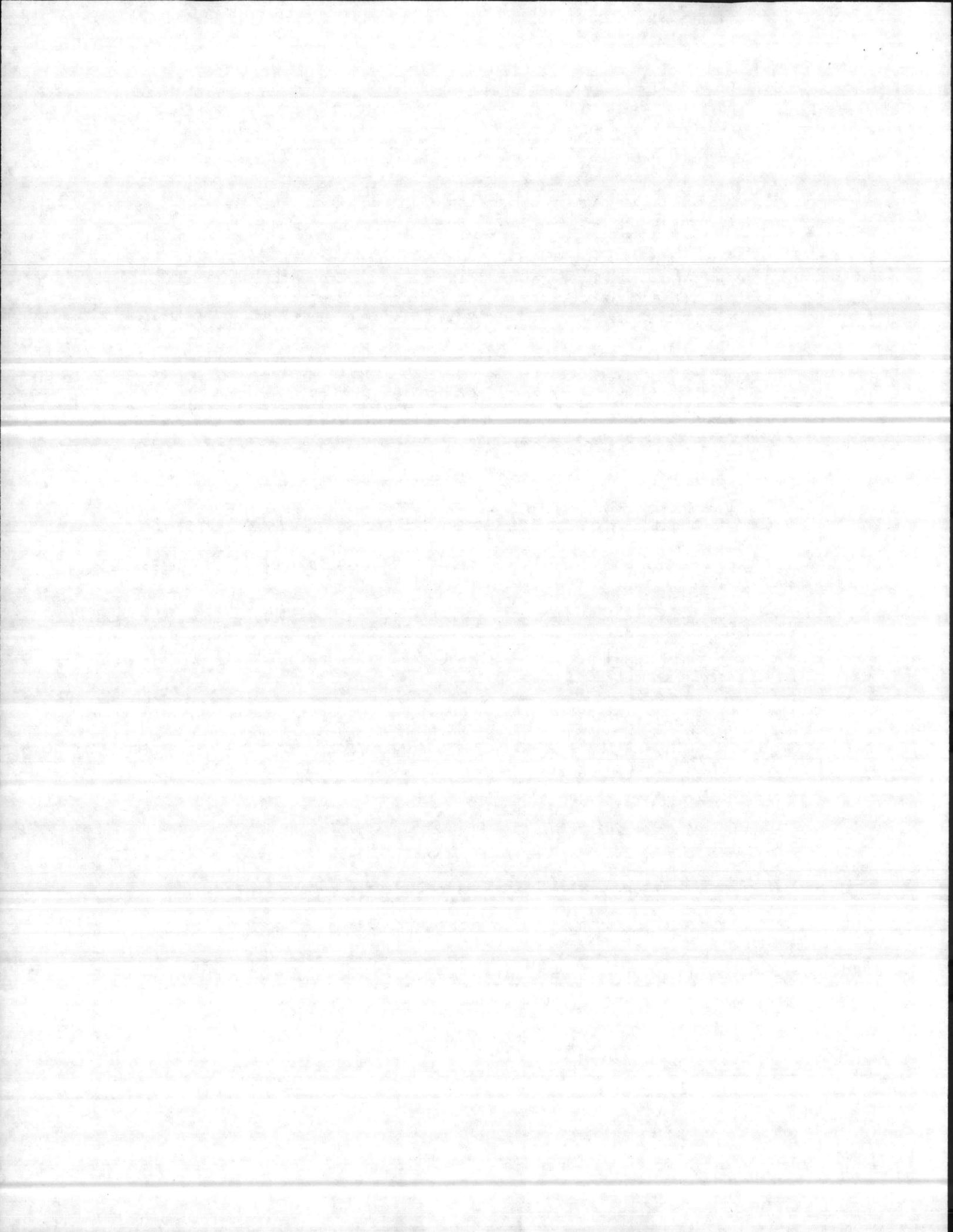
21. Clean out the janitor's closet ("gear locker") on the second floor of Module 1, near end stair, Hangar 515, and remove all paints, brushes, thinners, and empty cans.



22. Remove the coffee mess/snack bar from the first floor room, at the end stair of Module 1, Hangar 515. The fire door between the coffee mess and stair tower is kept tied open which jeopardizes the fire integrity of this required exit. The radar range and "jury rigged" electrical wiring make this a completely unsafe arrangement regardless of location.
23. Remove all candy machines, cigarette machines, etc. and all storage from the areas at the foot of all stairs in Hangar 504. These stairs are required exits and no storage or equipment of any kind is permitted.
24. Institute and enforce a station-wide procedure whereby no coffee mess, snack bar, hot plate, coffee pot, or cooking facility can be established or placed in operation without examination by the fire department, and health officer as necessary, and the issuance of a permit which must be kept posted at the appliance. Unauthorized, unsafe, and unsanitary coffee messes and cooking facilities are proliferating with little or no control.
25. Secure all interior fire alarm system coded transmitter covers closed with either nut and bolt or padlocks. It is obvious that many transmitters are subject to tampering.
26. Either remove the plywood ceiling of Sqdn. 214 Mail Room in Hangar 504, or provide sprinklers under this ceiling.
27. Remove the lawn mower now stored in office of MABS-26 Headquarters Building 3502 from the building.
28. Cleanup and clean out the interior of Ground Electronics Building 849 and replace the numerous "jury-rigged" wiring circuits with wiring complying with the National Electric Code.
29. Provide an exhaust fan to outdoors, capable of reducing vapors in the Duplicating Room of Building 818 to a safe level, and instruct personnel not to operate the large duplicating machine unless the fan is running.
30. The present condition of Old Boiler Plant 833 constitutes a severe fire hazard. Clean out the trash, rags, junk and other materials (apparently mostly Flying Club property) and completely secure the building until such time as it is demolished or otherwise disposed of.
31. Remove the latch from the automatic dispensing nozzle of the Flying Club gasoline pump. Such latches are prohibited for self-service dispensing.



32. Provide UL-listed, wet cell battery with automatic charger, emergency lights throughout Officers' Club 710. These units are required by NFPA-101, "Life Safety Code", to be provided in places of assembly, so located as to illuminate the pathways to the exits in the event of a power outage.
33. Provide a wood waste collection and removal system, connected to all woodworking machinery in Carpenter Shop Building 124.
34. Either provide a safe fuel supply arrangement for the LP gas range in Grounds Maintenance Building 121, or remove the range and LP gas cylinder and appurtenances. The necessity for this range is highly suspect and the fuel supply is an industrial LP gas cylinder.
35. The deep fat fryer in Service Club 208 does not appear to be provided with thermostats complying with current requirements. Deep fat fryers must have a primary (adjustable) thermostat with an upper limit not exceeding 410°F and a secondary back-up thermostat designed to limit temperature to 425°F. If this unit does not comply, replace it with a unit equipped to meet these requirements.
36. Relocate the deep fat fryer in Service Club 208 from its present position outside the exhaust hood so that it is entirely under the hood, as required by NFPA-96, "Commercial Cooking Equipment".
37. Properly flameproof the burlap draperies on the walls of Bowling Alley 205, or replace with noncombustible material.
38. Replace the deep fat fryer in the snack bar of Bowling Alley 205 by one with a primary thermostat with an upper limit not in excess of 410°F and provided with a back-up thermostat limiting temperature to not more than 425°F.
39. Replace the electrical panel "dead-front" covers and doors, which were removed for work on circuits, in Electrical Room of Bowling Alley 205 now that repairs have been completed. A station electrician on the scene at inspection refused to accomplish this without a separate work order.
40. Connect dryers to the existing vent system in Laundry Room of BEQ 214.
41. Restore exit lights to full service in BEQ 214 and 212.
42. Remove the unauthorized hot plate from Barber Shop Storeroom in Exchange 232.
43. Provide UL-listed, wet cell battery operated emergency lights throughout Exchange 232 so situated as to light the pathways to the



exits in the event of a power outage.

44. Remove the unauthorized hot plate from the employees lounge in "Seven Day Store" 233.

45. Limit smoking to specifically designated areas in Warehouse 130.

46. Clear out the area behind the reefer boxes in lean-to area of Commissary 414 and keep this area clean.

47. Weigh the high pressure CO₂ cylinders on all fixed CO₂ systems, recharging as necessary, every 6 months as is required by NFPA-12, "Carbon Dioxide Systems". System cylinders in Building 312, for example, have not been weighed since their installation in 1969.

48. Rework the sprinkler systems in Group Supply Warehouse 424 as follows:

a. Extend sprinklers to cover the new Warehouse Chief's office currently under construction.

b. Extend sprinkler protection to cover the new Administration Office addition.

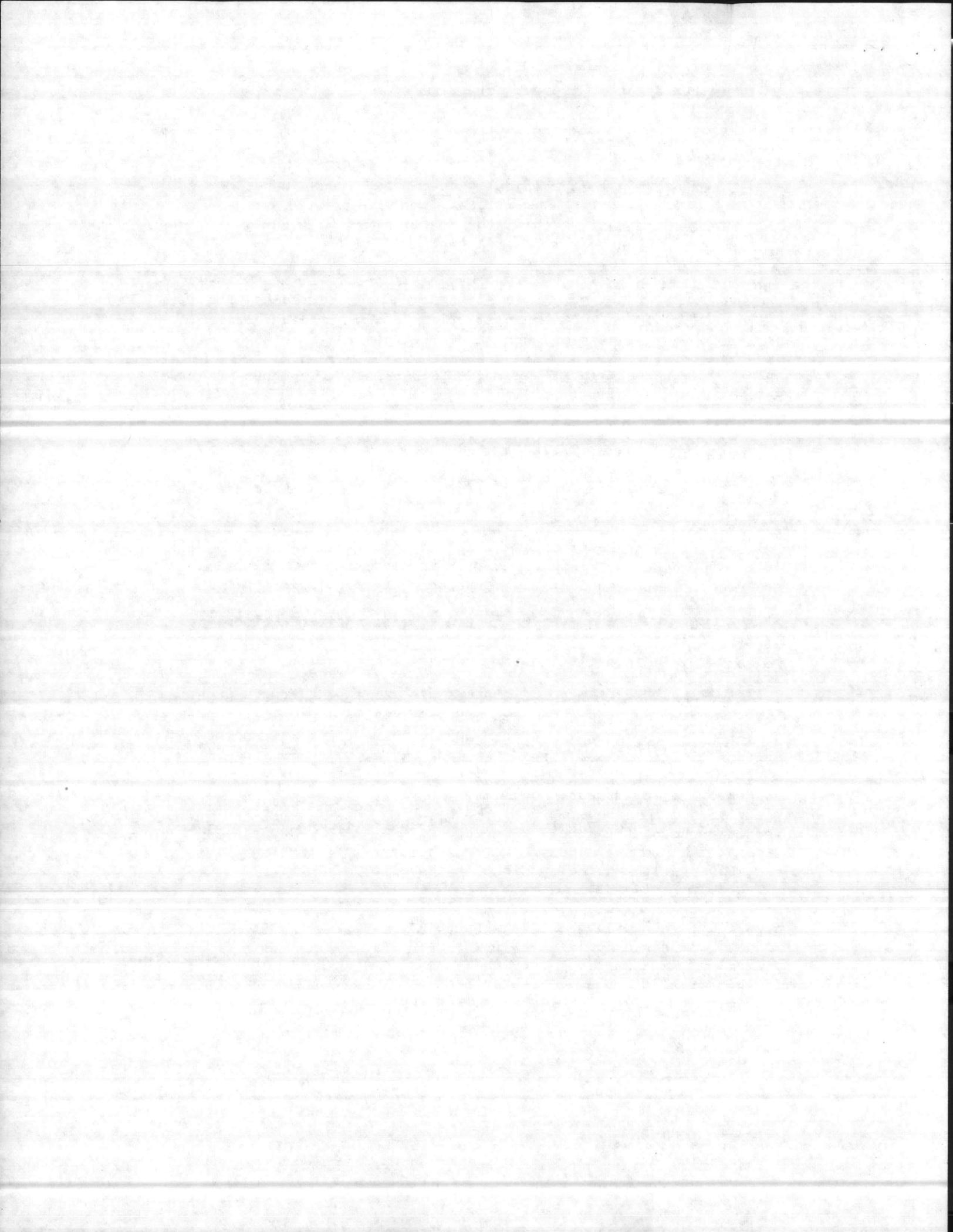
c. Repipe the sprinkler branch line in Marine Corps Property Office where there is now one sprinkler head on 1/2-inch pipe. This area requires two sprinklers and these must be on 1-inch pipe.

d. Extend the sprinkler system, via an antifreeze loop, to cover all of the area under the canopy over the south loading dock, which is now used full time for storage.

49. Replace the three 2½-inch valve hose outlets on the hose header (test header) on Booster Pump House 2003. Existing valves have been damaged by freezing and hose threads on these valves are not U. S. National Standard Hose Threads as is required.

50. Provide an automatic ball drip in the hose header assembly of the fire pumps in Booster Pump House 2003. This will prevent a reoccurrence of the freezing which occurred during January 1977 by automatically draining any water which leaks into the test header assembly past the normally closed gate valve.

51. During this survey, the recently installed 8-inch main which supplies fire hydrants in the MABS-26 Area and the sprinkler system in MABS-26 Warehouse Building 3525 was found to be full of rocks and gravel. Fire department personnel should continue to flush hydrants in this area, via the 4½-inch outlets and with fire pump in Building 2003 operating, until fully satisfied that all rocks and gravel have been cleared from the main.



LOCAL RECOMMENDATIONS

MARINE CORPS AIR STATION (HELICOPTER)

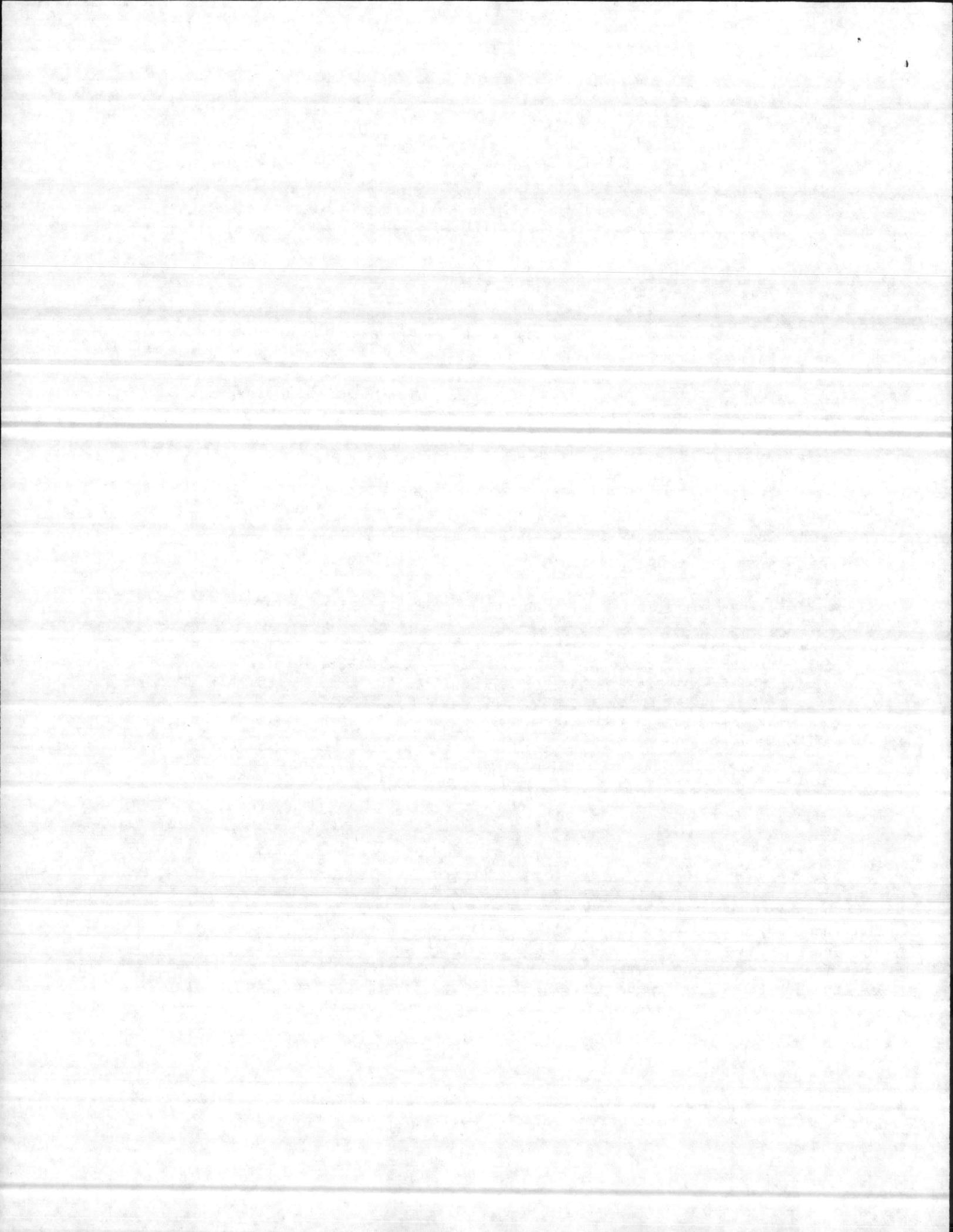
NEW RIVER

JACKSONVILLE, NORTH CAROLINA

1 JUNE 1977

- 26 +
29
1. Overhaul, repair or replace as necessary, and restore to full service the exit lights in BEQs 4020 and 4025 which have been severely vandalized. 26 29 (list separately)
- all
llr
2. Improve the maintenance of exit lights throughout all buildings on the station.
- 26 +
29
3. Reconnect all dryers to the exhaust vent system in Laundry Rooms of BEQ 4010. llr
- 29
4. Remove all storage of surfboards, saw horses, plywood, etc. from Mechanical Equipment Room in MAG-29 Headquarters Building 4122.
- all
5. Remove, and strictly prohibit the further use of plastic trash containers throughout the station. Combustible trash is required to be disposed of only in noncombustible containers with metal covers.
- 29
6. Remove all storage from Mechanical Equipment Room of MAG-29 Warehouse 4110.
- 29
7. Remove all plywood from the security mesh ceiling of Warehouseman's Office in MAG-29 Warehouse 4110 or provide sprinklers under this ceiling.
8. Repair or replace all damaged elbows and wind-driven ventilators for the valve pit exhaust systems in the Fuel Farm.) llr
7 +
9. Remove the latching devices from the fuel dispensing nozzles of the gasoline pumps at the gasoline station adjacent to the Fuel Farm. These latches are permitted on automatic nozzles only when all dispensing is done by the attendant on duty. At the gasoline station in question it is common practice for vehicle operators to refuel their own vehicles even though an attendant is on duty.)
- 29
10. Replace the painted sprinkler head in the ceiling of the west end stair of Hangar 4108.
- 29
11. Immediately replace the damaged shutoff valve and missing supply piping at the dry pipe sprinkler valve which controls protection in

ENCLOSURE (2)



the enclosed 1-story lean-to at the east end of Hangar 4108. This system was damaged by freezing during January 1977 and is still out of service "awaiting parts", although the needed parts are readily obtainable.

29 12. Remove the plywood deck over the security mesh enclosure housing locker area in Flight Equipment Room WC-130 of Hangar 4108, or provide sprinklers under this deck.

29 13. Remove all storage from the top of the locker cage in Flight Equipment Room of HML-268 in Hangar 4108, or provide sprinklers within the cage.

29 14. Remove the wooden platform over the sprinkler valve in the west end 1-story lean-to of Hangar 4108.

29 15. Discontinue the practice of blocking, wedging, or tying open the fire doors to the stair towers on second floor of Hangar 4106. These doors must be kept normally closed.

29 16. Either remove the ceiling of the Production Control Office in Supply Area of Hangar 4106, first floor, or provide sprinkler protection throughout this office.

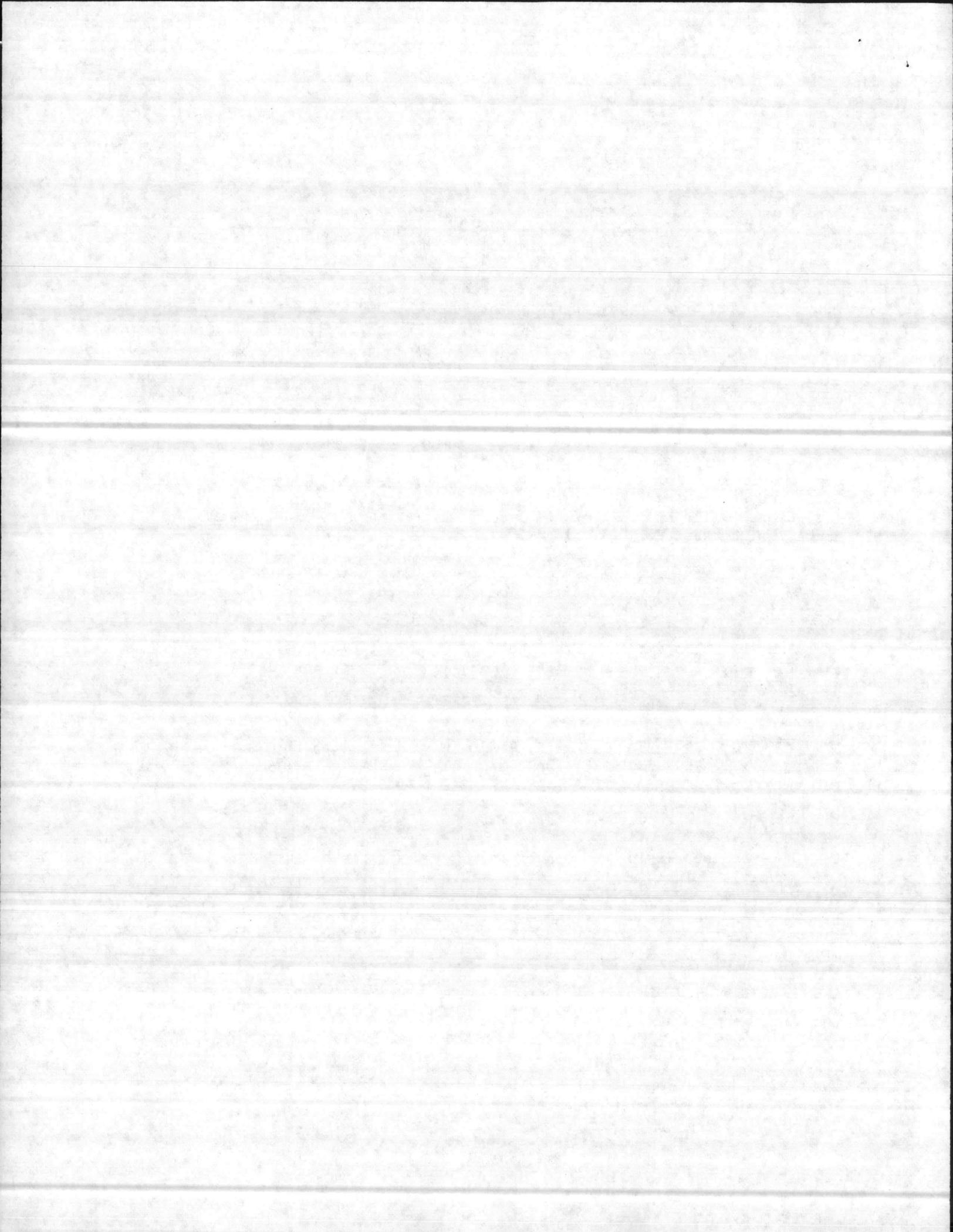
29 17. Remove the motorcycles from the Hydraulic Test Stand Room and from the Metal Shop in Hangar 4106. Housing of private vehicles in hangars and shops is prohibited, and the legal liability aspects emphasize this prohibition.

29 18. Remove the coffee mess/snack bar at east end stair tower of Hangar 4100. This is presently housed in a room opening directly into the stair tower necessitating that the fire door between the snack bar and stair tower be kept open. This jeopardizes the fire integrity of this required exit facility.

26 19. Replace the missing gong shell on the low air trouble bell of the southerly deluge sprinkler system valves in Hangar 518. This audible alarm device is essential to give warning of low air pressure in the system in case of compressor failure, or leakage, to enable corrective action to be taken before the systems trip and flood the hangar bay.

26 20. Remove all paints and thinners from the Hydraulic Shop in Hangar 518. Any essential amounts within the shop to be kept only in UL-listed safety cans.

26 21. Clean out the janitor's closet ("gear locker") on the second floor of Module 1, near end stair, Hangar 515, and remove all paints, brushes, thinners, and empty cans.



26
22. Remove the coffee mess/snack bar from the first floor room, at the end stair of Module 1, Hangar 515. The fire door between the coffee mess and stair tower is kept tied open which jeopardizes the fire integrity of this required exit. The radar range and "jury rigged" electrical wiring make this a completely unsafe arrangement regardless of location.

26
23. Remove all candy machines, cigarette machines, etc. and all storage from the areas at the foot of all stairs in Hangar 504. These stairs are required exits and no storage or equipment of any kind is permitted.

all
(National-wide)
24. Institute and enforce ~~a station-wide~~ procedure whereby no coffee mess, snack bar, hot plate, coffee pot, or cooking facility can be established or placed in operation without examination by the fire department, and health officer as necessary, and the issuance of a permit which must be kept posted at the appliance. Unauthorized, unsafe, and unsanitary coffee messes and cooking facilities are proliferating with little or no control.

all
25. Secure all interior fire alarm system coded transmitter covers closed with either nut and bolt or padlocks. It is obvious that many transmitters are subject to tampering.

26
26. Either remove the plywood ceiling of Sqdn. 214 Mail Room in Hangar 504, or provide sprinklers under this ceiling.

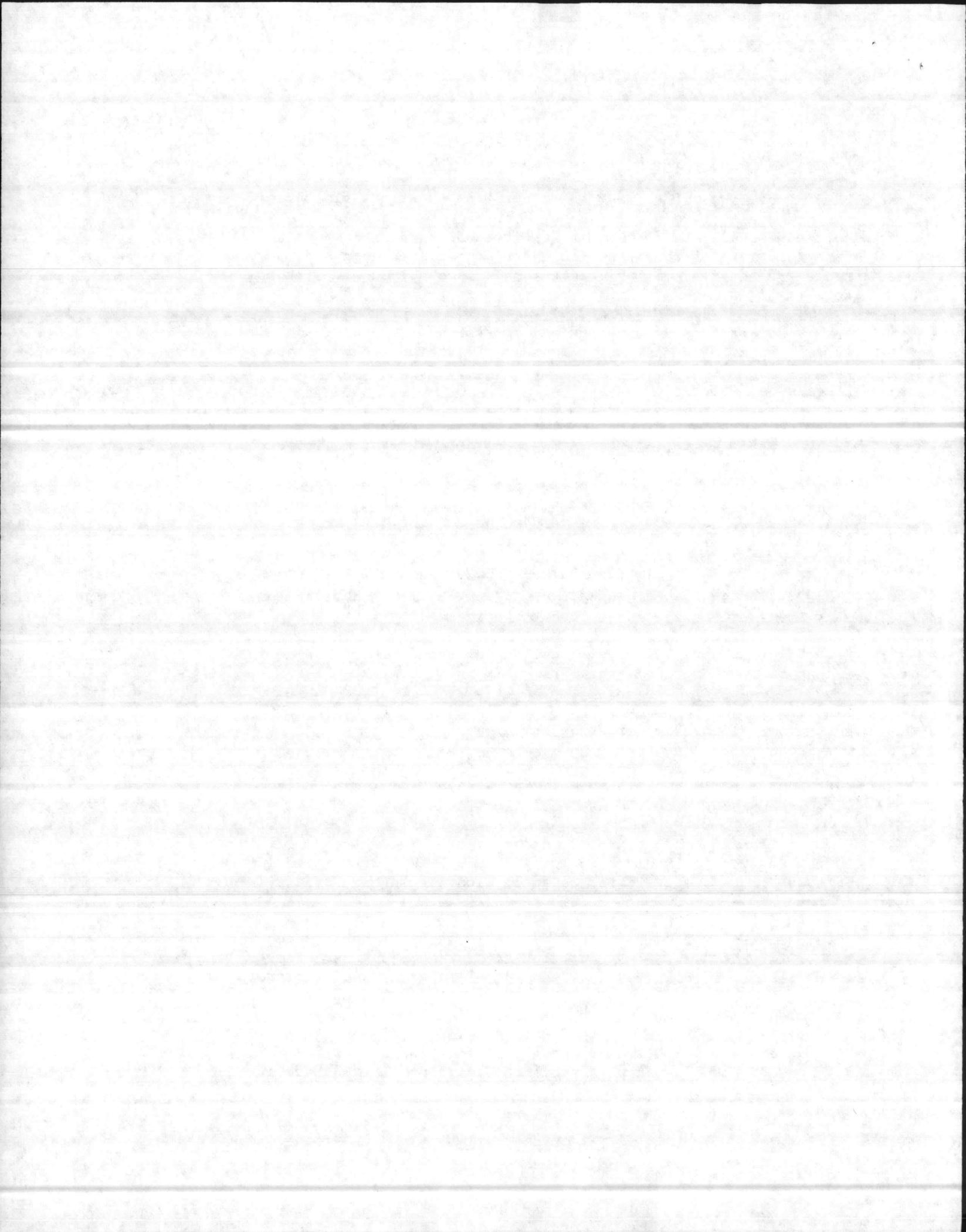
26
27. Remove the lawn mower now stored in office of MABS-26 Headquarters Building 3502 from the building.

5-3
28. Cleanup and clean out the interior of Ground Electronics Building 849 and replace the numerous "jury-rigged" wiring circuits with wiring complying with the National Electric Code.) Com-plant

29. Provide an exhaust fan to outdoors, capable of reducing vapors in the Duplicating Room of Building 818 to a safe level, and instruct personnel not to operate the large duplicating machine unless the fan is running.) 2-14-5

30. The present condition of Old Boiler Plant 833 constitutes a severe fire hazard. Clean out the trash, rags, junk and other materials (apparently mostly Flying Club property) and completely secure the building until such time as it is demolished or otherwise disposed of.)

51
31. Remove the latch from the automatic dispensing nozzle of the Flying Club gasoline pump. Such latches are prohibited for self-service dispensing.) Flying Club



32. Provide UL-listed, wet cell battery with automatic charger, emergency lights throughout Officers' Club 710. These units are required by NFPA-101, "Life Safety Code", to be provided in places of assembly, so located as to illuminate the pathways to the exits in the event of a power outage.

S-1

O. J. J.

33. Provide a wood waste collection and removal system, connected to all woodworking machinery in Carpenter Shop Building 124.

Maint

MCB

34. Either provide a safe fuel supply arrangement for the LP gas range in Grounds Maintenance Building 121, or remove the range and LP gas cylinder and appurtenances. The necessity for this range is highly suspect and the fuel supply is an industrial LP gas cylinder.

MCB
ygs?

35. The deep fat fryer in Service Club 208 does not appear to be provided with thermostats complying with current requirements. Deep fat fryers must have a primary (adjustable) thermostat with an upper limit not exceeding 410°F and a secondary back-up thermostat designed to limit temperature to 425°F. If this unit does not comply, replace it with a unit equipped to meet these requirements.

S-1

36. Relocate the deep fat fryer in Service Club 208 from its present position outside the exhaust hood so that it is entirely under the hood, as required by NFPA-96, "Commercial Cooking Equipment".

S-1

37. Properly flameproof the burlap draperies on the walls of Bowling Alley 205, or replace with noncombustible material.

S-1

38. Replace the deep fat fryer in the snack bar of Bowling Alley 205 by one with a primary thermostat with an upper limit not in excess of 410°F and provided with a back-up thermostat limiting temperature to not more than 425°F.

S-1

39. Replace the electrical panel "dead-front" covers and doors, which were removed for work on circuits, in Electrical Room of Bowling Alley 205 now that repairs have been completed. A station electrician on the scene at inspection refused to accomplish this without a separate work order.

S-1

40. Connect dryers to the existing vent system in Laundry Room of BEQ 214.

Det A

Det A

41. Restore exit lights to full service in BEQ 214 and 212.

H+H S

Det A
H+H S

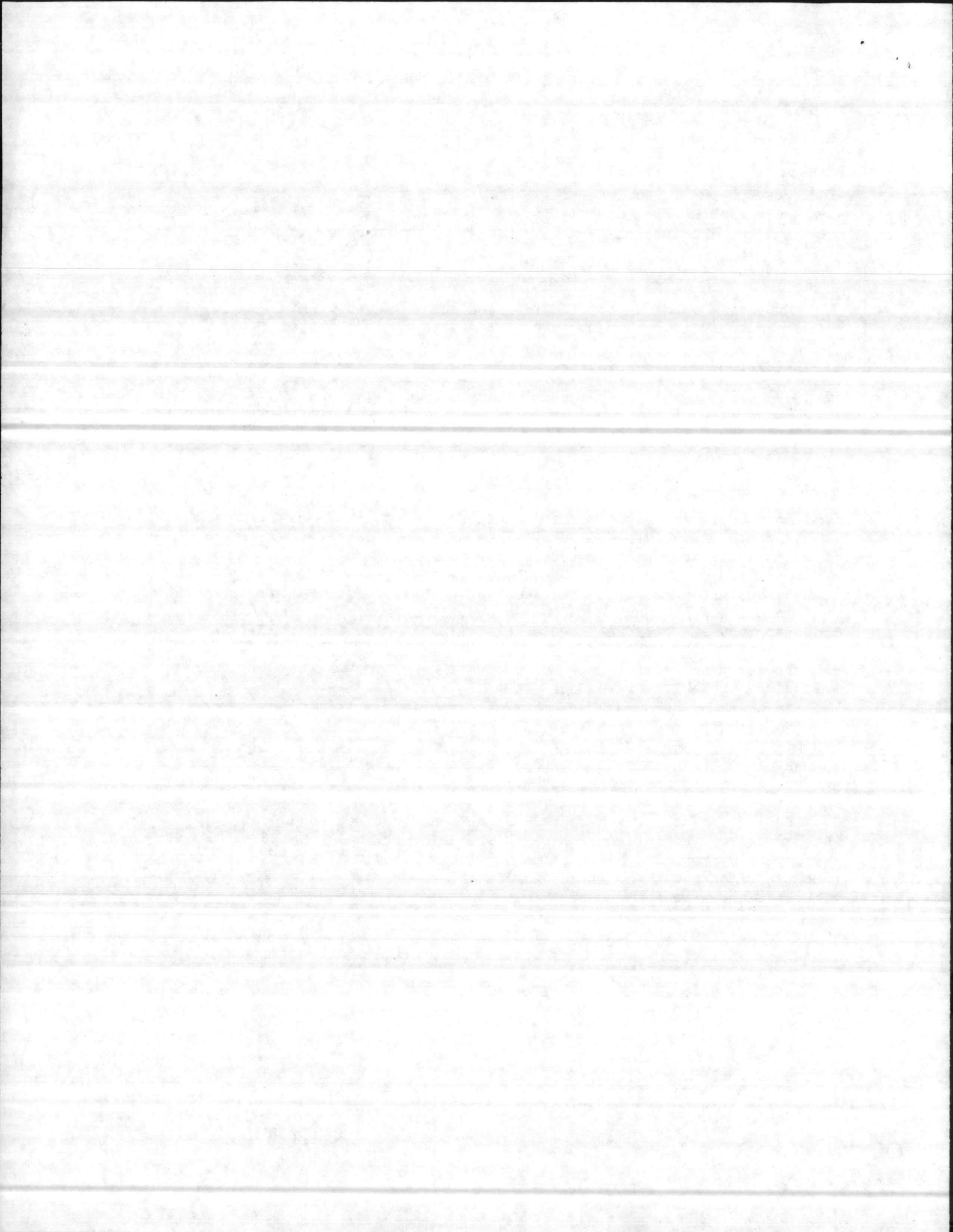
42. Remove the unauthorized hot plate from Barber Shop Storeroom in Exchange 232.

~~MCB~~
Exch

43. Provide UL-listed, wet cell battery operated emergency lights throughout Exchange 232 so situated as to light the pathways to the

Exch
g
MCB (H)

~~MCB~~
Exch



exits in the event of a power outage.

~~MCB~~
Eval

44. Remove the unauthorized hot plate from the employees lounge in "Seven Day Store" 233.

Eval
MCAB (H)

45. Limit smoking to specifically designated areas in Warehouse 130.

) Supply

46. Clear out the area behind the reefer boxes in lean-to area of Commissary 414 and keep this area clean.

3w-01
MCASCH

- MCB
Com

47. Weigh the high pressure CO₂ cylinders on all fixed CO₂ systems, recharging as necessary, every 6 months as is required by NFPA-12, "Carbon Dioxide Systems". System cylinders in Building 312, for example, have not been weighed since their installation in 1969.

) Tony

26

48. Rework the sprinkler systems in Group Supply Warehouse 424 as follows:

a. Extend sprinklers to cover the new Warehouse Chief's office currently under construction.

b. Extend sprinkler protection to cover the new Administration Office addition.

c. Repipe the sprinkler branch line in Marine Corps Property Office where there is now one sprinkler head on 1/2-inch pipe. This area requires two sprinklers and these must be on 1-inch pipe.

d. Extend the sprinkler system, via an antifreeze loop, to cover all of the area under the canopy over the south loading dock, which is now used full time for storage.

49. Replace the three 2 1/2-inch valve hose outlets on the hose header (test header) on Booster Pump House 2003. Existing valves have been damaged by freezing and hose threads on these valves are not U. S. National Standard Hose Threads as is required.

Utes
MCB

~~MCB~~
Utes

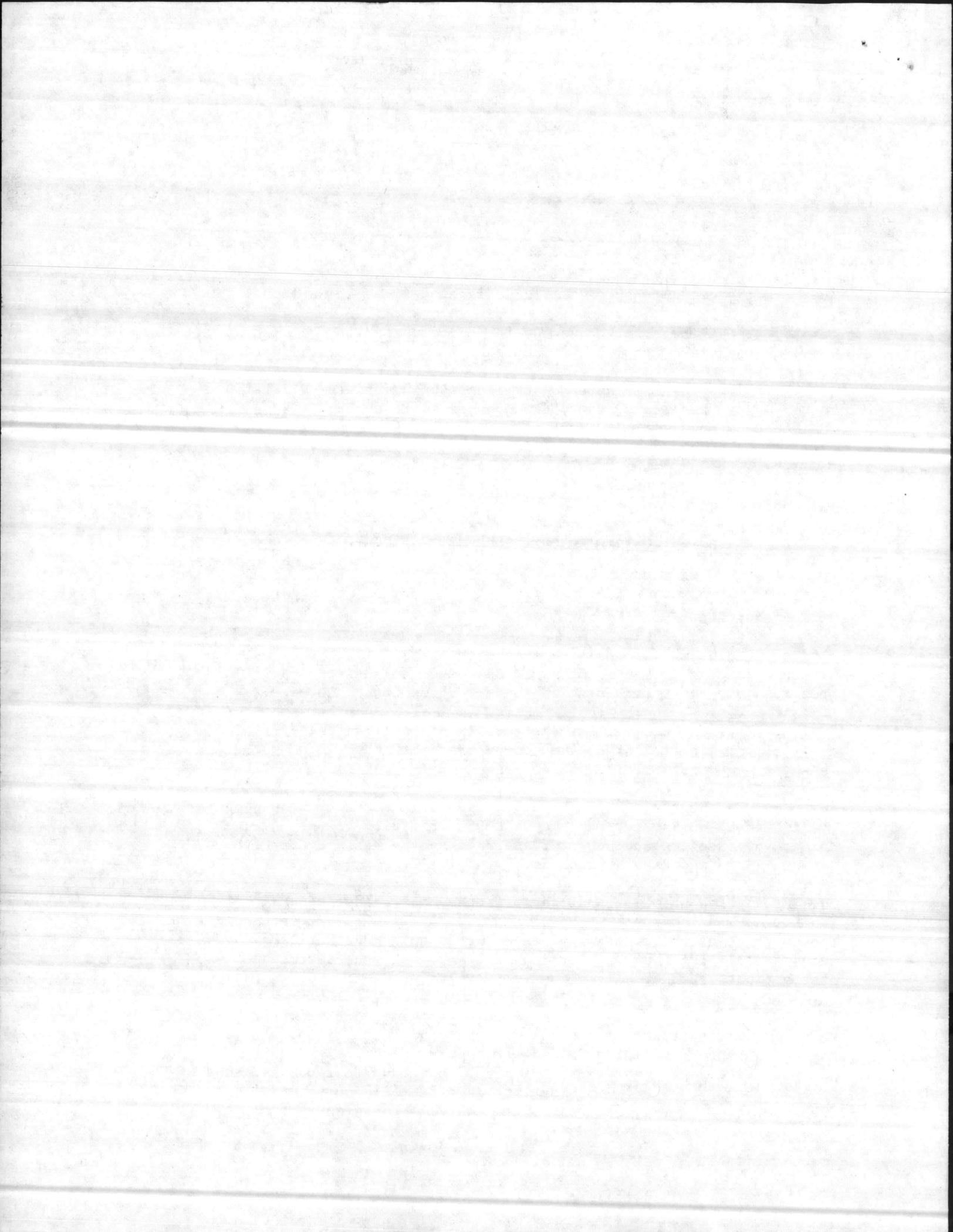
50. Provide an automatic ball drip in the hose header assembly of the fire pumps in Booster Pump House 2003. This will prevent a reoccurrence of the freezing which occurred during January 1977 by automatically draining any water which leaks into the test header assembly past the normally closed gate valve.

Utes
MCB

~~MCB~~
Utes

51. During this survey, the recently installed 8-inch main which supplies fire hydrants in the MABS-26 Area and the sprinkler system in MABS-26 Warehouse Building 3525 was found to be full of rocks and gravel. Fire department personnel should continue to flush hydrants in this area, via the 4 1/2-inch outlets and with fire pump in Building 2003 operating, until fully satisfied that all rocks and gravel have been cleared from the main.

26



1. DATE 20 JUN 1977	2. FISCAL YEAR 1980	3. DEPARTMENT NAVY		4. INSTALLATION MARINE CORPS BASE, CAMP LEJEUNE	
5. PROPOSED AUTHORIZATION \$ 2,664,000		6. PRIOR AUTHORIZATION P.L. -	7. CATEGORY CODE NUMBER 880-XX	8. PROGRAM ELEMENT NUMBER	9. STATE/COUNTRY NORTH CAROLINA
10. PROPOSED APPROPRIATION \$ 2,664,000		11. BUDGET ACCOUNT NUMBER P-738		12. PROJECT NUMBER	

SECTION A - DESCRIPTION OF PROJECT

14. TYPE OF CONSTRUCTION

a. PERMANENT	<input checked="" type="checkbox"/>
b. SEMI-PERMANENT	<input checked="" type="checkbox"/>
c. TEMPORARY	<input type="checkbox"/>

15. TYPE OF WORK

a. NEW FACILITY	<input checked="" type="checkbox"/>
b. ADDITION	<input type="checkbox"/>
c. ALTERATION	<input checked="" type="checkbox"/>
d. CONVERSION	<input type="checkbox"/>
e. OTHER (Specify)	

16. REPLACEMENT

17. TYPE OF DESIGN

a. STANDARD DESIGN	<input checked="" type="checkbox"/>
b. SPECIAL DESIGN	<input type="checkbox"/>
c. DRAWING NO.	

18. PHYSICAL CHARACTERISTICS OF PRIMARY FACILITY

19. DESCRIPTION OF WORK TO BE DONE

Provide fire escape stairs, fire sprinklers, fire alarm systems, fire exit signs, emergency lights, space heaters, draft stops, and fire doors.

SECTION B - COST ESTIMATES

U/M	QUANTITY	UNIT COST	COST (\$,000)
LS	-	-	1,951
LS	(-)	-	1,951
			713
			18
LS	-	-	116
LS	-	-	62
LS	-	-	48
LS	-	-	236
LS	-	-	148
LS	-	-	5
LS	-	-	
			\$ 2,664

SECTION C - BASIS OF REQUIREMENT

23. QUANTITATIVE DATA (U/M NOT APPLICABLE)

a. TOTAL REQUIREMENT	-
b. EXISTING SUBSTANDARD	-
c. EXISTING ADEQUATE	-
d. FUNDED, NOT IN INVENTORY	-
e. ADEQUATE ASSETS (c + d)	-
f. UNFUNDED PRIOR AUTHORIZATION	-
g. INCLUDED IN FY PROGRAM	-
h. DEFICIENCY (a - b - c - d)	-

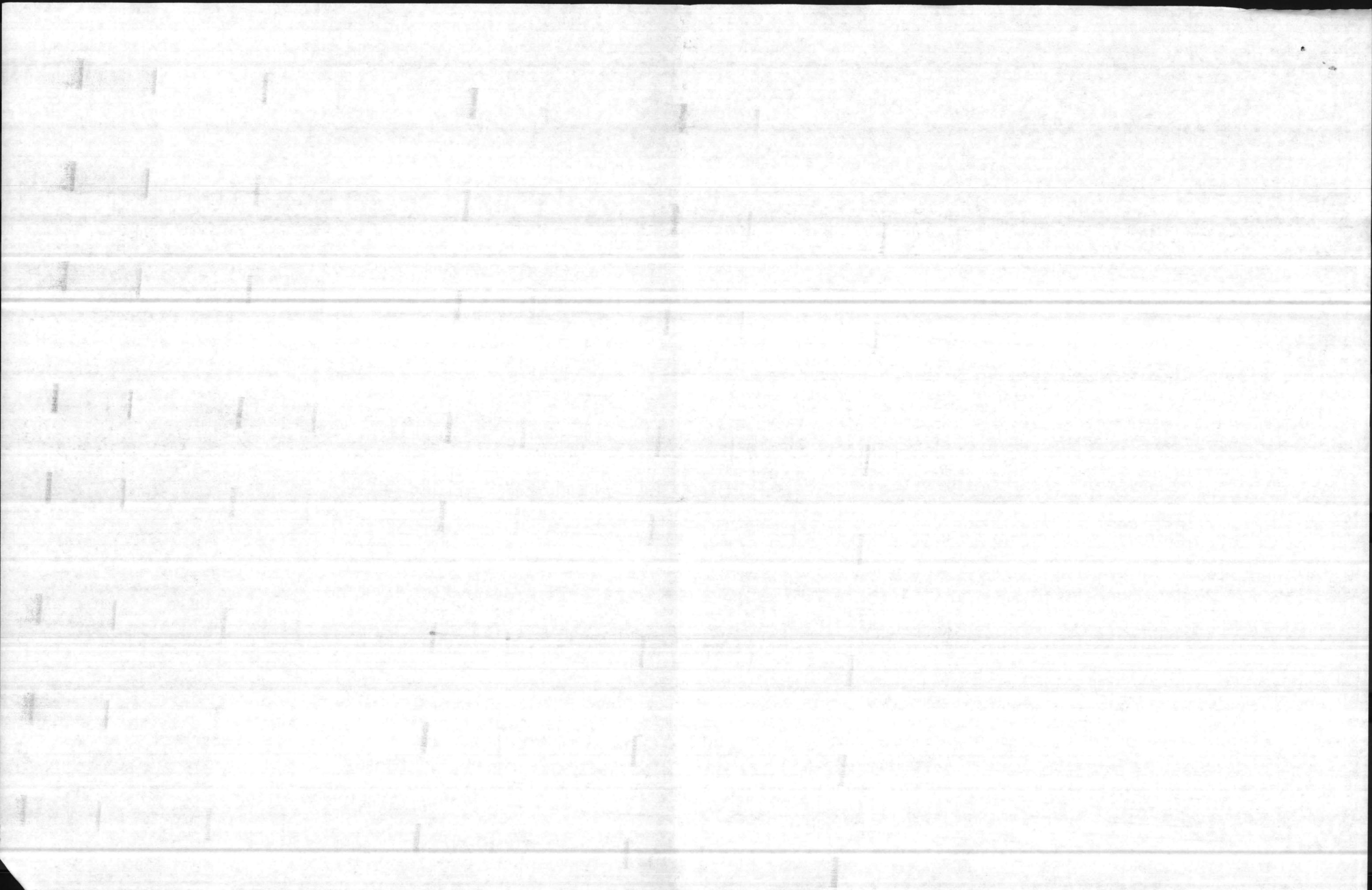
24. RELATED PROJECTS

25. REQUIREMENT FOR PROJECT MISSION AND PROJECT. Provide housing, training facilities, logistical support, and certain administrative support for tenant Fleet Marine Force commands and other units assigned. This project will provide fire escape stairs, fire sprinklers, fire alarm systems, fire exit signs, emergency lights, space heaters, draft stops, and fire doors.

REQUIREMENT. NAVDOCKS DM-8, MCO 1100.11, NFPA 101, and the National Fire Code. Many buildings do not meet these fire, safety, and building codes. The corrections are required to eliminate the deficiencies.

CURRENT SITUATION. Many buildings at Camp Lejeune were constructed in 1942/43. The fire deficiencies are numerous, varied, and widespread as described in the latest Fire Protection Engineering Survey Report dated 3 May 1976. Since the majority of these buildings were built prior to the present-day standards, consequently, they do not comply with the fire codes and standards.

IMPACT IF NOT PROVIDED. The deficiencies will continue to exist. The high potential loss of lives and incidence of injuries will continue. The high risk of property damages and losses will also continue.



1. DATE 20 JUN 1977	2. FISCAL YEAR 0980	MILITARY CONSTRUCTION PROJECT DATA (Continued)	3. DEPARTMENT NAVY	4. INSTALLATION MARINE CORPS BASE, CAMP LEJEUNE, NORTH CAROLINA
5. PROJECT NUMBER P-738		6. PROJECT TITLE FACILITY STUDY: BASEWIDE CORRECTION OF FIRE DEFICIENCIES		

c. Cost Growth Projection Factor. 6% per year to coincide with estimated award date.

d. Source Used for Cost Growth. NAVFAC P-438, Historical Military Construction Cost Engineering Data.

e. Estimated Award Date. 1980

f. Basis of Cost Estimate. Past estimates for similar facilities.

5. Justification for the Project. Corrections of fire deficiencies are required in order to comply with NAVDOCKS Design Manual DM-8, MCO 11000.11, NFPA 101 (Life Safety Code), and the National Fire Code.

6. Justification for Scope of Project. The scope of this project was determined by the Fire Protection Engineering Survey Report dated 3 May 1976.

7. Common Support Facilities. MCAS(H) New River, the nearest service installation to Camp Lejeune, is interconnected and cooperates with the Camp Lejeune Fire Stations.

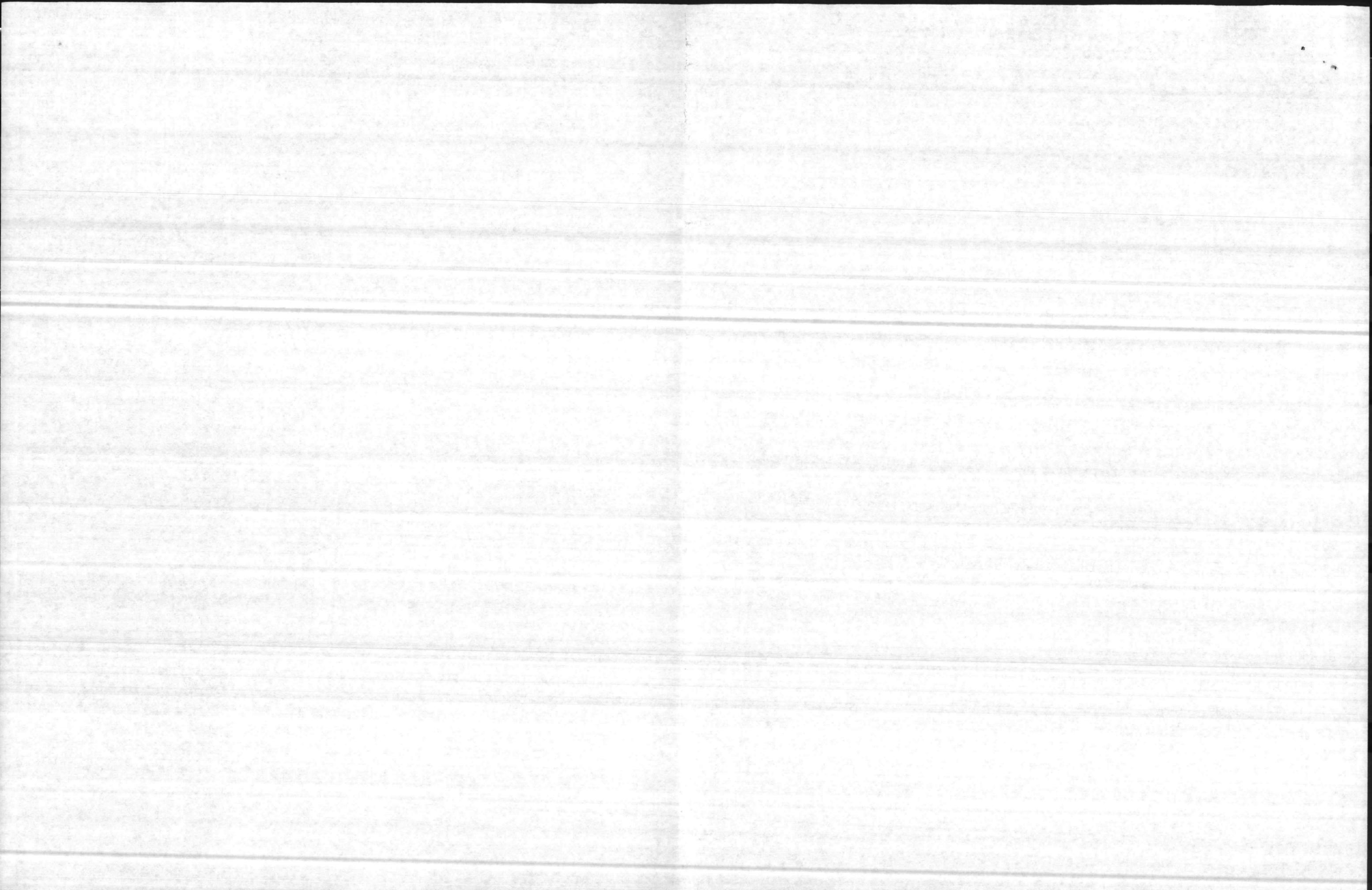
8. Effect on Other Resources. Additional electrical power for lighted signs, emergency lights, automatic sprinkler systems, alarm systems and fire reporting systems will be required although these items are low power consumers. No significant additional manpower is anticipated for inspection and maintenance of the fire protection systems in this project.

9. Siting of the Project. Locations of the corrections are basewide and specifically located in the Fire Protection Engineering Study Report.

10. Other Graphic Presentations. None

11. Economic Analysis. Building costs and values of contents are given in the Fire Protection Engineering Survey Report.

12. Environmental Impact Statement. An environmental impact assessment has been made, and it has been determined that this project will have neither a significant impact on the environment nor is it highly controversial. Requirements of Executive Order No. 11296 (flood hazards) are not applicable.



1. DATE 20 JUN 1977	2. FISCAL YEAR 1980	MILITARY CONSTRUCTION PROJECT DATA (Continued)	3. DEPARTMENT NAVY	4. INSTALLATION MARINE CORPS BASE, CAMP LEJEUNE, NORTH CAROLINA
5. PROJECT NUMBER P-738	6. PROJECT TITLE FACILITY STUDY: BASEWIDE CORRECTION OF FIRE DEFICIENCIES			

1. Project Purpose. This project will correct fire deficiencies. Fire deficiency corrections will be in use 100% of the time. The number of persons to be accommodated by this project will be the majority of military and civilian personnel at Camp Lejeune.

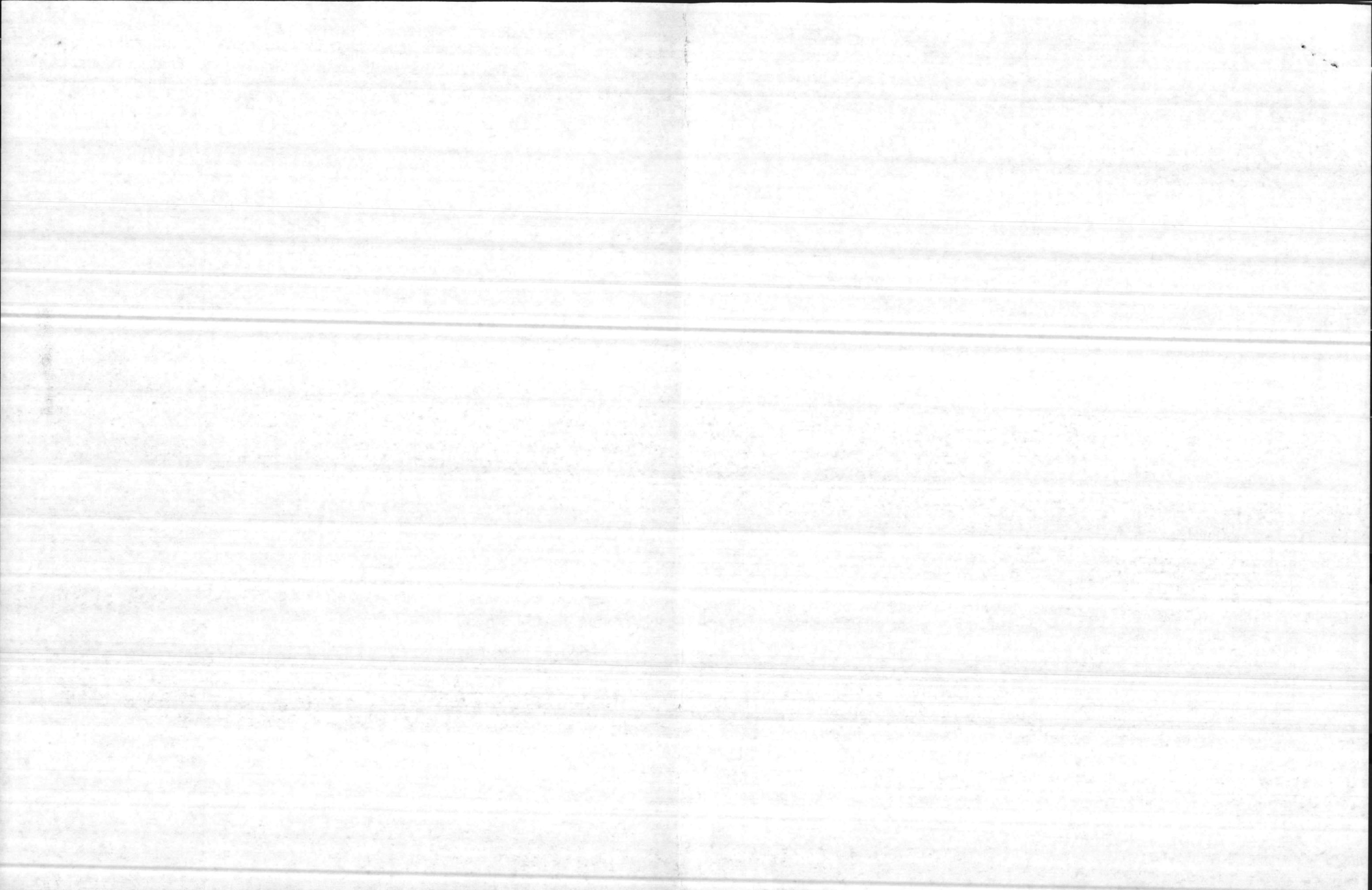
3. Description of Project

- a. Type of Construction. Permanent
- b. Type of Work. New and Alterations
- c. Replacement. None
- d. Type of Design. Standard
- e. Description of Work to be Done
 - (1) Primary Facility. Fire Sprinkler Systems
 - (2) Collateral Equipment
 - (a) Equipment Built-in or Installed and Chargeable to MCON Funds. None
 - (b) Equipment not Considered Built-in but Chargeable to MCON Funds. None
 - (c) Equipment Funded From Appropriations Other Than MCON. None

(3) Supporting Facilities. Fire escape stairs, alarm systems, reporting systems, exit and directional signs, emergency lights, forced air heating systems, draft stops, and fire doors.

4. Cost Estimates

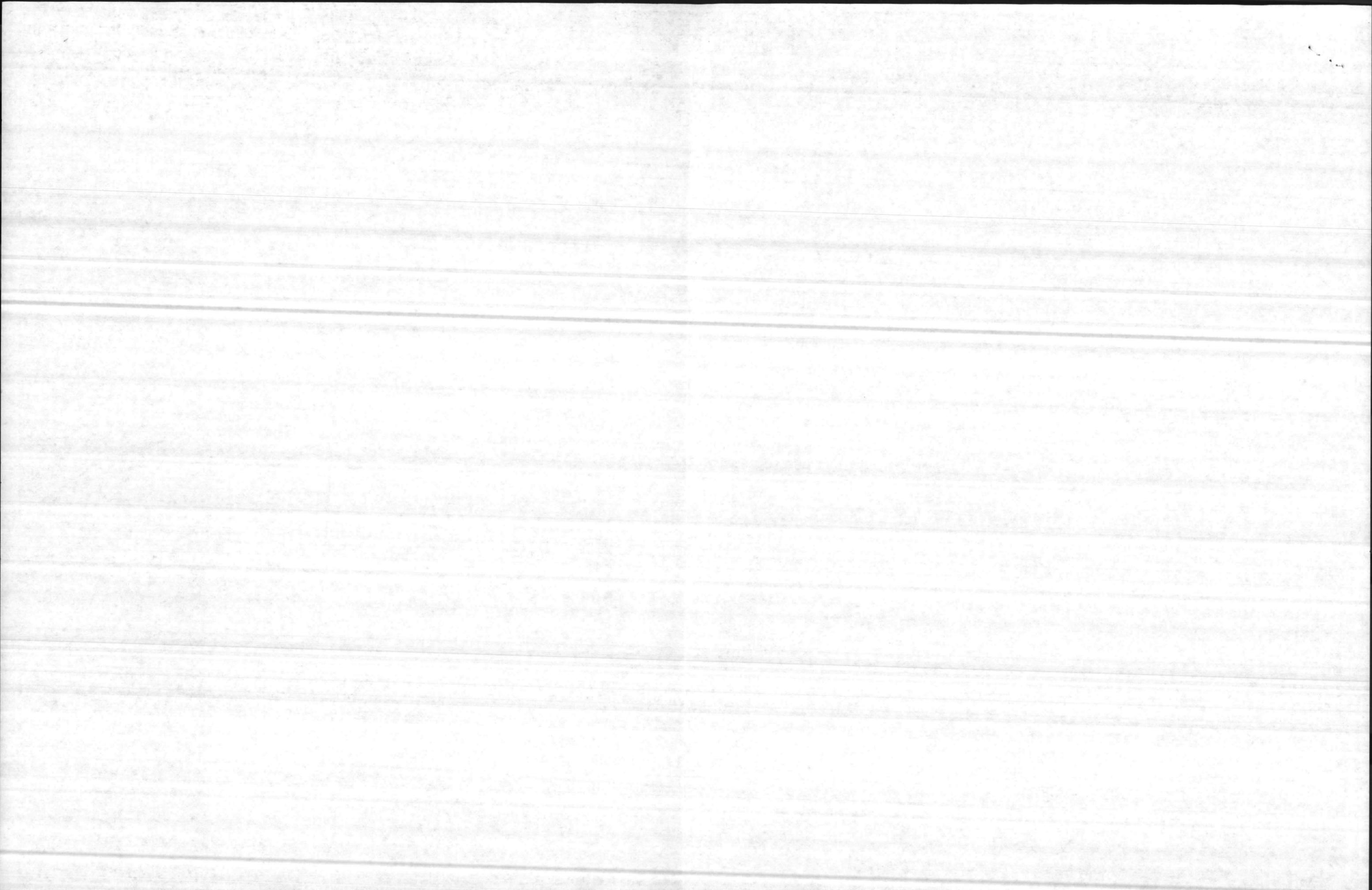
- a. Area Cost Factor. 1.00
- b. Contingency Factor. 10%

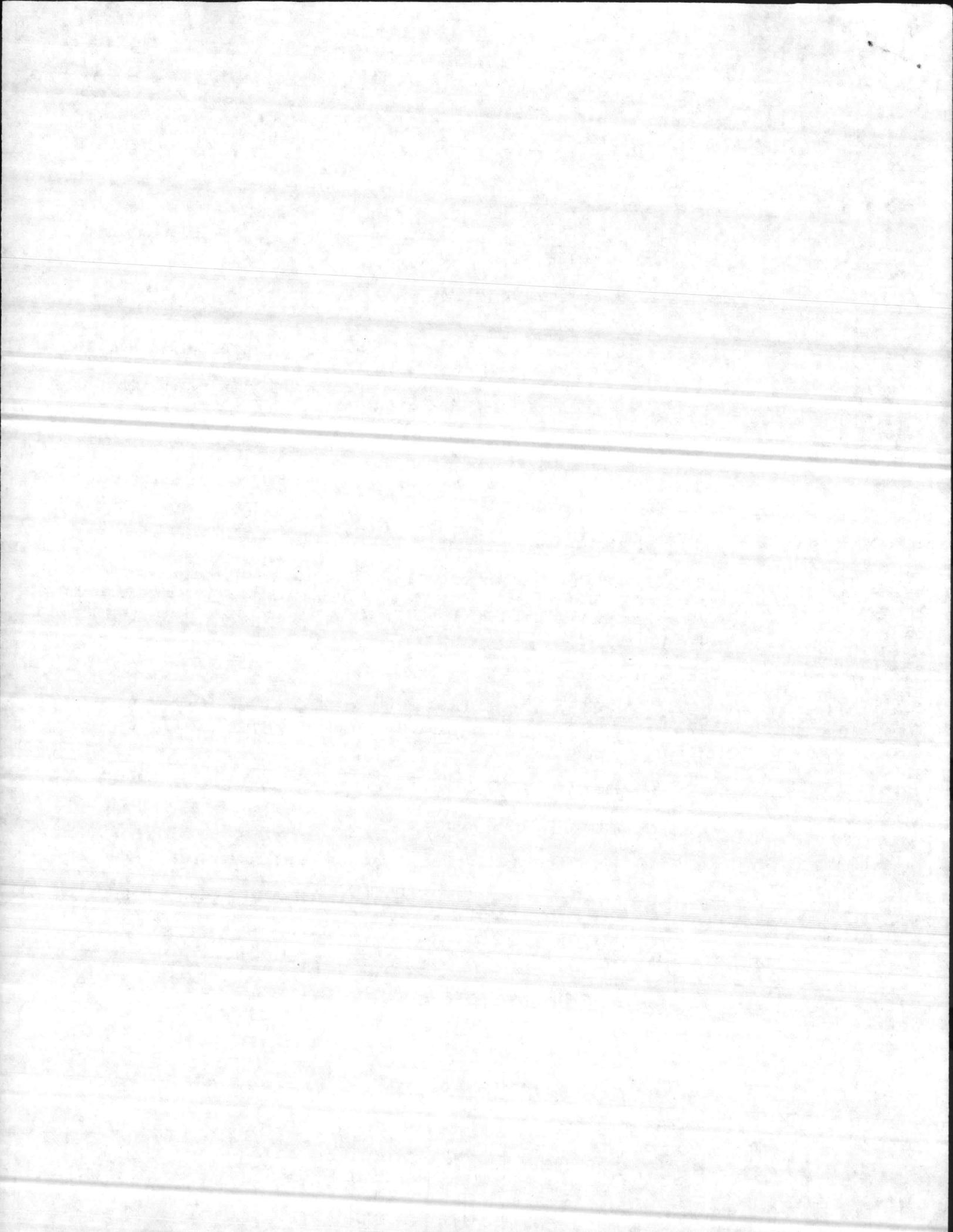


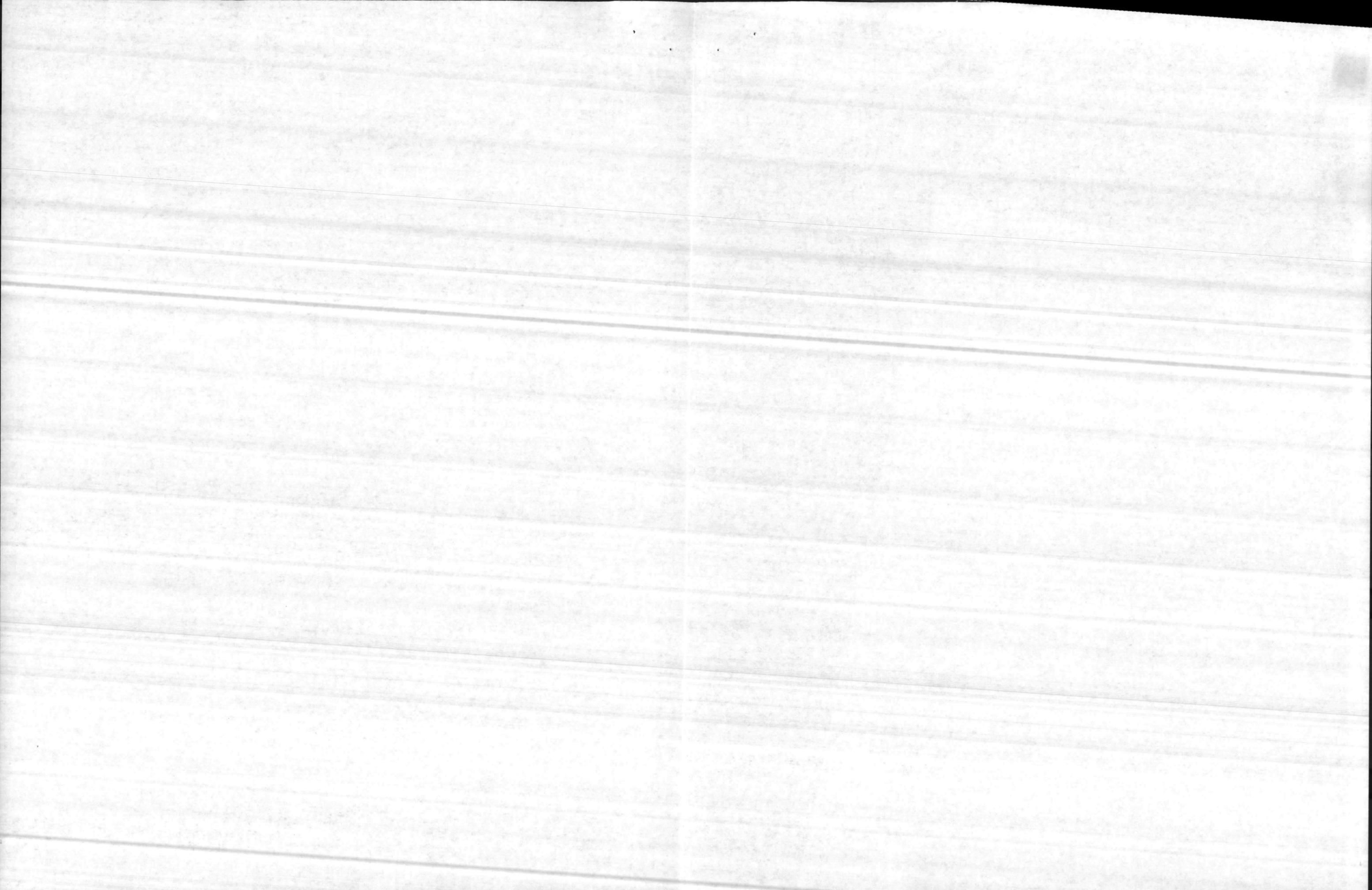
1. DATE 20 JUN 1977	2. FISCAL YEAR 1980	MILITARY CONSTRUCTION PROJECT DATA (Continued)	3. DEPARTMENT NAVY	4. INSTALLATION MARINE CORPS BASE, CAMP LEJEUNE, NORTH CAROLINA
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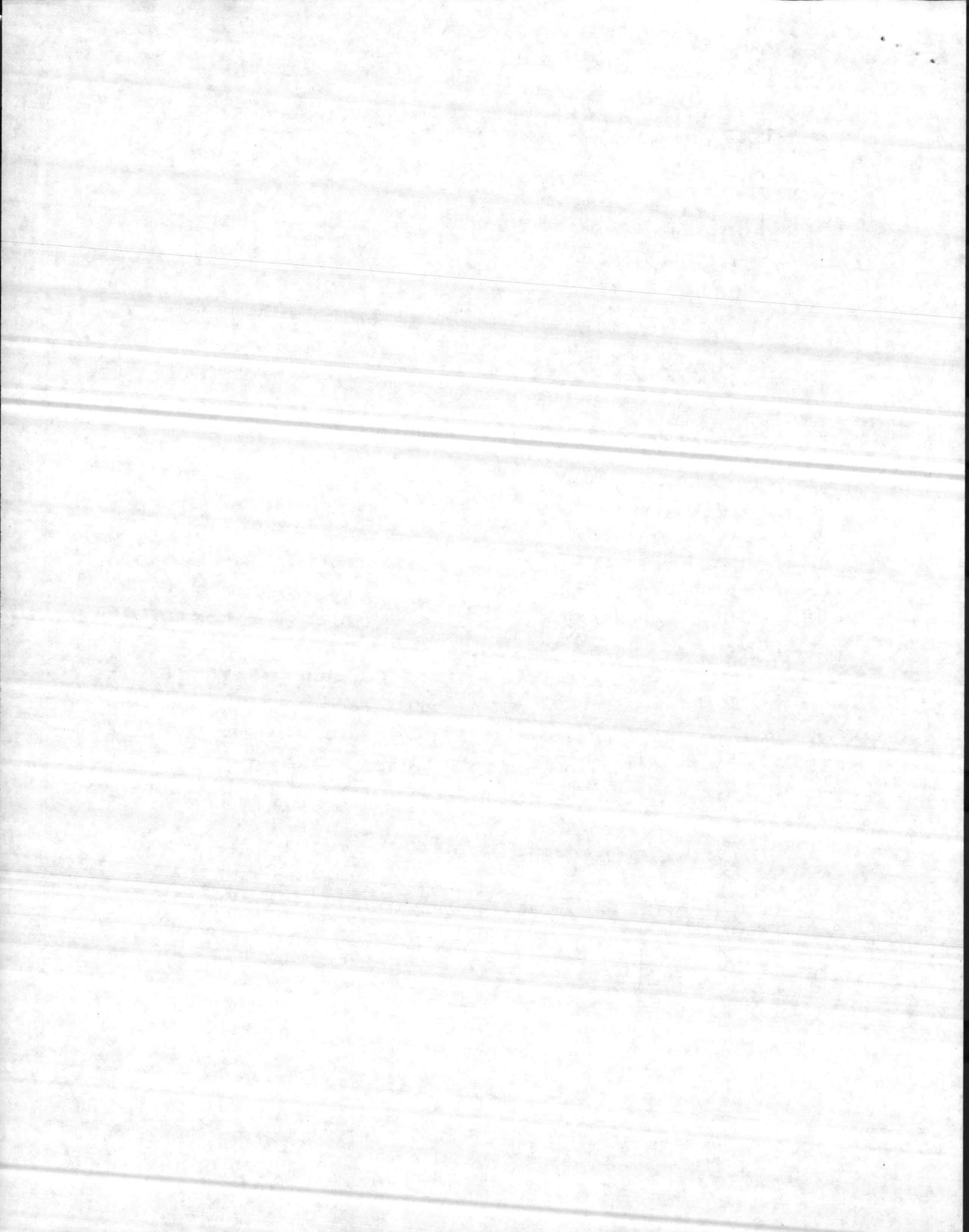
SPECIAL CONSIDERATIONS

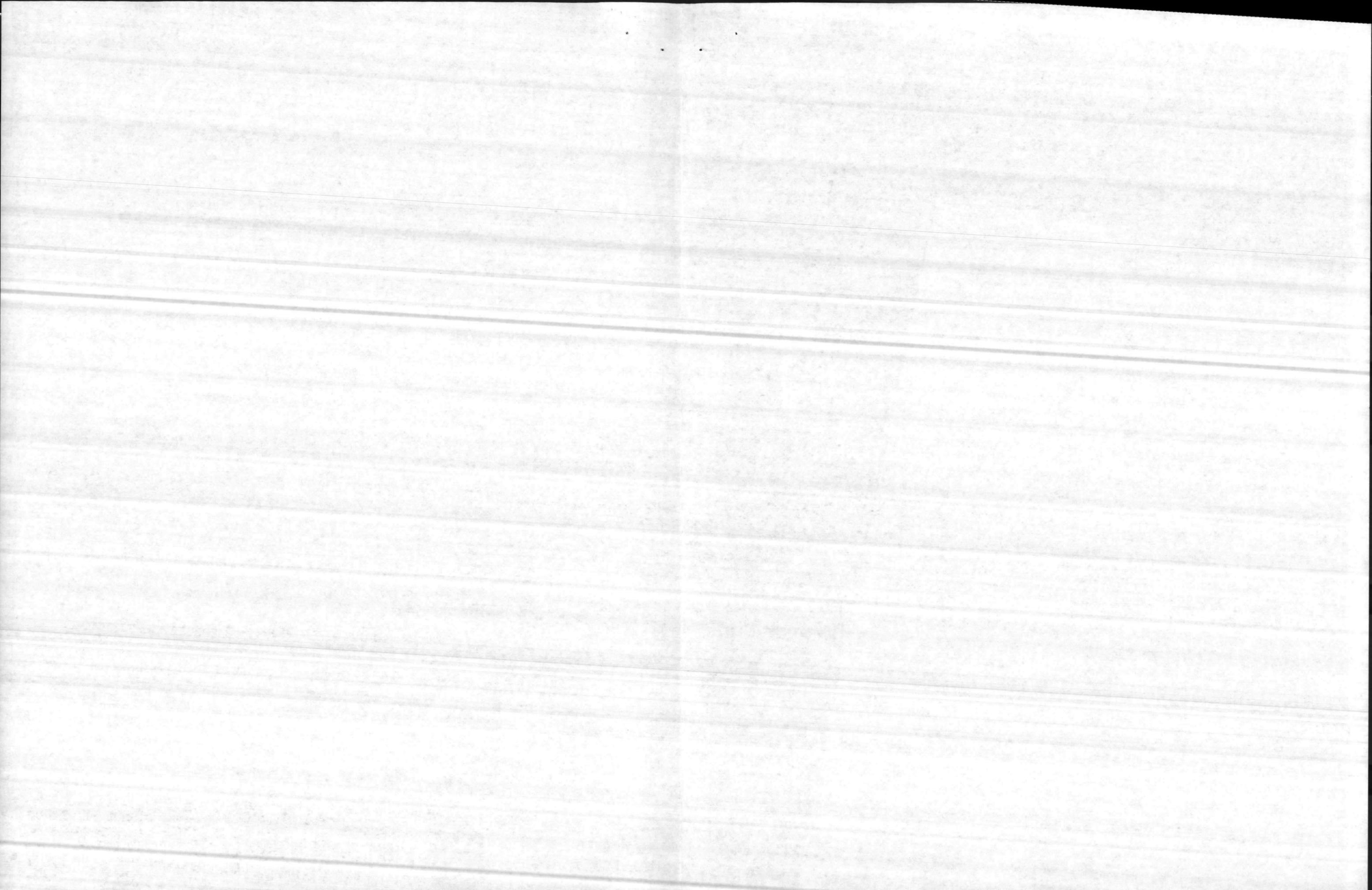
1. POLLUTION PREVENTION, ABATEMENT, AND CONTROL. This project will not cause additional air or water pollution.
2. FLOOD HAZARD EVALUATION. Requirements of Executive Order No. 11296 (flood hazards) are not applicable.
3. ENVIRONMENTAL IMPACT. An environmental impact assessment has been made, and it has been determined that the proposed project will have neither a significant impact on the environment nor is it highly controversial.

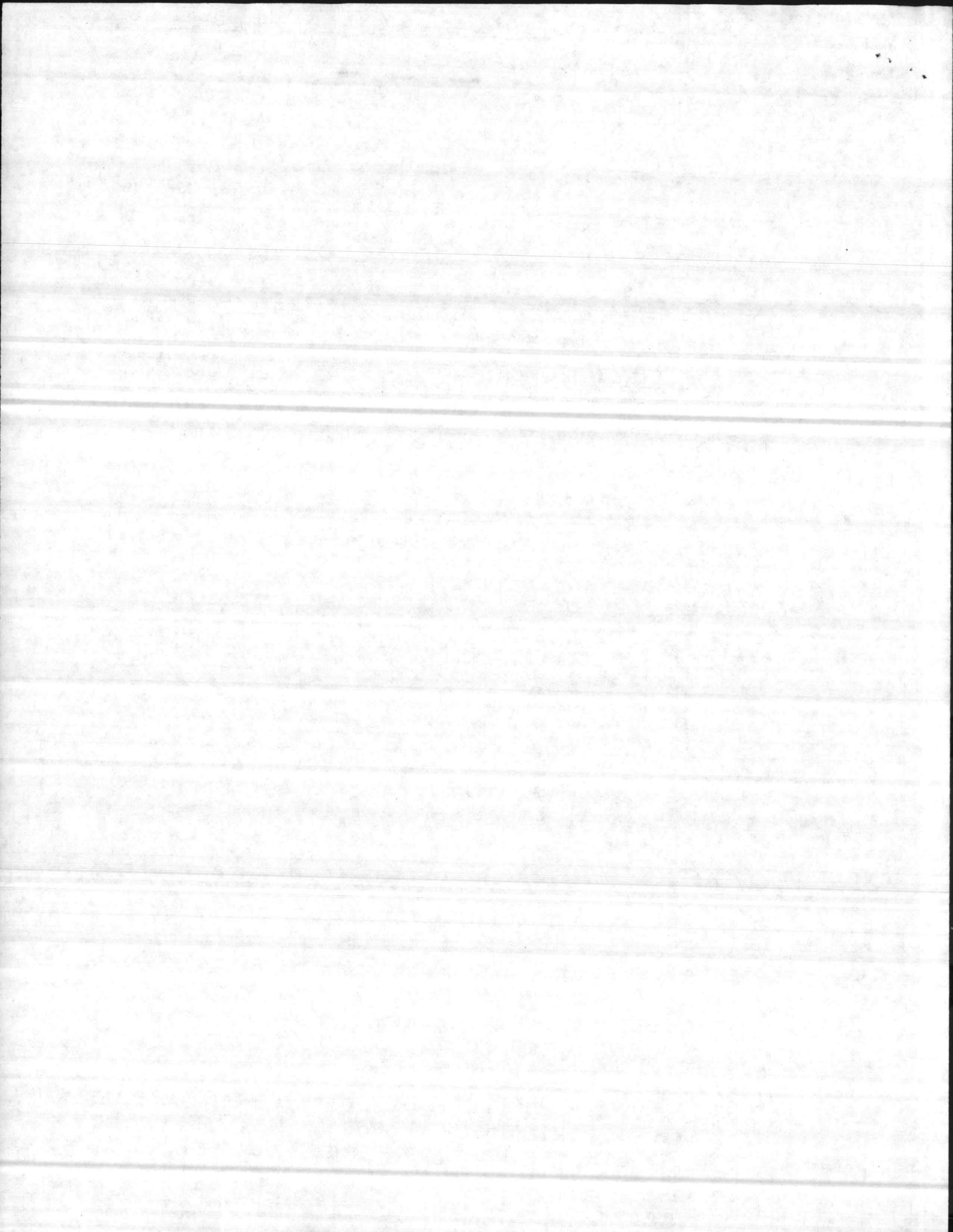


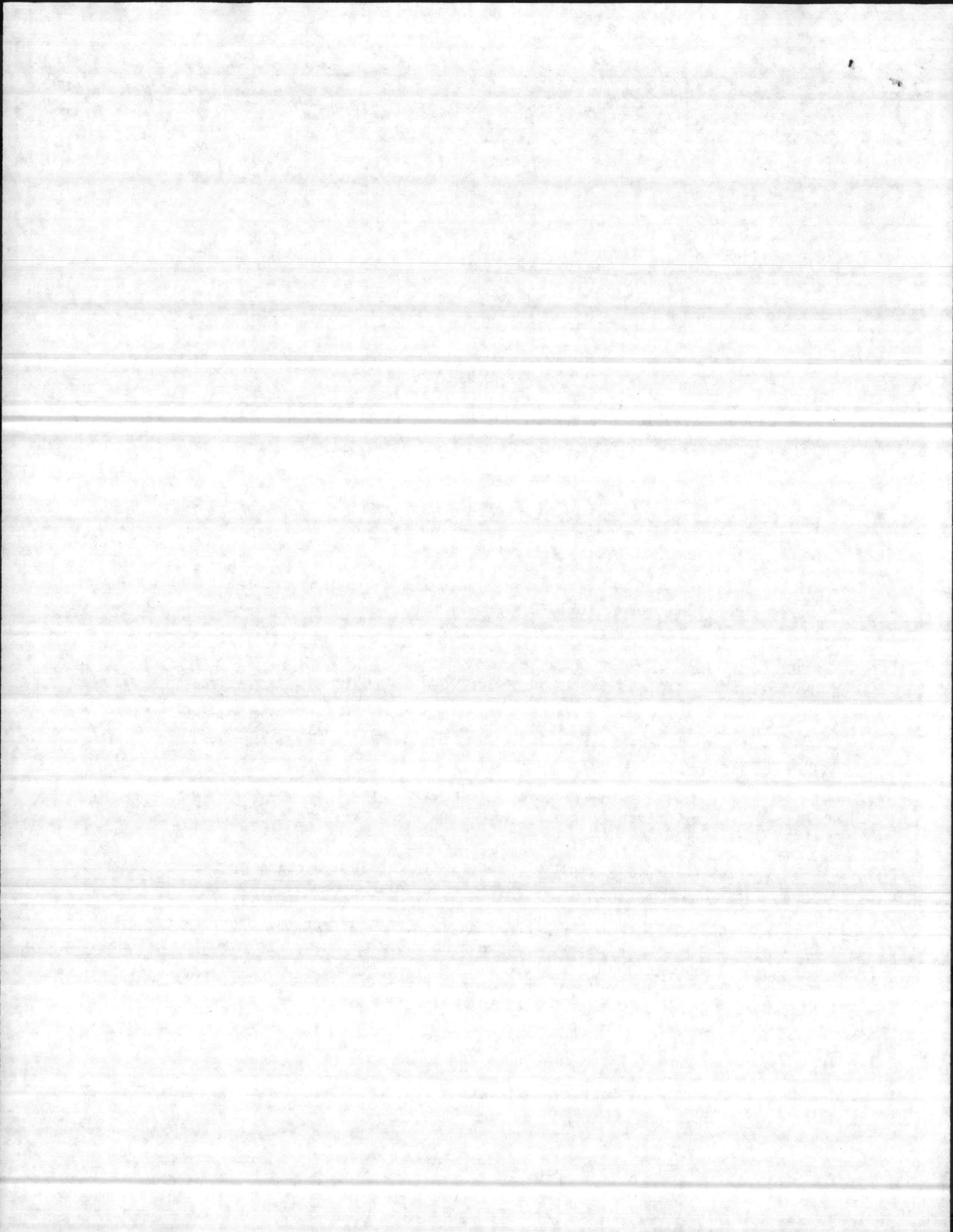


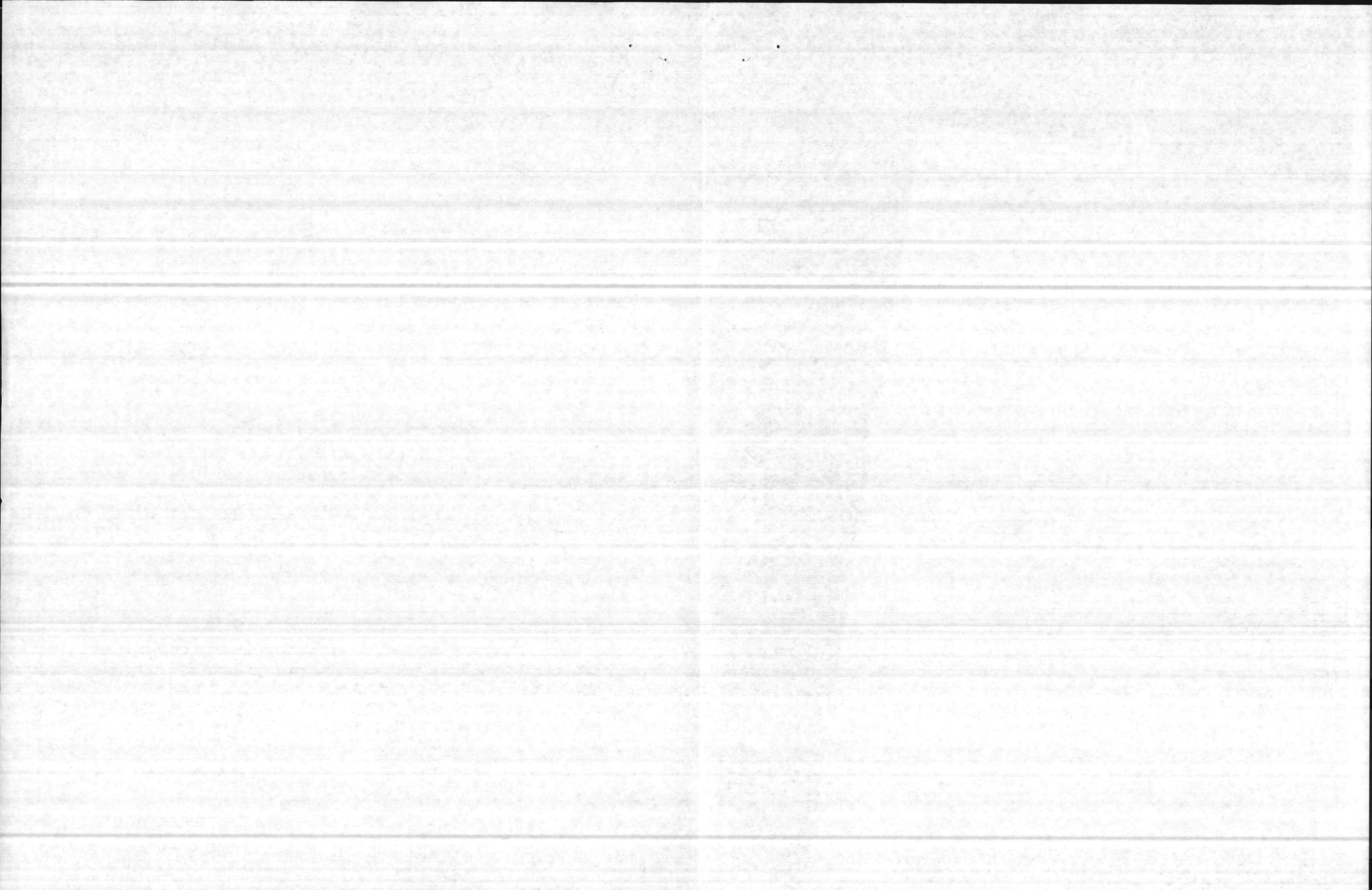












204:BJB:cbm
11320
7 Oct 1977

From: Commanding Officer
To: Commanding General, Marine Corps Base, Camp Lejeune, N. C. 28542
(Base Maintenance Officer)

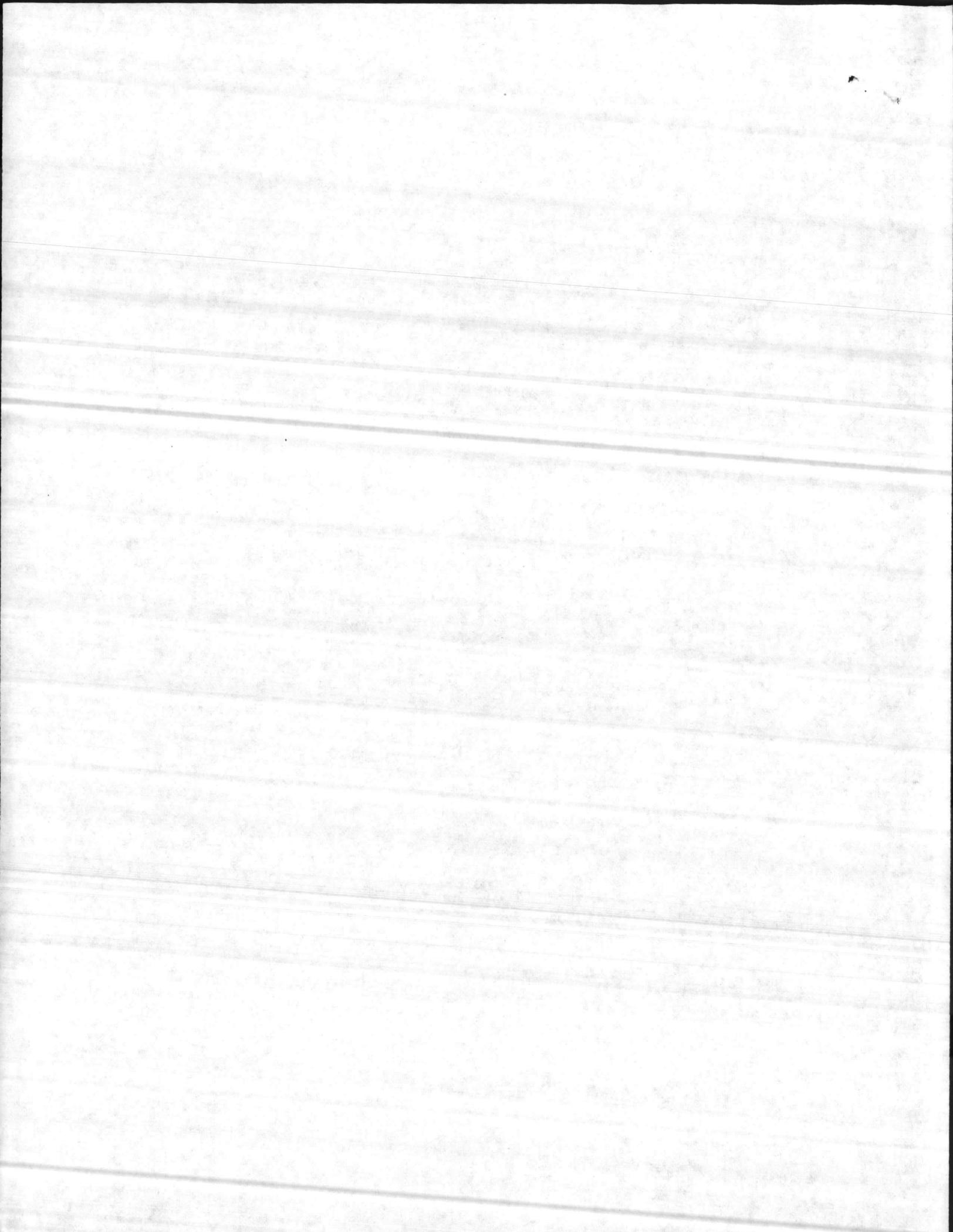
Subj: Local recommendations as result of Fire Protection Engineering Survey, MCAS(H), New River

1. A Fire Protection Engineering Survey was conducted aboard this command. The following local recommendations were made concerning discrepancies under cognizance:

- a. Improve the maintenance of exit lights throughout all buildings on the station.
 - b. Remove, and strictly prohibit the further use of plastic trash containers throughout the station. Combustible trash is required to be disposed of only in noncombustible containers with metal covers.
 - c. Institute and enforce procedure station-wide whereby no coffee mess, snack bar, hot plate, coffee pot, or cooking facility can be established or placed in operation without examination by the fire department, and health officer as necessary, and the issuance of a permit which must be kept posted at the appliance. Unauthorized, unsafe, and unsanitary coffee messes and cooking facilities are proliferating with little or no control.
 - d. Secure all interior fire alarm system coded transmitter covers closed with either nut and bolt or padlocks. It is obvious that many transmitters are subject to tampering.
 - e. Provide a wood waste collection and removal system, connected to all woodworking machinery in Carpenter Shop Building 124.
 - f. Either provide a safe fuel supply arrangement for the LP gas range in Grounds Maintenance Building 121, or remove the range and LP gas cylinder and appurtenances. The necessity for this range is highly suspect and the fuel supply is an industrial LP gas cylinder.
2. It is requested that the above discrepancies be corrected at the earliest possible date to conform with current Fire Regulations.

Blind copy to:
Fire Chief, MCAS(H)

F. M. MORGAN
By direction.



204:BJB:cbm
11320
7 Oct 1977

From: Commanding Officer
To: Commanding General, Marine Corps Base, Camp Lejeune, N. C. 28542
(Base Maintenance Officer, Director Utilities Division)
Subj: Local recommendations as result of Fire Protection Engineering Survey, MCAS(H), New River

1. A Fire Protection Engineering Survey was conducted aboard this command. The following local recommendations were made concerning discrepancies under cognizance:

a. Improve the maintenance of exit lights throughout all buildings on the station.

b. Remove, and strictly prohibit the further use of plastic trash containers throughout the station. Combustible trash is required to be disposed of only in noncombustible containers with metal covers.

c. Institute and enforce procedure station-wide whereby no coffee mess, snack bar, hot plate, coffee pot, or cooking facility can be established or placed in operation without examination by the fire department, and health officer as necessary, and the issuance of a permit which must be kept posted at the appliance. Unauthorized, unsafe, and unsanitary coffee messes and cooking facilities are proliferating with little or no control.

d. Secure all interior fire alarm system coded transmitter covers closed with either nut and bolt or padlocks. It is obvious that many transmitters are subject to tampering.

e. Replace the three 2 1/2-inch valve hose outlets on the hose header (test header) on Booster Pump House 2003. Existing valves have been damaged by freezing and hose threads on these valves are not U. S. National Standard Hose Threads as is required.

f. Provide an automatic ball drip in the hose header assembly of the fire pumps in Booster Pump House 2003. This will prevent a reoccurrence of the freezing which occurred during January 1977 by automatically draining any water which leaks into the test header assembly past the normally closed gate valve.

2. It is requested that the above discrepancies be corrected at the earliest possible date to conform with current Fire Regulations.

Blind copy to:
Fire Chief, MCAS(H)

F. M. MORGAN
By direction

