

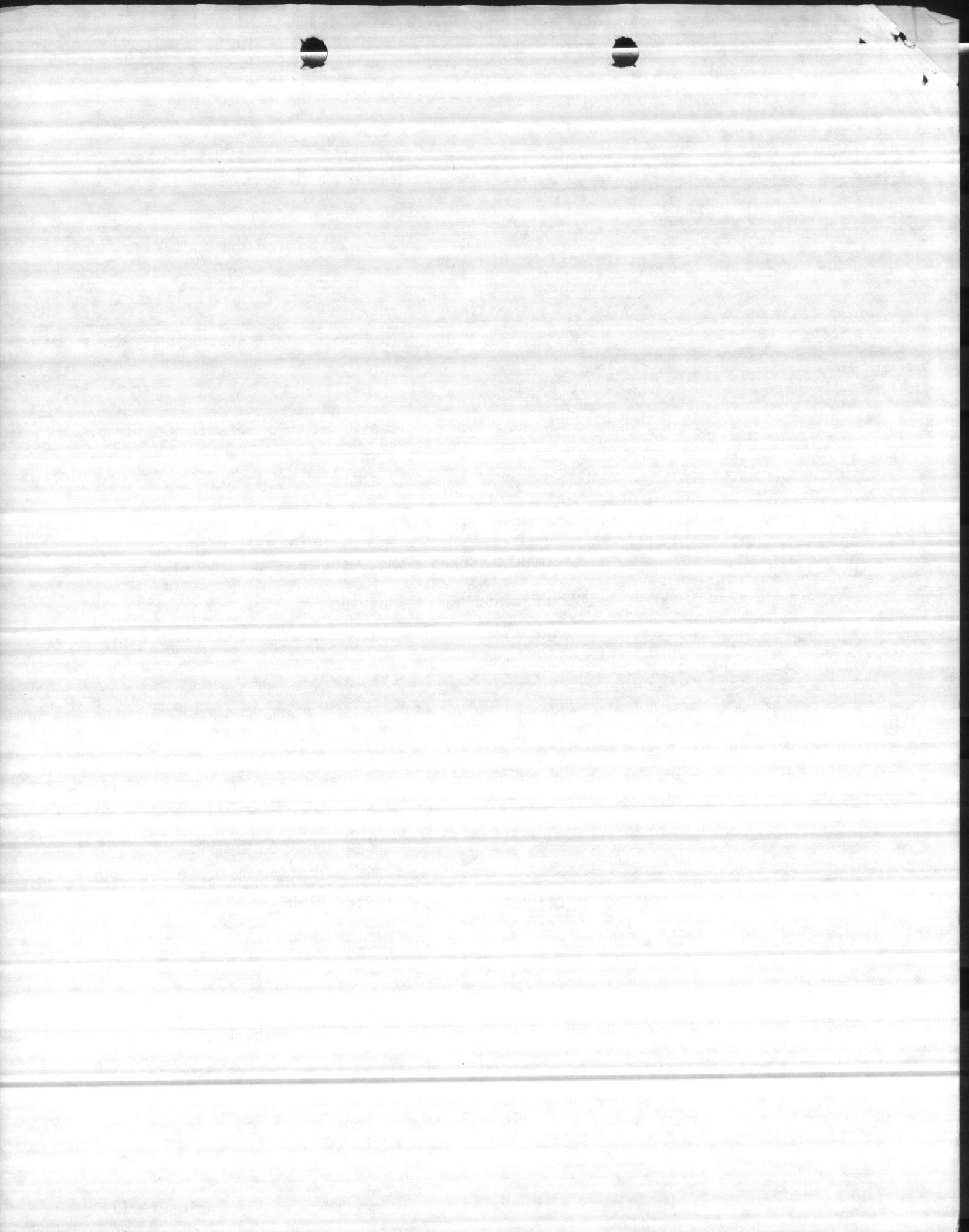
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INDUSTRIAL AREA
MARINE CORPS BASE
CAMP LEJEUNE, NORTH CAROLINA

FIRE PROTECTION ENGINEERING SURVEY REPORT

16 MAY 1985

Enclosure (1)



FIRE PROTECTION ENGINEERING SURVEY REPORT

DATE OF REPORT:

16 MAY 1985

1. NAVAL SHORE INSTALLATION: Marine Corps Base, Industrial Area

LOCATION: Camp Lejeune, North Carolina

2. DATE OF SURVEY: 29 April - 3 May 1985 (40/9)

DATE OF LAST REPORT: 4 June 1982

3. SUMMARY OF CONDITIONS

The Marine Corps Base at Camp Lejeune, North Carolina is an exceptionally large military installation near Jacksonville, North Carolina. The base is the home of the 2nd Marine Division, 2nd Force Service Support Group, and Marine Corps Base personnel. The mission of the Industrial Area is to provide industrial and storage facilities and support to Marine Corps Base, Camp Lejeune.

The Industrial Area survey boundaries are North-Holcomb Blvd., East-Sneads Ferry Road, West-Main Service Road, and South-Cogdels' Creek. The remainder of Camp Lejeune is covered by separate fire protection surveys for Hadnot Point, Camp Johnson, Camp Geiger, and Outlying Areas.

Virtually all of the large warehouse-office buildings are of fire resistive construction with smaller industrial area vehicle maintenance buildings of all metal construction.

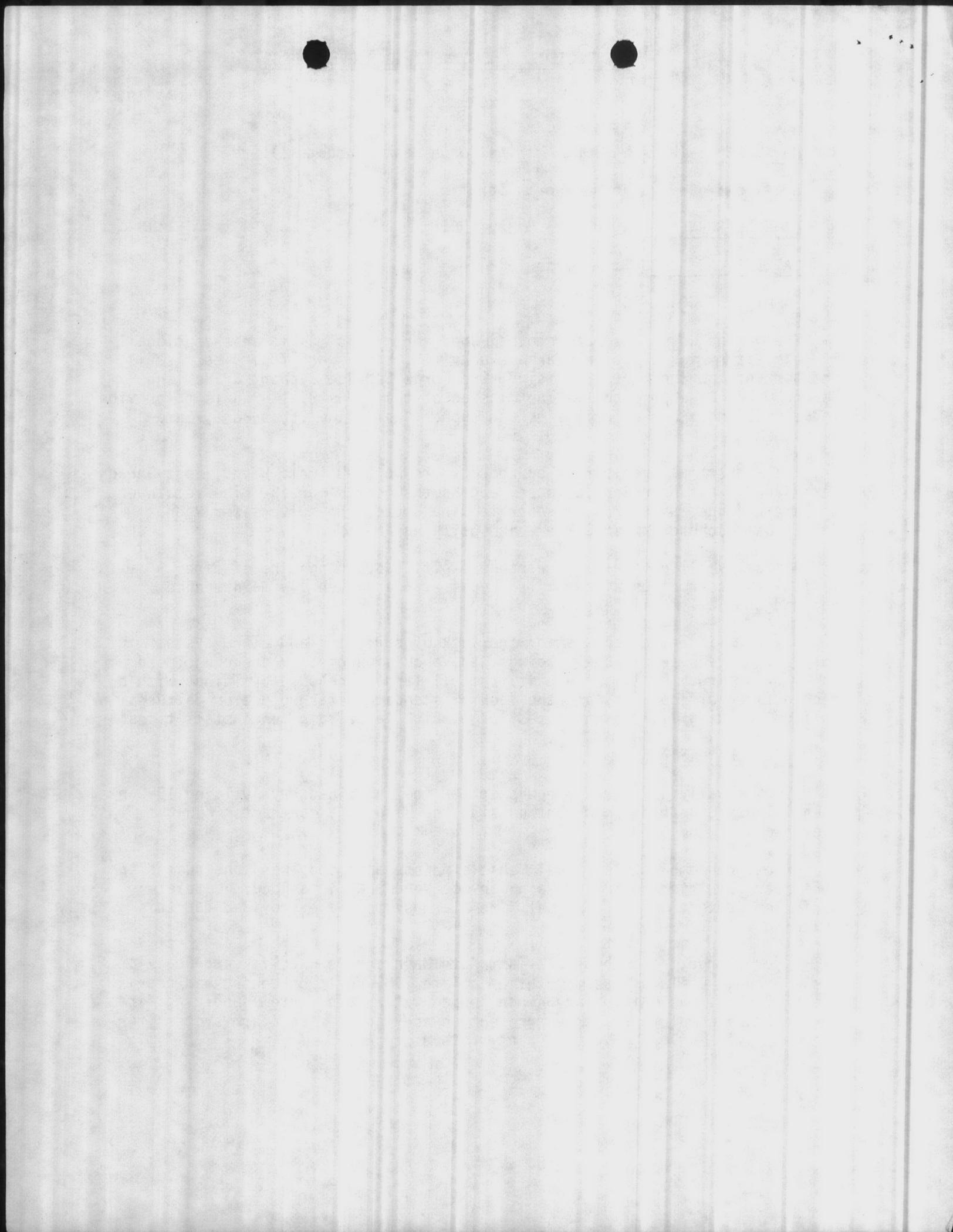
Major deficiencies consist of the lack of sprinkler and alarm systems in the large warehouse-office buildings, the provision of only one unenclosed interior stairway as the sole exit from all large warehouse buildings with a second floor office area, and the lack of standard fire protection features in half of Building 1101 which houses large, high value computer installations.

4. MAJOR CHANGES

a. Virtually all laundry equipment in the large Laundry Building 1500 has been idled. Laundry is now sent outside the base to a contractor run operation.

A new, noncombustible Combat Vehicle Maintenance Shop was constructed in 1984 near the intersection of Main Service Road and Louis Road. Complete sprinkler protection and a manual fire alarm system were provided for this building.

A very large, noncombustible Tank/Auto Maintenance Facility and Ready Issue Storage Building was completed in late 1983 south of Louis Road near Duncan Street. An 8-inch and 6-inch looped water main system supplying fire hydrants and complete sprinkler protection and manual fire alarm systems for both buildings were included as part of this project.



Approved wet pipe sprinkler protection, ceiling smoke detectors, and underfloor CO2 protection has been provided for the computer section of Building 1101, protecting the vital computer installations in this area.

b. Previous Recommendations:

The portion of Recommendation 4-79 for Building 1101 sprinkler protection (West Section), ceiling smoke detectors, and underfloor carbon dioxide protection has been complied with and deleted from this report.

5. FIRE PREVENTION PROGRAM - COMMENTS AND RECOMMENDATIONS

a. Comments: Building inspections are conducted by the Marine Corps Base Fire Prevention Inspectors at the intervals required by MCO P11000.11A. In addition, fire-fighters make semi-annual building inspections. The Base has an effective fire prevention education and public awareness program which has aided in reducing the frequency of fires. One inspector is assigned full-time to this important problem.

b. Recommendations: All drawings and specifications for facility construction, alteration or repair should be reviewed by fire prevention personnel. This review would identify potential fire protection problems and would help ensure that adequate fire protection features are included in all projects.

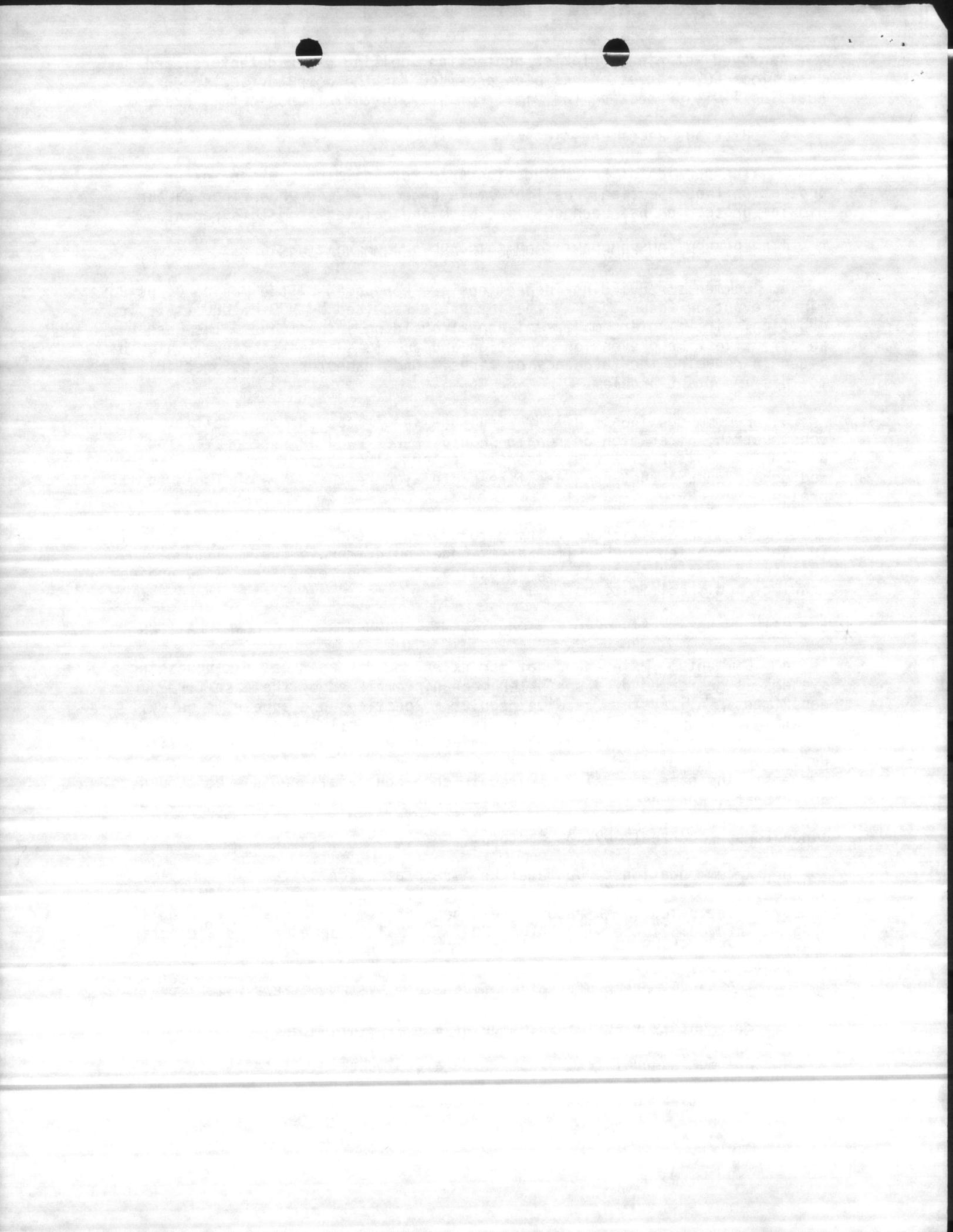
Provide additional training for fire prevention inspectors. Training in the application of the Life Safety Code would improve the quality of the building inspections and is highly desirable for personnel reviewing project drawings and specifications.

* 6. MAINTENANCE OF FIRE PROTECTION SYSTEMS - COMMENTS AND RECOMMENDATIONS

a. Comments: Maintenance of sprinkler and dry chemical extinguishing systems is performed by a sprinkler mechanic employed by the base fire department. All systems receive regular inspections and appear to be well maintained. The fire alarm electricians have recently been hired by the fire department. The placement of these maintenance personnel within the fire department has resulted in much better maintenance of fire protection systems. The base fire alarm system in the Industrial Area has continued to deteriorate, and was found temporarily inoperative at the time of this survey due to system grounds in excess of 80% and reported frequent damage to buried conductors, reportedly by contractors.

b. Recommendations: Upgrade the fire protection system maintenance/testing program by conducting the inspections listed below at the intervals indicated, with records retained for review. This will bring the program into compliance with NAVFAC MO-117, "Maintenance of Fire Protection Systems".

1. Weekly check of station fire alarm system battery water level;
2. Monthly visual inspection of all fire alarm equipment;
3. Semi-annual test of all fire alarm manual pullstations;
4. Semi-annual test of heat detectors;



5. Semi-annual operational test of all smoke detectors;
6. Monthly fire alarm battery voltage check;
- ✓ 7. Weekly dry pipe valve air and water pressure check;
8. Monthly test of sprinkler water flow alarms;
9. Quarterly sprinkler main drain tests;
- ✓ 10. Weekly visual check of carbon dioxide systems.

Work is continuing to restore base fire alarm circuits to the best possible condition, but excessive grounding problems were noted to exist on several base circuits. Close supervision of contractor operations is essential to avoid continued damage to base fire alarm circuits. (See Recommendation I-2-85).

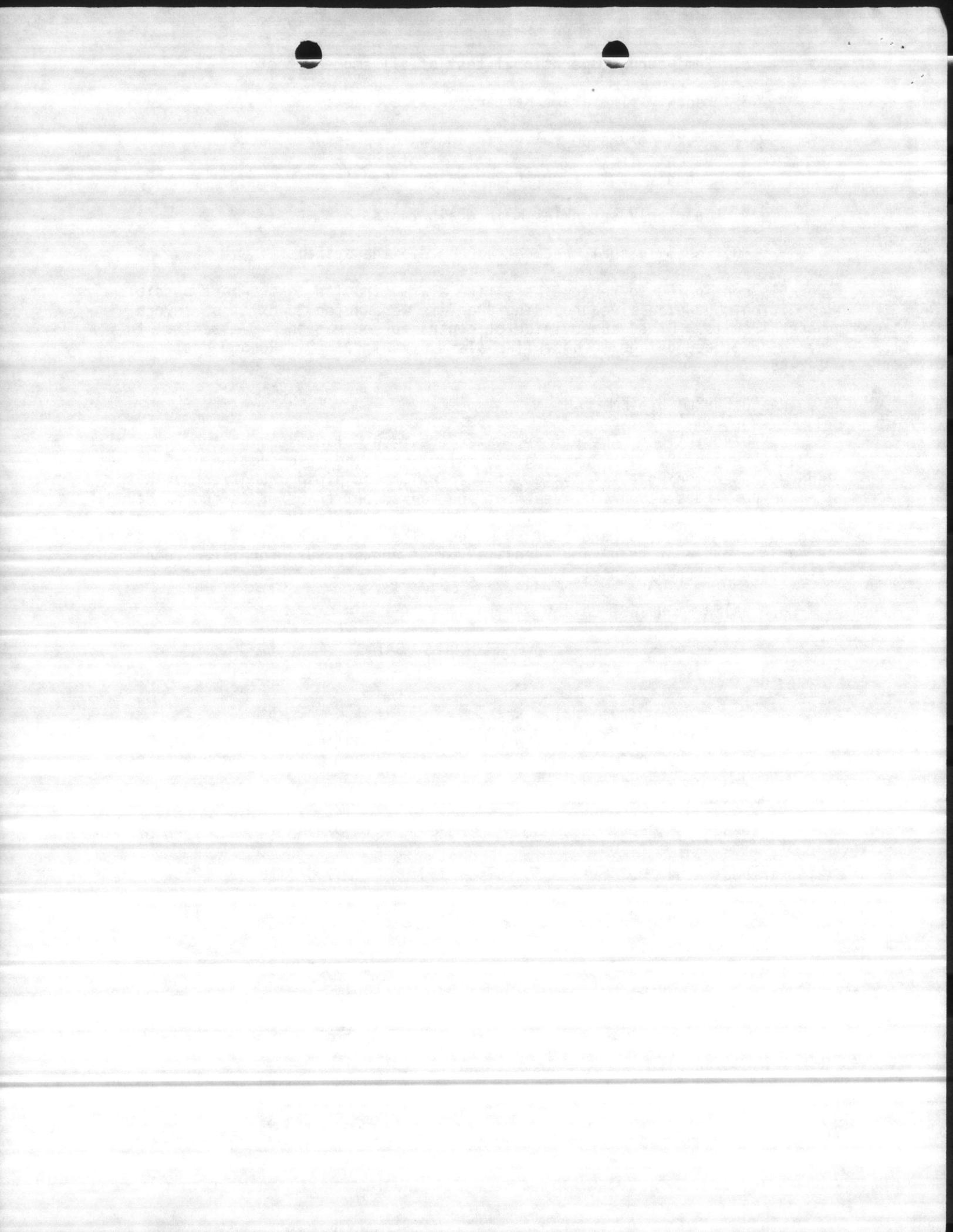
7. WATER SUPPLY SYSTEM

a. Description: The primary water treatment plant serving the Industrial Area is Pumping Station Building 20, which is at the intersection of G Street and Main Service Road. A system of deep wells and piping supplies raw water to the pumping station for treatment and subsequent transfer to one of several elevated storage tanks. The water is distributed from the tanks via a well looped system of 6, 8, and 12 inch mains. The water supply for the Industrial Area is capable of supplying adequate volume and pressure for fire protection systems and fire hydrants.

b. WATER FLOW TEST DATA

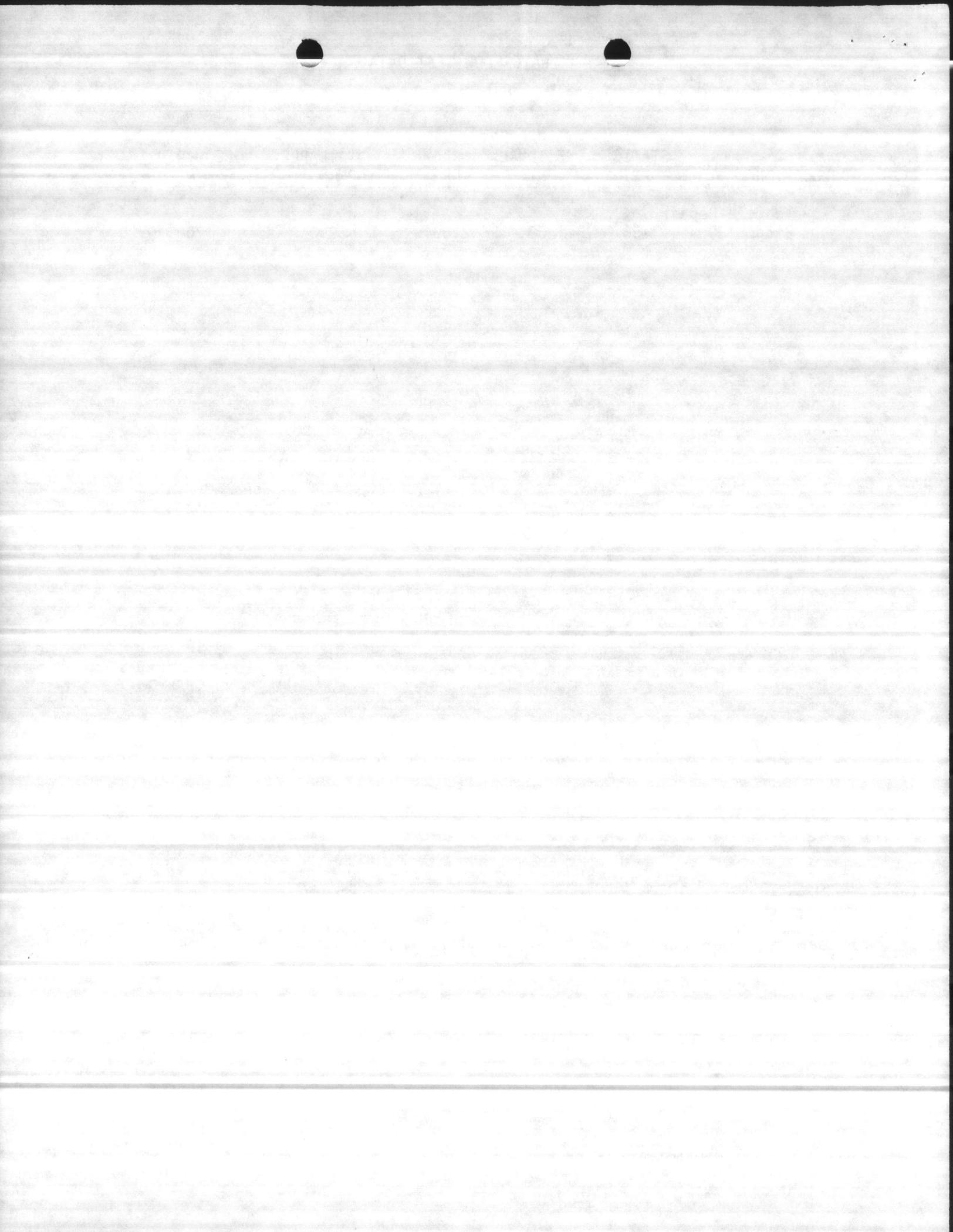
WATERFLOW TEST DATA

LOCATION	STATIC PSI	MEASUREMENTS:		AVAILABLE		REQUIRED	
		RESIDUAL PSI	FLOW GPM	GPM @ PSI	GPM @ PSI		
1. Flammable Storage Bldg. TP-457	53	39	995	950 @ 40	1400 @ 40		
2. Warehouse 904	53	38	1235	1900 @ 20	2500 @ 20		
3. Warehouse 916	51	25	1460	1300 @ 30	1250 @ 30		
4. Base Maint. Bldg. 1202	54	46	2110	4600 @ 20	2000 @ 20		
5. SERVMART Bldg. 1606	54	44	1965	3750 @ 20	2000 @ 20		
6. Vehicle Repair Bldg. 1775	58	50	1640	3800 @ 20	2000 @ 20		



WATERFLOW TEST DATA

LOCATION	MEASUREMENTS:				
	STATIC PSI	RESIDUAL PSI	FLOW GPM	AVAILABLE GPM @ PSI	REQUIRED GPM @ PSI
7. Vehicle Repair Bldg. 1808	55	38	2180	3200 @ 20	2000 @ 20



8. ENGINEERING RECOMMENDATIONS

a. Priority

These recommendations involve major life safety hazards or conditions which could severely impact on the activity's ability to accomplish vital missions, and are those for which attention and resources should be directed.

Cost estimates contained in recommendations are not intended as precise costs but are only to indicate a probable range of expenditure.

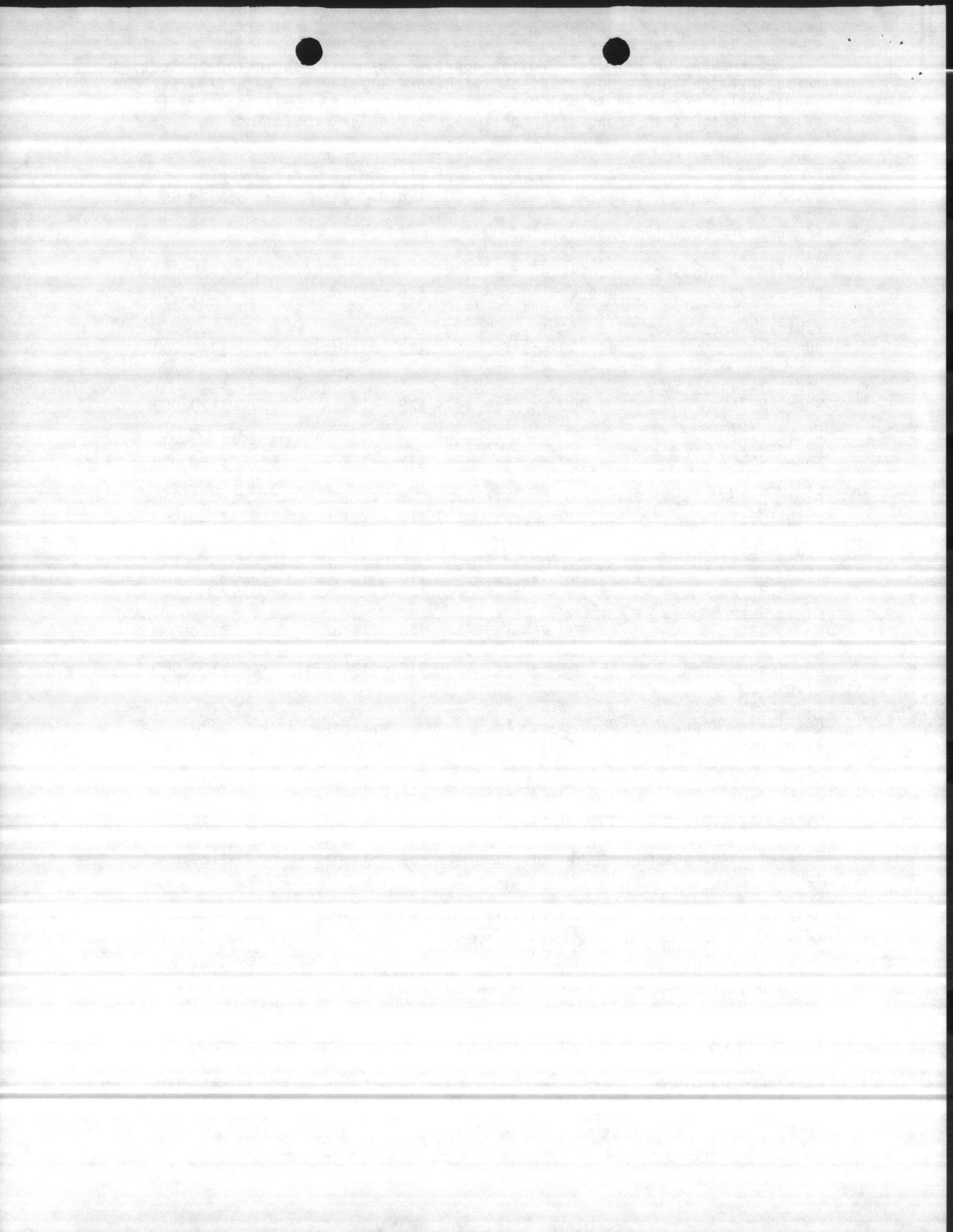


RECOMMENDATION P-1-53: Provide approved automatic sprinkler protection throughout the following buildings, with sprinkler system waterflow switches electrically connected to the base fire alarm system. Buildings are listed below in descending order of priority for sprinkler protection:

<u>BUILDING</u>	<u>APPROXIMATE AREA</u>	<u>EST. REPLACEMENT VALUE BLDG. & CONTENTS</u>	<u>APPROX. SPRINKLER SYSTEM COST</u>
Warehouse - EDP Bldg. 1101 (East half requires sprinkler protection)	Approx. 18,000 sq. ft., requires sprinkler protection	\$35 million	\$40,000
Vehicle Parts Whse. 904	64,800 sq. ft.	\$20 million	\$120,000
Medical Supply Stge. Whse. 907	64,800 sq. ft.	\$22 million	\$120,000
Parts Stge. Whse. 903	64,800 sq. ft.	\$17 million	\$150,000
Field Gear Stge. Whse. 905	68,000 sq. ft.	\$17 million	\$140,000
Parts Stge. Whse. 1108	64,800 sq. ft.	\$10 million	\$120,000
Field Gear Stge. Whse. 1501	64,800 sq. ft.	\$10 million	\$120,000
Commissary Stge. Bldg. 1201	66,800 sq. ft.	\$6 million	\$130,000
Commissary/Whse. Bldg. 1200	38,000 sq. ft.	\$6 million	\$80,000
SERVMART Bldg. 1606	64,800 sq. ft.	\$5 million	\$120,000
Warehouse 1401	20,000 sq. ft.	\$4 million	\$40,000
General Stge. Whse. 1301	64,800 sq. ft.	\$4 million	\$120,000
Base Maint. Bldg. 1202	40,000 sq. ft.	\$5 million	\$80,000
Excess Prop. Stge. Whse. 906	64,800 sq. ft.	\$4 million	\$120,000
Whse.-Vehicle Repair Bldg. 902	64,800 sq. ft.	\$4 million	\$120,000
Laundry Bldg. 1500	36,500 sq. ft.	\$6 million	\$75,000

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<i>Repair</i> Warehouse - EDP Bldg. 1101 (East half requires sprinkler protection)	Approx. 18,000 sq. ft., requires sprinkler protection	\$35 million	\$40,000 — R-1
Vehicle Parts Whse. 904	64,800 sq. ft.	\$20 million	\$120,000 —
Medical Supply Stge. Whse. 907	64,800 sq. ft.	\$22 million	\$120,000
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<u>BUILDING</u>	<u>APPROXIMATE AREA</u>	<u>EST. REPLACEMENT VALUE BLDG. & CONTENTS</u>	<u>APPROX. SPRINKLER SYSTEM COST</u>
X Packing/Preservation Bldg. 909	42,000 sq. ft.	\$3 million	\$80,000
Vehicle Repair Bldg. 1502	68,000 sq. ft.	\$4 million	\$140,000
1601 Vehicle Repair Bldg.	64,800 sq. ft.	\$4 million	\$140,000

JUSTIFICATION:

(1) Supporting Statement: Automatic sprinkler systems, properly installed and maintained, provide a means of automatically extinguishing a fire and also serve as a means of detecting a fire and sounding an alarm. Sprinkler systems are required by current DOD and Marine Corps criteria to be provided in large combustible buildings and in noncombustible buildings where moderate or large volumes of combustible material are stored. All of the buildings above require sprinkler protection and many contain high value contents representing extensive combustible loading. Building 1101 is vital to the mission of East Coast Marine Corps activities and its loss, or severe damage, due to fire could be nearly catastrophic.

(2) Code/Criteria reference: DOD 4270.1M, "Construction Criteria Manual", Para. 2.T.B;

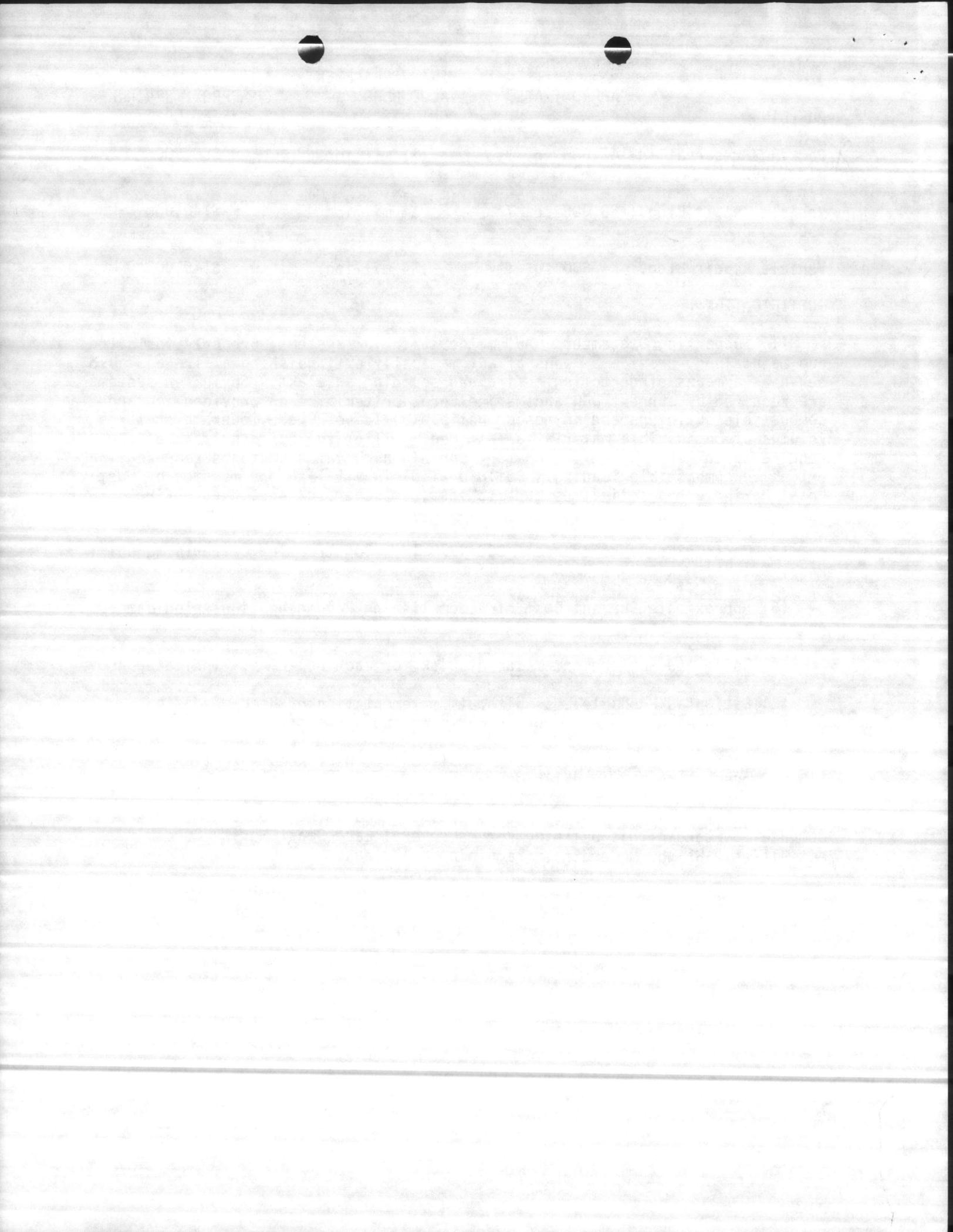
(3) Approximate Current Cost of Accomplishing Recommendation: Indicated Above

(4) Estimated Replacement Value at Risk for each Building: Indicated Above

(5) Estimated Probable Loss Without Implementation of Recommendation: \$3 -5 million with severe damage to building and contents.

(6) Estimated Probable Loss With Implementation of Recommendation: \$15,000 due to prompt sprinkler operation and fire control.

(7) Strategic Importance: Moderate-High in Building 1101 since the computer center in this building serves several East Coast Marine Corps Activities. Slight-Moderate in remaining buildings.



RECOMMENDATION P-54 (Revised 1985): Provide complete, electrically supervised manual fire alarm systems throughout each of the following buildings, or extend existing systems to provide complete coverage:

<u>BUILDING</u>	<u>APPROXIMATE COST OF RECOMMENDATION</u>
Computer Section-Bldg. 1101 (Add fire alarm pullstations at all exit doors, approx. 5 additional ceiling mounted smoke detectors in the original computer room, and underfloor smoke detectors in the original computer room)	\$6,000
Warehouses Buildings 905, 914, 1011, 1108, 1116, and 1211	\$8,000 per building
Commissary Building & Warehouse 1200	\$6,000
Public Works & ROICC Building 1005	\$8,000
Base Maintenance Building 1202	\$10,000
* EM Club/Carpenter Shop Building 1006	\$6,000
Vehicle Repair Building 1601 + 1502	\$6,000

JUSTIFICATION:

(1) Supporting Statement: Fire evacuation alarm systems provide the means of simultaneously alerting occupants of a building to the necessity for immediate evacuation and transmitting an alarm to the station fire department.

(2) Code/criteria reference: Marine Corps Order P11000.11A, Para. 0604.

(3) Life safety: Up to 30 people could become overcome by smoke and heat in the event of a rapidly developing fire in Commissary Building & Warehouse 1200 since this non-sprinklered building may be very congested and occupied by 200 people or more, including children, during peak periods. Lack of a fire alarm system could cause delays in building evacuation.



1000

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BUILDING

APPROXIMATE COST OF RECOMMENDATION

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Commissary Building & Warehouse 1200

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Base Maintenance Building 1202

\$10,000

* EM Club/Carpenter Shop Building 1006

\$6,000

Vehicle Repair Building 1601 + 1502

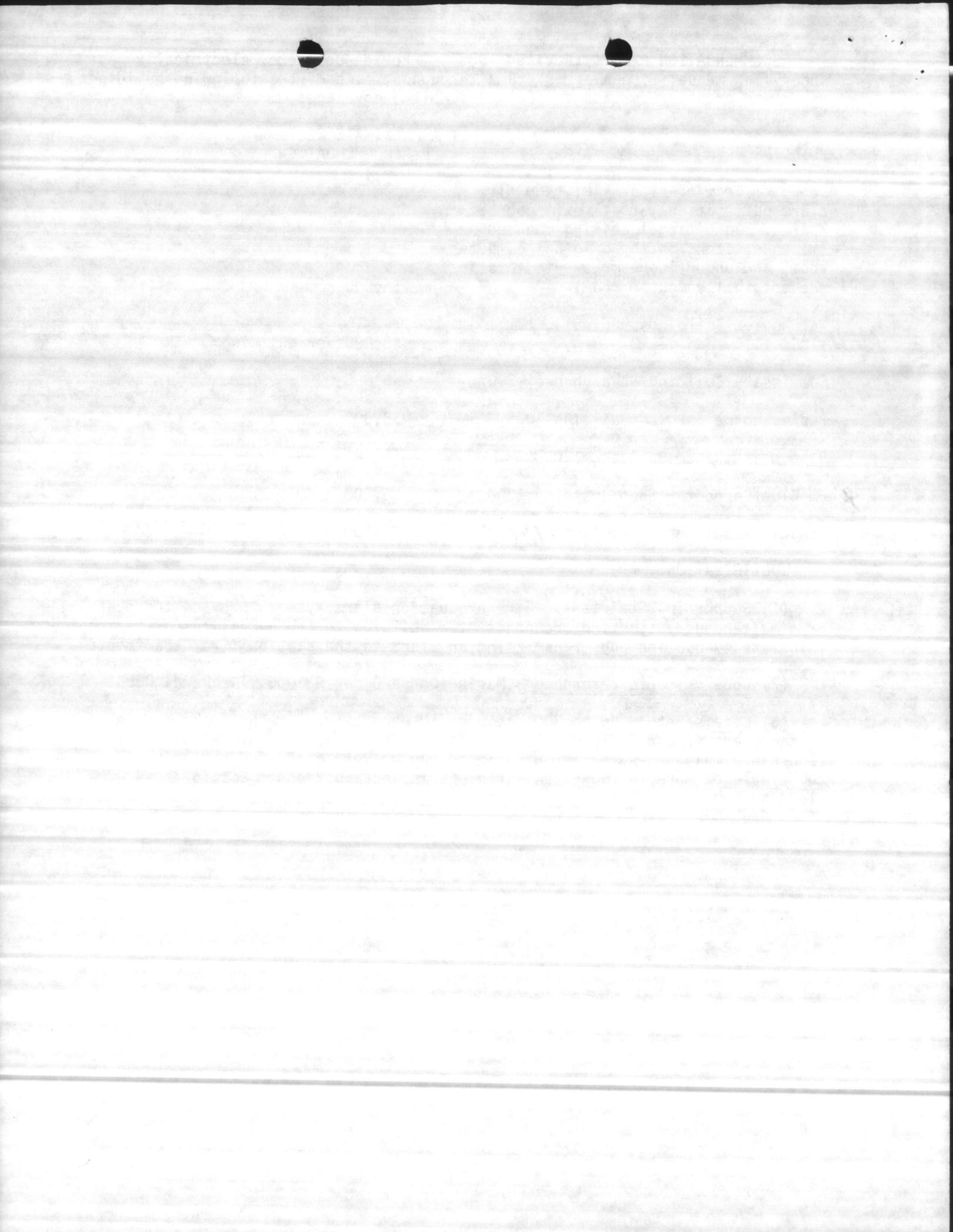
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RECOMMENDATION P-53 (Revised 1985): Provide standard exterior stairways from the second floors of the following buildings, and provide one hour fire rated enclosures for the existing interior stairways with Class B fire doors at all stairway openings:

- a. Warehouse Buildings 905, 914, 1011, 1108, 1116, and 1211
- b. Base Maintenance Building 1202
- c. Administration/Repair Building 900
- d. Vehicle Repair Buildings 1502 and 1601

JUSTIFICATION:

(1) Supporting Statement: Many of the second stories of the above buildings are provided with only one unenclosed interior stairway as the sole means of egress. Dead end travel distance to reach the single stairway is, in some cases, more than 3 times that permitted by NFPA-101, "Life Safety Code". As a result, second floor occupants are subject to potentially serious injury or death in the event of a building fire. Many of the above buildings are non-sprinklered, and none have a standard interior fire alarm system to alert second floor occupants of a building fire.

(2) Code/Criteria reference: NFPA 101-1985, "Life Safety Code", paragraphs 5-1.3.1, 27-2.4, and 29-2.4.1

(3) Approximate current cost of accomplishing recommendation: \$12,000 per building

(4) Life Safety: Approximately 20 people could become trapped on the second floor and overcome by heat and smoke in the event of a moderate-severe building fire which could spread rapidly into the single, unenclosed building stairway.

P2C

RECOMMENDATION P-53 (Revised 1985): Provide standard exterior stairways from the second floors of the following buildings, and provide one hour fire rated enclosures for the existing interior stairways with Class B fire doors at all stairway openings:

- a. Warehouse Buildings 905, 914, 1011, 1108, 1116, and 1211
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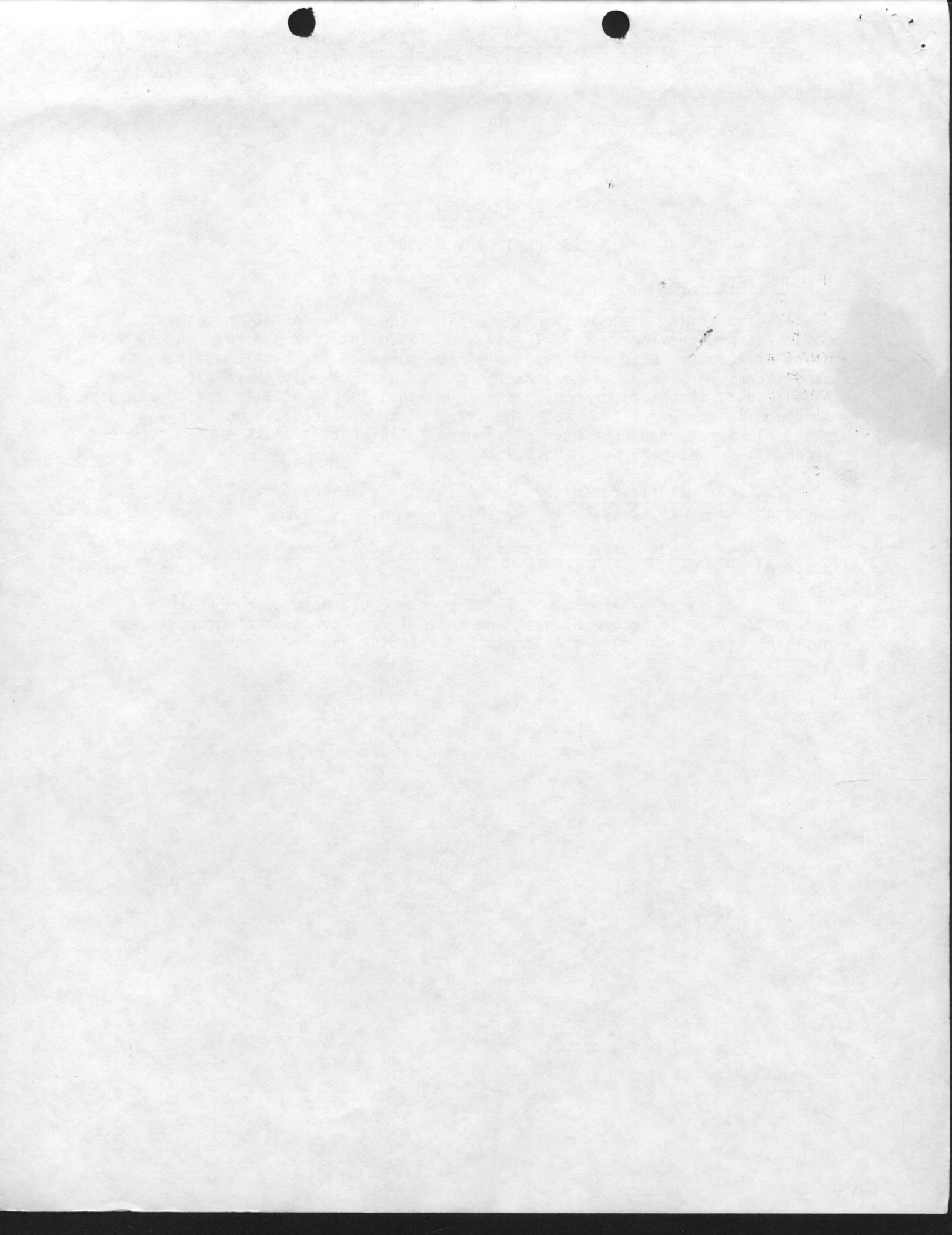
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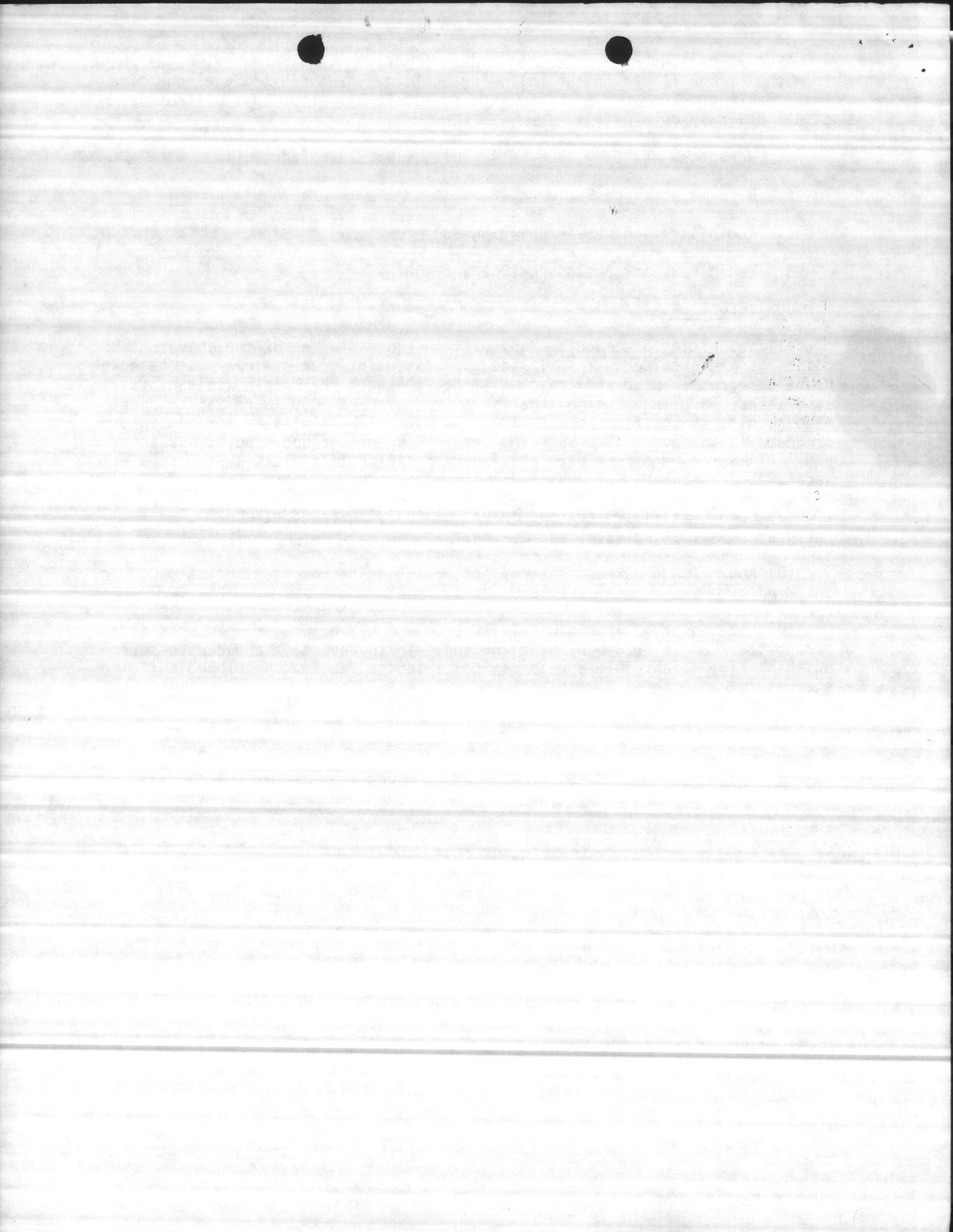
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(4) Life Safety: Approximately 20 people could become trapped on the second floor and overcome by heat and smoke in the event of a moderate-severe building fire which could spread rapidly into the single, unenclosed building stairway.



b. Important:

These recommendations are for the correction of hazardous conditions considered as having significant impact potential but not of the critical nature of those in Section a.

I-1-85: Provide a 2-hour fire rated wall, (blank 8-inch hollow concrete block or equivalent), to separate the Building 1101 electronic data processing section from the adjoining warehouse occupancies. If door openings are essential in this wall, provide Class B, (1 1/2 hour), self-closing fire rated doors and frames.

I-2-85: The base fire alarm system circuit in the Industrial Area was found to have excessive grounds with an 80% voltage loss to ground reading noted at the time of this survey, and Industrial Area fire alarm boxes failed to transmit during testing. This serious impairment must be corrected as soon as possible. Contractors working in the area of buried fire alarm cables have reportedly severed these cables frequently on past occasions. Close supervision of contractor operations and coordination with the Base Fire Department must be provided to stop continued damage and deterioration to base fire alarm circuits.

* I-3-85: In Exchange Warehouse Building 1402, extend approved sprinkler protection as required by 1983 NFPA-13, para. 4-4.11 under all non-sprinklered areas where elevated metal gratings have been installed. Approximately 12,000 square feet is involved.

* I-4-85: Warehouse 1316 - Extend approved sprinkler protection to cover the approximately 1600 square feet East End Repair Section.

I-5-82: Properly enclose all building interior stairways with fire rated partitions to provide complete one-hour fire rated enclosures. Provide Class B, (1-hour) fire doors at all stairway entrances.

I-6-79: Extend approved sprinkler protection for 100% coverage in presently non-sprinklered areas of sprinklered buildings. Unsprinklered offices and other enclosures were noted in the following buildings:

- a. North Center Section of Warehouse Bldg. 914.
- b. Entire West Office Section, NE Whse. Office, and South Section Office of Warehouse 1011.
- c. South and Northwest Office Sections of Bldg. 1116.
- d. South Office Sections of Warehouse 1212.
- e. Northwest Offices of Warehouse 1211.
- f. East End Offices of Warehouse 1317.
- g. Northeast and Southwest Office Sections of Warehouse 1118.

I-7-76: Provide automatic, self-closing U.L. listed Class A, (3-hour) fire doors on both sides of all wall openings in Industrial Area warehouse buildings. Approximately 30% of the warehouses presently lack the required double fire door arrangement at interior fire wall openings.

I-8-76: Upgrade the fuel transfer and storage operations for the main base POL Facility (Building 1004) to comply in all respects with NFPA-30, "Flammable and Combustible Liquids Code". The entire operation should be given a detailed study followed by corrective action, with the following features or approved alternatives included:

- a. Install quick closing shutoff valves in the gasoline transfer lines from the fuel farm "earth covered" storage tanks. These valves should be located a safe distance from the gasoline dispensing and truck filling stations.
- b. Provide an approved ventilation system for Building 1004 and for the pipe tunnel extending under this building.
- c. Test ground connections regularly with an ohmmeter for resistance to ground and stencil the date of the test adjacent to each ground connection.
- d. Provide an approved intercommunications system with stations at the fuel pumphouse, Office Building 1002, and at all three truck fueling stations.

9. SURVEY FINDINGS DEBRIEFED WITH

Mr. B. W. Elston, Asst. Chief of Staff, Facilities
Mr. E. J. Padgett, Fire Chief

Report prepared by:

Martin P. Clark

MARTIN P. CLARK
Fire Protection Engineer
Atlantic Division
Naval Facilities Engineering Command



444-9981
AUTOVON 564-9981

11320/CAMLEJ
408:CDP

30 MAR 1985

From: Commander, Atlantic Division, Naval Facilities Engineering Command
To: Commandant of the Marine Corps

Via: Commanding General, Marine Corps Base, Camp Lejeune

Subj: FIRE PROTECTION ENGINEERING SURVEY REPORT

Ref: (a) NAVMATINST 11320.6B
(b) MCO P11000.11A

Encl: (1) Fire Protection Engineering Survey Report of Madnet Point Area,
Marine Corps Base, Camp Lejeune, North Carolina (3 copies)

1. Subject survey was conducted in conformance with the requirements of references (a) and (b). The report is forwarded as enclosure (1).

2. Reference (b) requires the following action by the Commanding General:

a. Comment on each recommendation, stating the action contemplated for each recommendation or reasons for each nonconcurrence, if any.

b. Submit real property facilities projects in accordance with approval and funding authorities and procedures prescribed in the current edition of MCO P11000.5 to correct deficiencies which exceed local approval authority.

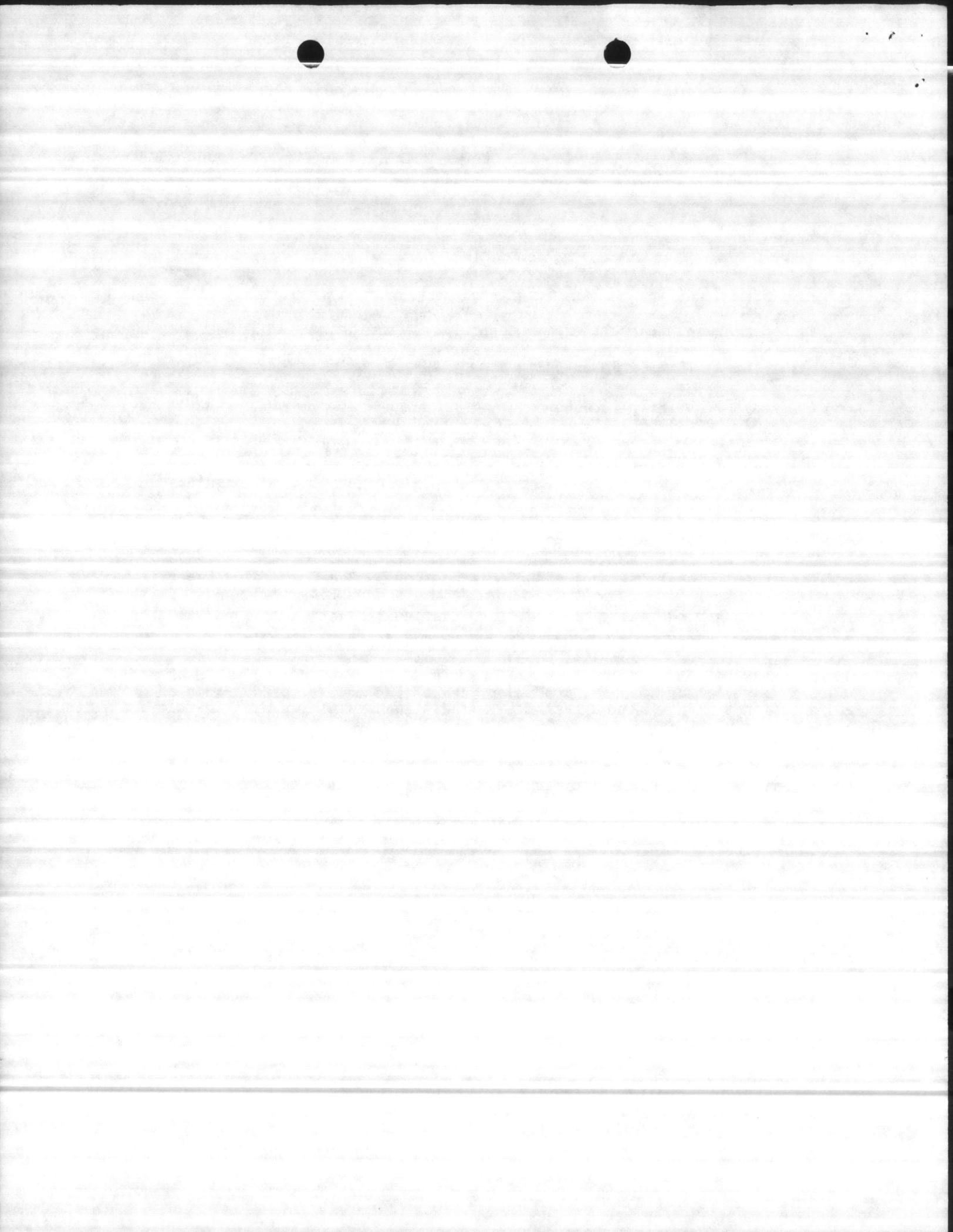
c. Furnish copies of all endorsements to the originator of the report, endorsees, and information addressees.

3. Any questions or comments concerning the subject report should be directed to Mr. C. D. Fritchard, Code 408, telephone (804) 444-9981, autovon 564-9981.

K. E. GODFREY
By direction

Copy to: (w/encl)
CNO
CIC (Code LFF)
CINAVMAT (04F)
NAVFAAC (04F)

Blind copy to: (w/encl)
NAVSAFECEN NORVA (44)
→ MCB CAMLEJ (Fire Chief)
408 (4 copies)
10F
114



Memorandum

11320
FAC

DATE: 26 APR 1985

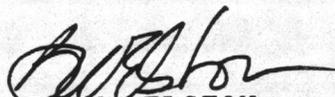
FROM: Assistant Chief of Staff, Facilities, Marine Corps Base, Camp
Lejeune
TO: Base Fire Chief

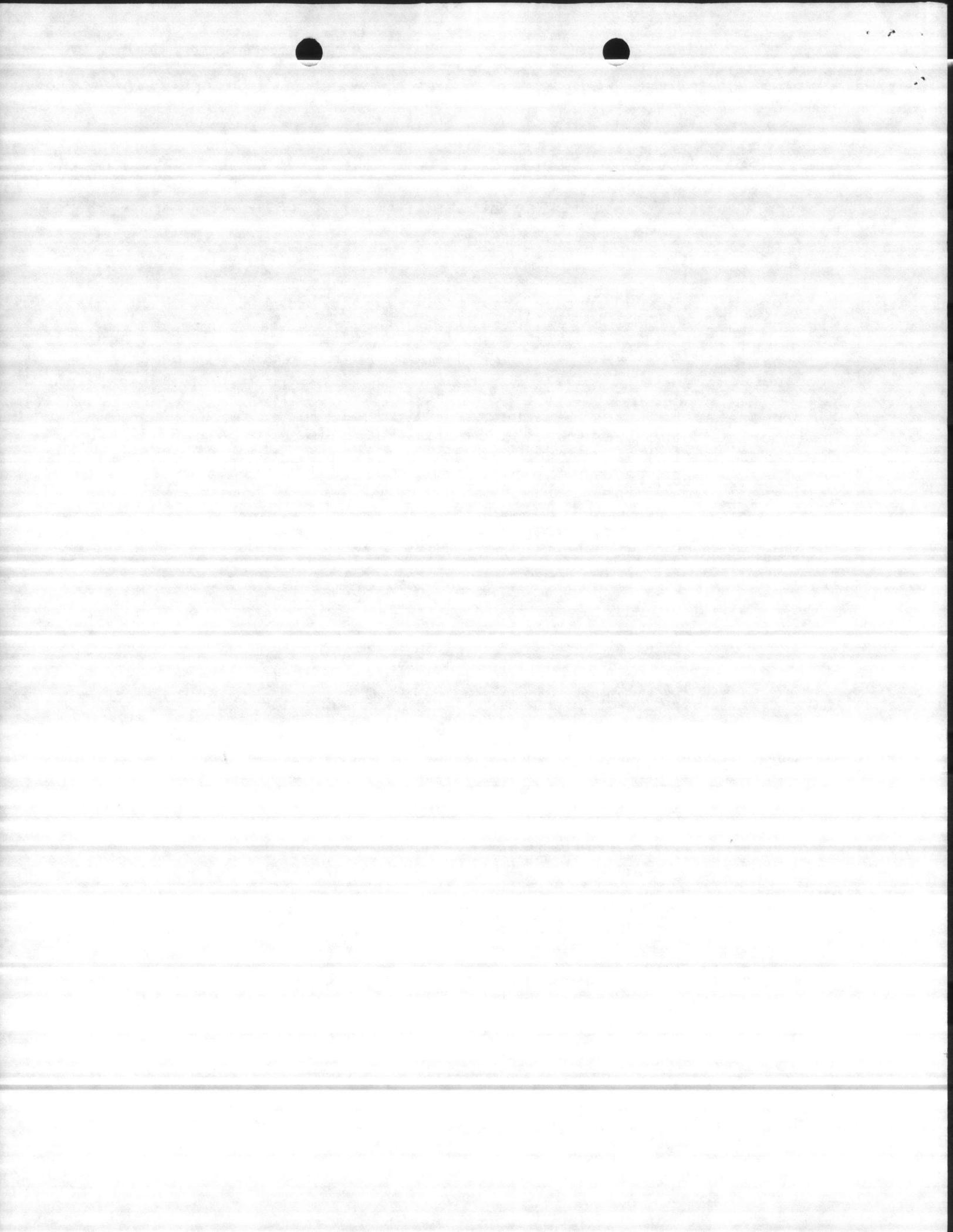
SUBJ: FIRE PROTECTION ENGINEERING SURVEY REPORT

Ref: (a) Cmdr, LANTDIV ltr 11320/CAMLEJ 408:CDP dtd 30Mar85, w/Encl
thereto

1. The reference provided the results of the Fire Protection Engineering Survey Report conducted in the Hadnot Point area during the period 4-8 February 1985. It identified specific deficiencies and requested appropriate corrective action be initiated. Accordingly, it is referred to you for action.

2. Please have a forwarding endorsement prepared by Friday, 7 June 1985.


B. W. ELSTON



HADNOT POINT AREA
MARINE CORPS BASE
CAMP LEJEUNE, NORTH CAROLINA

FIRE PROTECTION ENGINEERING SURVEY REPORT

29 March 1985

Enclosure (1)



FIRE PROTECTION ENGINEERING SURVEY REPORT

DATE OF REPORT: 29 March 1985

1. SHORE INSTALLATION/ACTIVITY: Marine Corps Base, Hadnot Point Area

LOCATION: Camp Lejeune, North Carolina

2. DATE OF SURVEY: 4-8 February 1985 (40/40)

DATE OF LAST REPORT: 4 June 1982 The last survey report included the Industrial Area which is now the subject of a separate survey report.

3. SUMMARY OF CONDITIONS

This Base is the home of the Second Marine Division and the Second Force Service Support Group. The majority of the buildings in the Hadnot Point area were constructed during World War II and are of ordinary construction. Newer buildings, including 26 three story BEQ's, are of non-combustible construction. Favorable fire protection features in the area includes an adequate water supply for fire protection, an area wide Gamewell telegraphic fire reporting system and the wide separation of buildings.

Major deficiencies include the lack of secondary means of egress, the lack of fire rated stairway enclosures and the lack of sprinkler protection in several dining facilities which are now used for the storage of Marine field equipment.

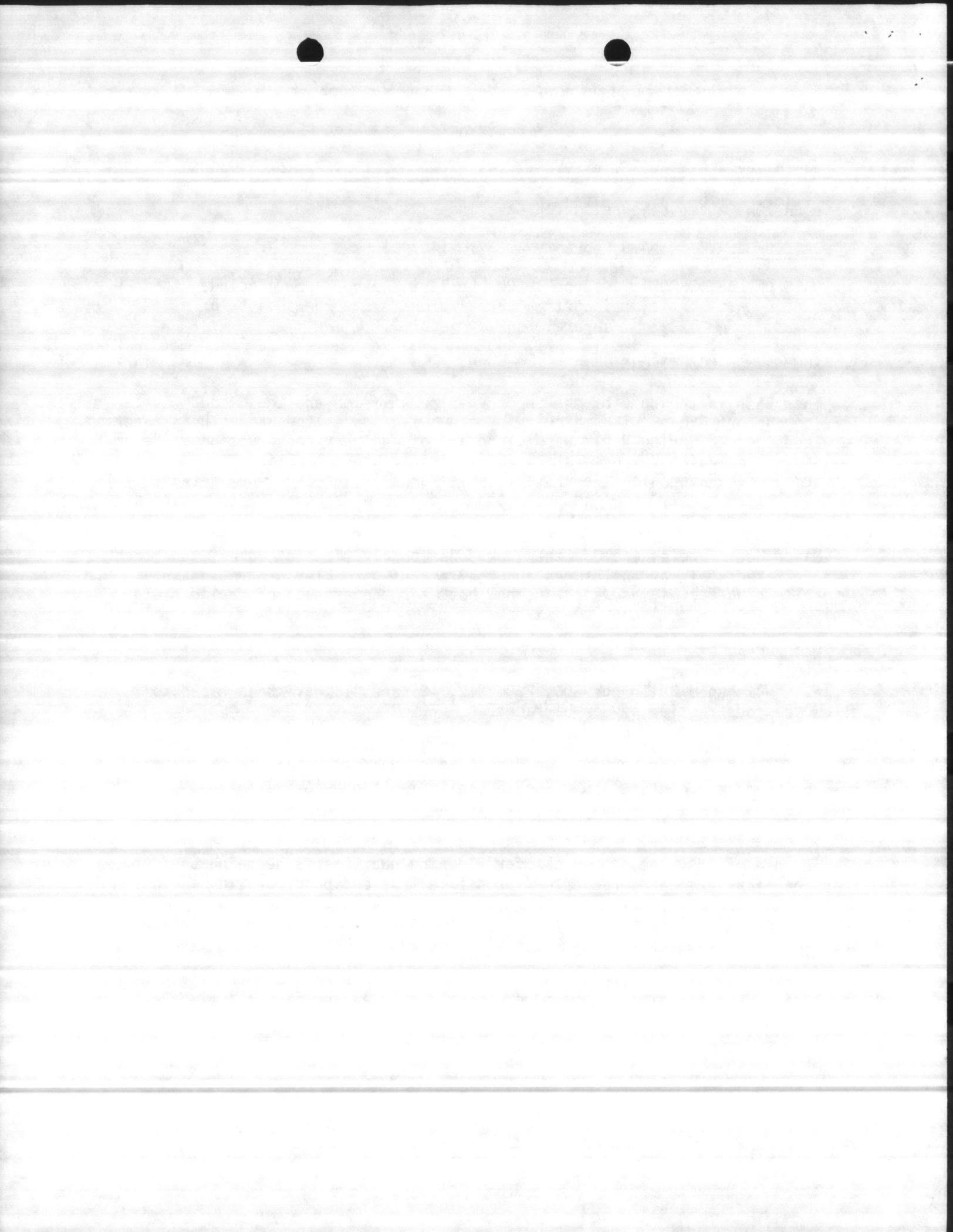
4. MAJOR CHANGES

a. "H" shaped Buildings 204, 208, 212, 409 and 415 have been razed to allow the construction of new barracks.

Thirteen motel style 3 story BEQ's, Buildings HP-215, HP-225, HP-235, HP-245, HP-255, HP-265, HP-275, HP-285, HP-295, HP-405, HP-415, HP-425 and HP-435, have been constructed. Each building is of non-combustible construction and is provided with exterior balconies and stairways and a manual fire alarm system.

The use of "H" shaped barracks for sleeping quarters is being phased out. These barracks are being remodeled for office type occupancy or are being demolished. Buildings 111, 118, 205, 213 and 217 have already been remodeled and each building is provided with fire rated stairway enclosures, exterior exit stairs, attic draft stops and a manual fire alarm system.

Location Exchange Buildings HP-564 and HP-257 have been constructed and occupied. Each building is provided with a sprinkler and fire alarm system.



b. Previous Recommendations:

Recommendation 3-(53) concerning the installation of exterior stairs from the second floor of "H" shaped 2 story barracks has been implemented in five recently rehabilitated buildings. Similarly implemented were several local recommendations for providing attic draft stops, interior stairway enclosures and fire alarm systems. This report does not continue recommendation 3-(53) or the local recommendations for the remaining 24 "H" shaped barracks. These recommendations have been deleted since, within 5 years, these buildings will be remodeled to house offices or will be demolished. Continuing these 30 year old recommendations in light of the planned demolition and remodeling is not warranted.

Local recommendations for the installation of dry chemical extinguishing systems, attic draft stops, emergency lights and exit signs have been implemented in numerous buildings.

5. FIRE PREVENTION PROGRAM - COMMENTS AND RECOMMENDATIONS

a. Comments: Building inspections are conducted by the Marine Corps Base Fire Prevention Inspectors at the intervals required by MCO P11000.11A. In addition, fire-fighters make semi-annual building inspections. The Base has an effective fire prevention education and public awareness program which has aided in reducing the frequency of fires. One inspector is assigned full-time to this important problem.

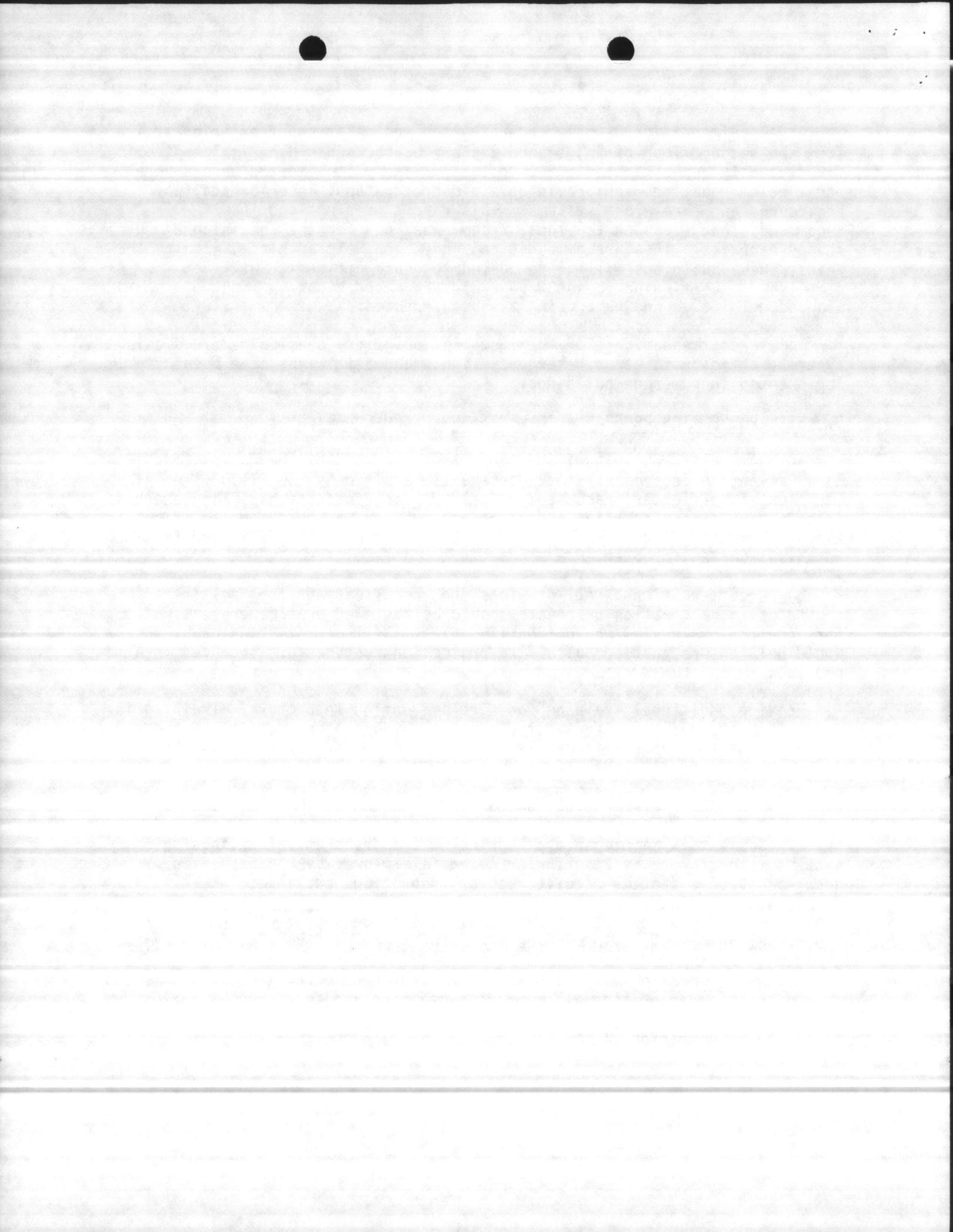
b. Recommendations: All drawings and specifications for facility construction, alteration or repair should be reviewed by fire prevention personnel. This review would identify potential fire protection problems and would help ensure that adequate fire protection features are included in all projects.

Provide additional training for fire prevention inspectors. Training in the application of the Life Safety Code would improve the quality of the building inspections and is highly desirable for personnel reviewing project drawings and specifications.

6. MAINTENANCE OF FIRE PROTECTIONS SYSTEMS - COMMENTS AND RECOMMENDATIONS

a. Comments: Maintenance of sprinkler and dry chemical extinguishing systems is performed by a sprinkler mechanic employed by the base fire department. All systems receive regular inspections and appear to be well maintained. A fire alarm electrician has recently been hired by the fire department. The placement of these maintenance personnel within the fire department has resulted in much better maintenance of fire protection systems.

b. Recommendations: An additional fire alarm electrician is recommended due to the backlog of fire alarm maintenance work and the large number of new fire alarm systems being installed. Work is already underway to hire another fire alarm electrician.



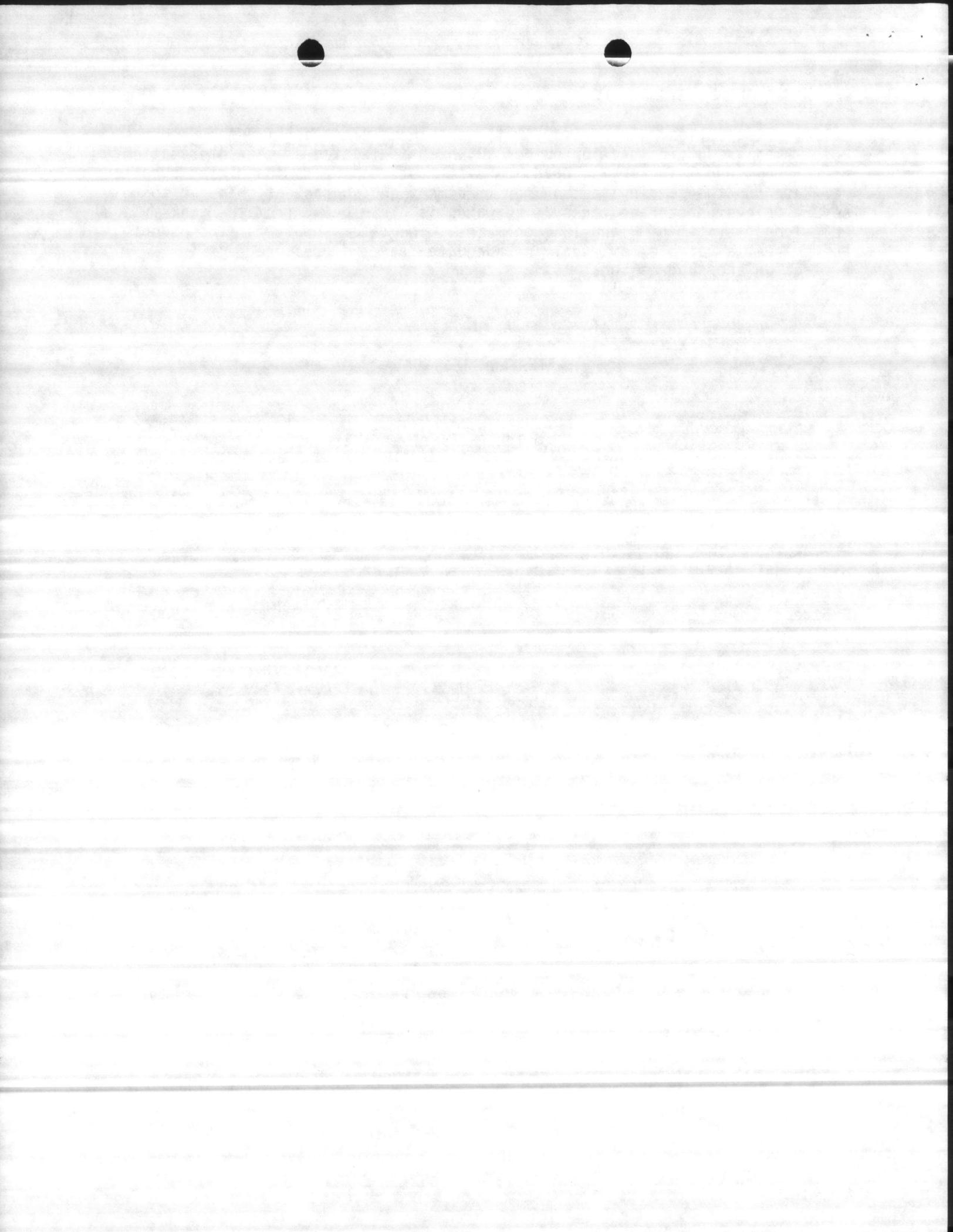
7. WATER SUPPLY SYSTEM

a. Description: The primary water treatment plant serving the Hadnot Point Area is pumping station number 20 which is located at the intersection of G Street and Main service road. A system of deep wells and piping supplies raw water to the pumping station for treatment and subsequent transfer to several elevated storage tanks. The water is distributed from the tanks via a well looped system of 8 and 12 inch mains. The water supply for the Hadnot Point Area is capable of supplying adequate flow and pressure for fire protection and suppression.

b. WATER FLOW TEST DATA

WATERFLOW TEST DATA

LOCATION*	MEASUREMENTS:				
	STATIC PSI	RESIDUAL PSI	FLOW GPM	AVAILABLE GPM @ 20 PSI	REQUIRED GPM @ 20 PSI
A Street Bldg. 106	55	50	2200	6300	2000
C Street Bldg. 107	53	47	1000	2500	1500
K Street South End	55	44	1300	2400	1500
M Street Bldg. 508	57	48	1550	3300	1500
Exchange Bldg. 84	50	35	1700	2400	2000

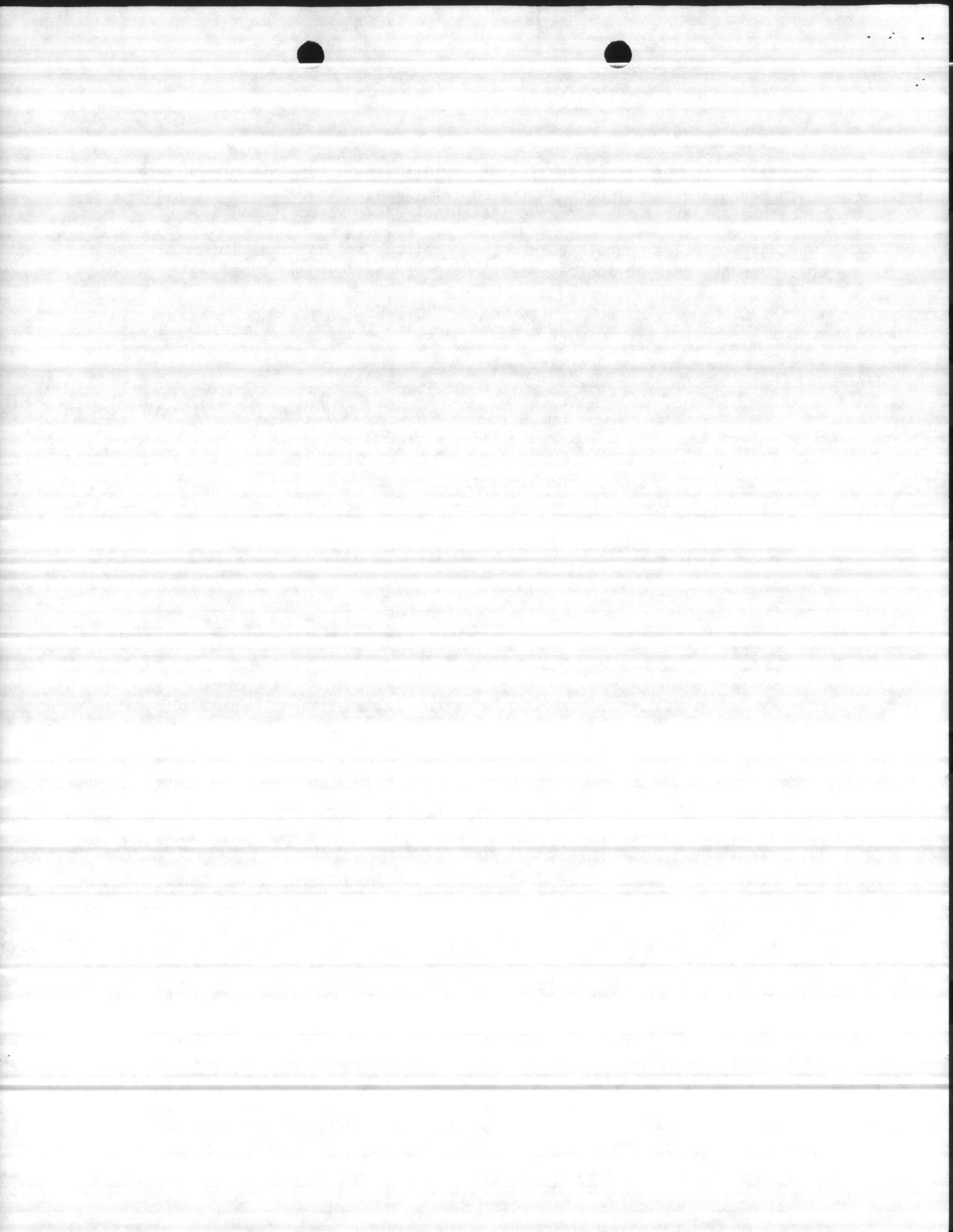


8. ENGINEERING RECOMMENDATIONS:

a. Priority:

These recommendations involve major life safety hazards or conditions which could severely impact on the activity's ability to accomplish vital missions, and are those for which attention and resources should be directed.

Cost estimates contained in recommendations are not intended as precise costs but are only to indicate a probable range of expenditure.



RECOMMENDATION P-1-85: Provide automatic sprinkler protection for storage buildings 106, 107, 206, 226, 307, 314, 424, and 509 and connect each sprinkler system to the base fire alarm system.

JUSTIFICATION:

(1) Supporting Statement: These buildings are 23,000 square foot dining facilities of ordinary construction which are now being used for storage of battalion field equipment. A fire within any building would likely result in a total loss of the building and contents since the storage is within stacked plywood bins and the buildings are not occupied at night. Automatic sprinkler systems are necessary due to the combustibility of the building contents, the value of the contents and the potential reduction in readiness of the Marine Corps units using these buildings.

(2) Code/criteria reference: DOD 4270.1-M, Paragraph 2.1B

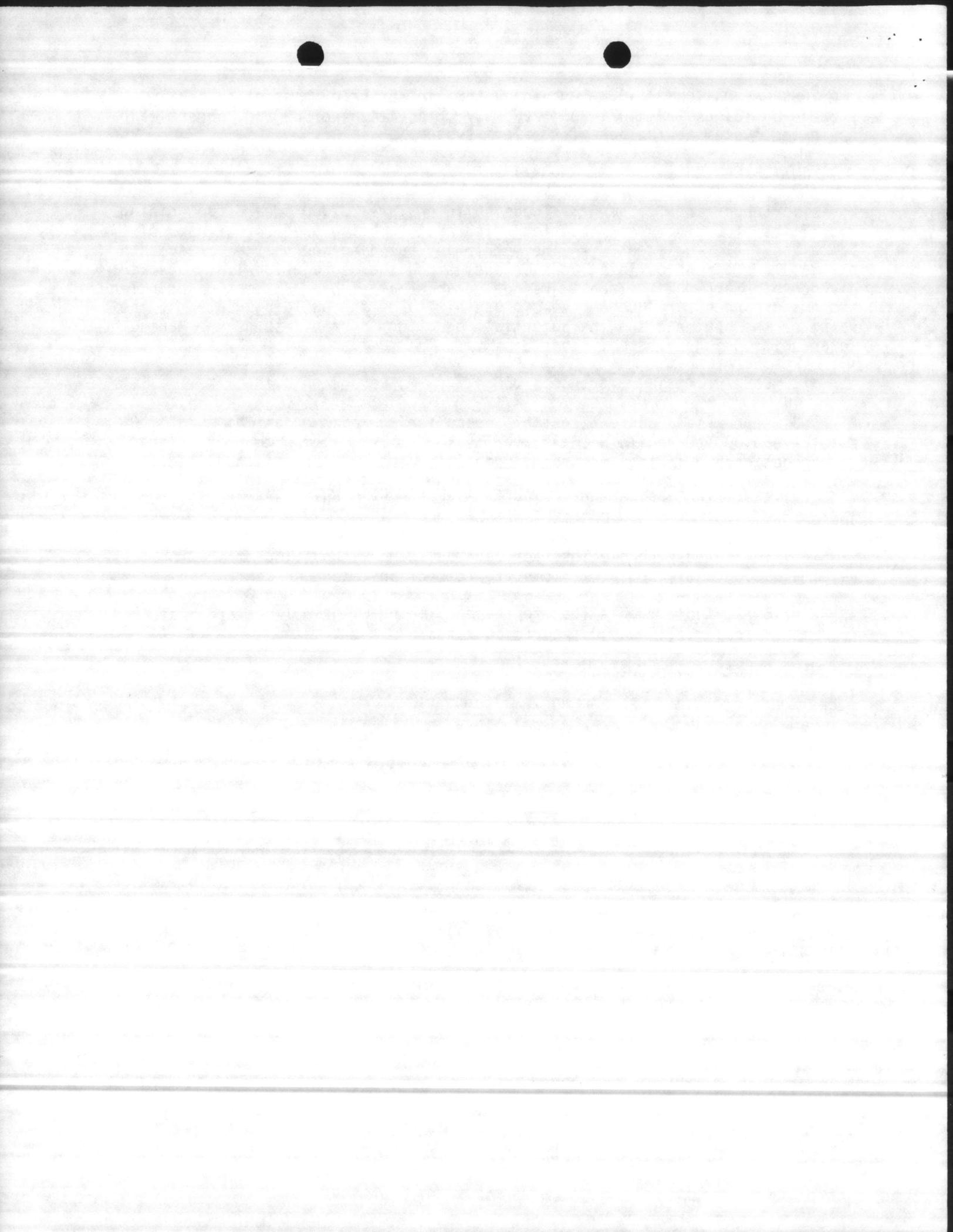
(3) Approximate current cost of accomplishing recommendation: \$480,000 total - \$60,000 per building. A dry pipe sprinkler system with protection throughout each building, including combustible attic spaces is required.

(4) Estimated replacement value at risk for each building: \$1,250,000 and approximately \$10,000,000 for contents.

(5) Estimated probable loss for each building without implementation of recommendation: \$11,250,000 - Complete loss of building and contents.

(6) Estimated probable loss for each building with implementation of recommendation: \$10,000 - Damage to contents.

(7) Strategic Importance: Not Known



RECOMMENDATION P-2-85: Provide fire alarm systems with corridor and stairway smoke detectors and 120 volt single station smoke detectors in all sleeping rooms of Staff Barracks/Office Buildings 58 and 67.

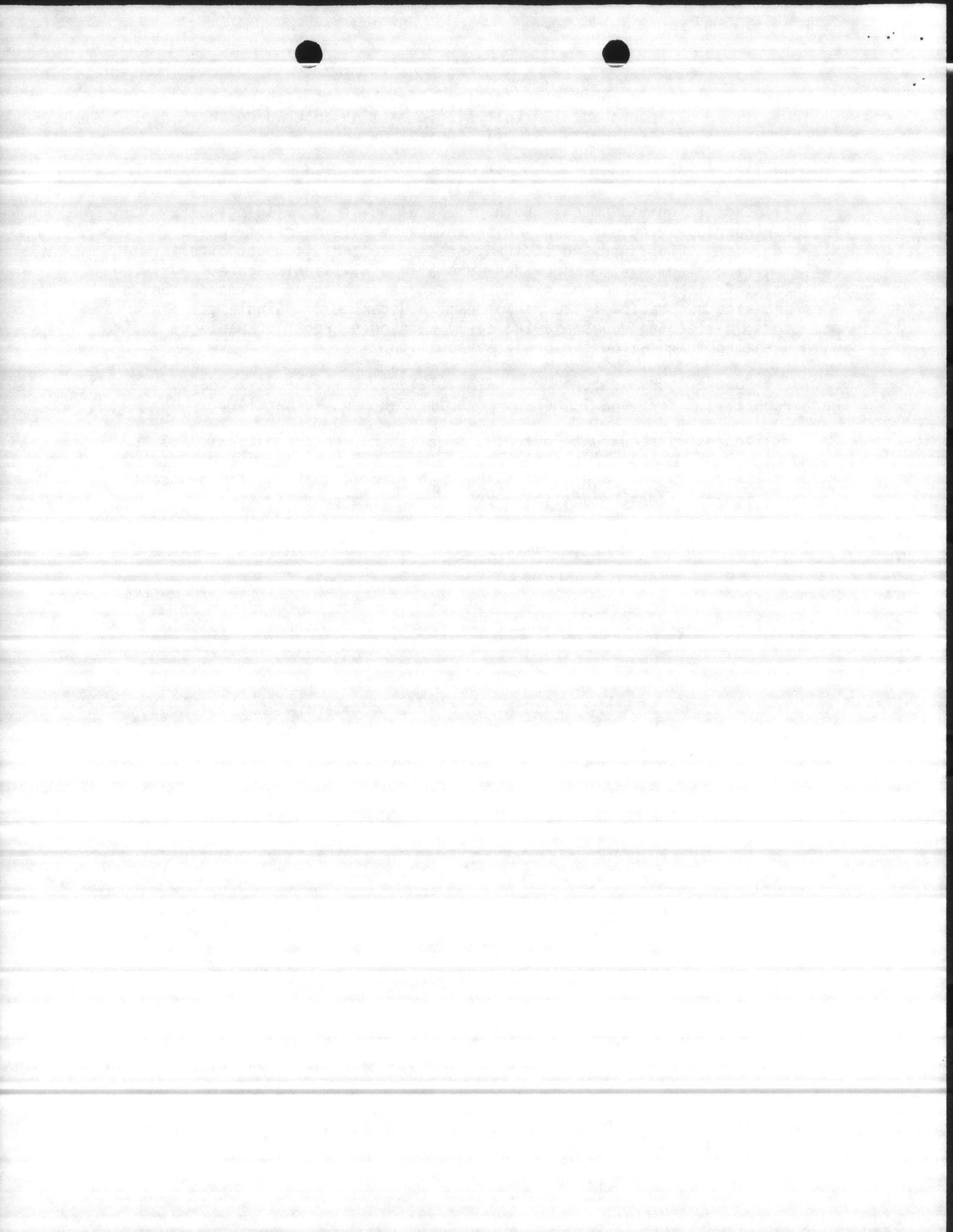
JUSTIFICATION:

(1) Supporting Statement: Both of these two-story buildings have interior corridors and stairs which serve as the sole means of egress for the sleeping rooms. Corridor and stairway smoke detectors, connected to a building fire alarm system, provides automatic early warning to all building occupants of smoke before their means of escape is blocked by smoke, heat or fire and also automatically summons the fire department. Single station detectors in sleeping rooms provide early warning to room occupants of a fire within the room and allow for prompt evacuation.

(2) Code/criteria reference: NFPA 101-1981, "Life Safety Code", Paragraph 17-6.3.2.2. and Temporary Interim Amendment Number 142.

(3) Approximate current cost of accomplishing recommendation: \$40,000

(4) Life safety: Occupants may be unable to exit the buildings due to smoke filled corridors. Fatalities or injuries are possible.



RECOMMENDATION P-3-85: Provide exterior stairs for the second floor of Club Building 62, 125, 322, and 525 and Office Building 225.

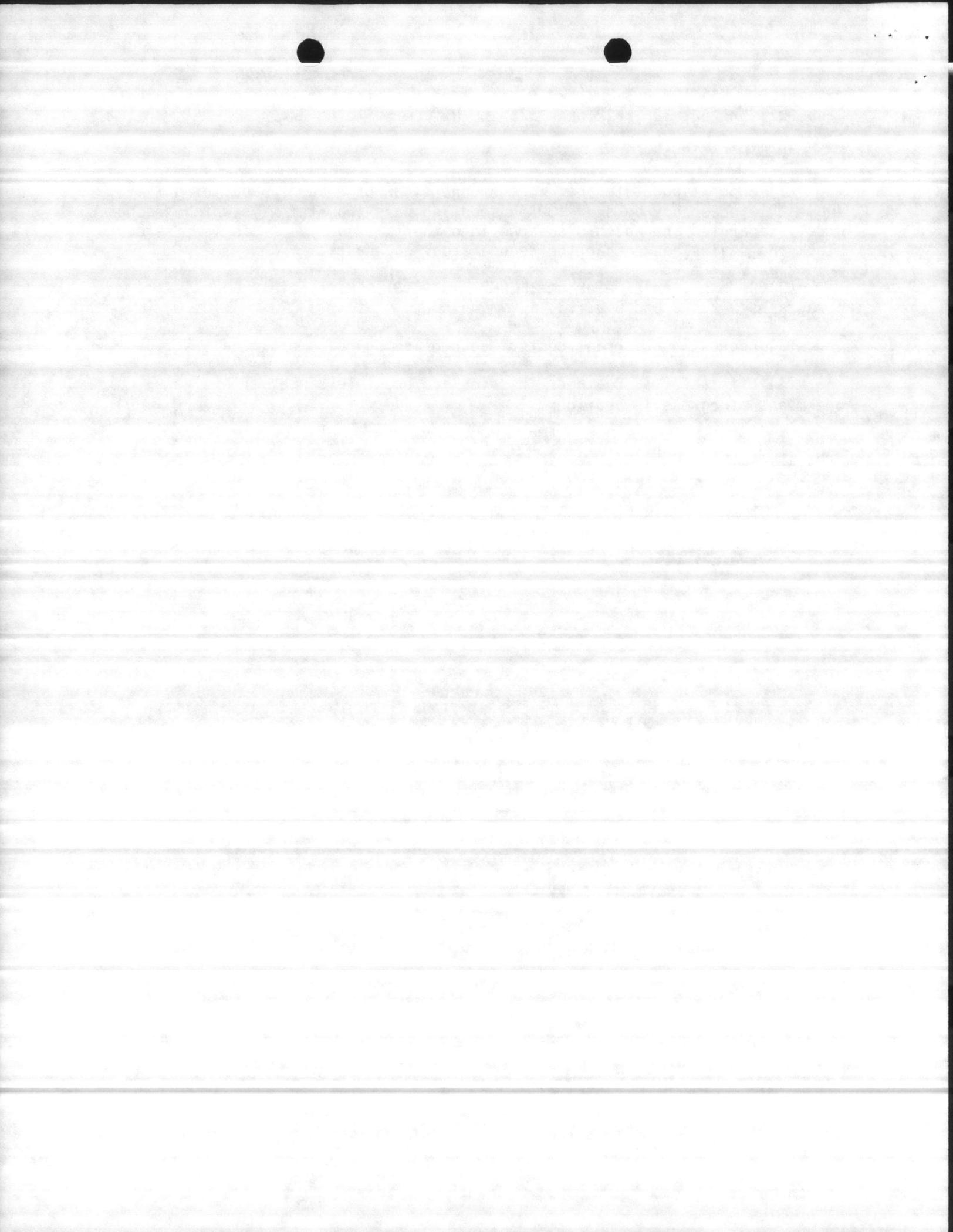
JUSTIFICATION:

(1) Supporting Statement: The second floor of each club building is subject to occupancy by over 100 persons and have two stairways which are not widely separated and which discharge into the same lobby. A single fire could block the stairs and entrap the second floor occupants.

(2) Code/criteria reference: NFPA 101-1981, "Life Safety Code", paragraphs 9-2.4.3 and 9-2.7.3.

(3) Approximate current cost of accomplishing recommendation: \$50,000.

(4) Life safety: Death or injuries are possible since, effectively, only one means of egress is provided.



RECOMMENDATION P-4-53: Provide one-hour fire rated enclosures and 3/4-hour fire doors for the interior stairs in all clubs, administration buildings and in Barracks/Office Buildings 58 and 67.

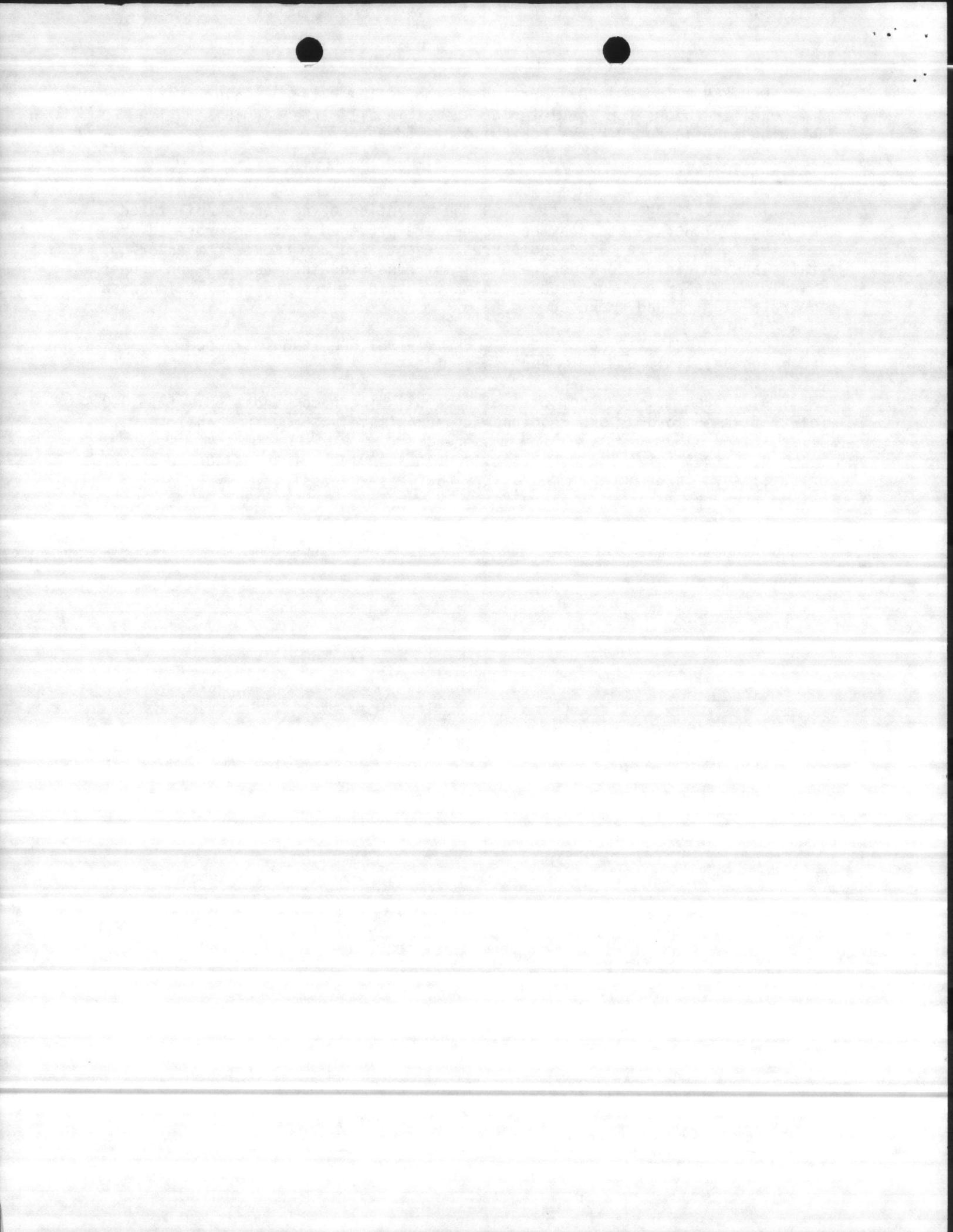
JUSTIFICATION:

(1) Supporting Statement: With the exception of new or rehabilitated buildings, either no stairway enclosures are provided or those provided are not fire rated. Fire rated enclosures prevent fire and smoke from entering stairs and adjoining corridors and thereby rendering them useless for egress. Unenclosed stairs can function as chimneys during fires and greatly increase the rate of fire and smoke spread.

(2) Code/criteria reference: NFPA 101-1981, "Life Safety Code", Paragraph 9-3.1, 17-6.3.1.1. and 27-3.1.1

(3) Approximate current cost of accomplishing recommendation: \$210,000. Thirty five enclosures are required at approximately \$6,000 per enclosure.

(4) Life safety: Second floor occupants could be trapped due to blocking of stairs by fire or smoke. Deaths or injuries are possible.



RECOMMENDATION P-5-54: Provide fire alarm systems for NCO and Enlisted Club Buildings 62, 125, 322, 425, and 524 and connect each system to the existing dry chemical extinguishing systems and to the base fire alarm system.

JUSTIFICATION:

(1) Supporting Statement: Each of these two-story buildings has an maximum permitted occupancy of over 800 people in four dining and bar areas. A building-wide alarm system is necessary in each building to permit prompt evacuation with a minimum of panic and to automatically summon the fire department.

(2) Code/criteria reference: NFPA 101-1981, "Life Safety Code", Paragraph 9-3.4 and MCO P11000.11A, Paragraph 0604.3.

(3) Approximate current cost of accomplishing recommendation: \$30,000

(4) Life safety: Deaths or injuries are possible due to delayed evacuation.



b. Important:

These recommendations are for the correction of hazardous conditions considered as having significant impact potential but not of the critical nature of those in Section a.

I-1-82: Provide exterior stairs for the second floors of Office/Barracks Buildings 58 and 67 and Office Building 1. These buildings are arranged such that the occupants must travel excessive distances before two separate paths of egress are available. Exterior stairs would greatly reduce the likelihood of a single fire trapping building occupants.

I-2-82: Provide fire alarm systems in buildings 1, 2, 15, 25, 54, and 225 and connect each system to the base fire alarm system. Due to the size and subdivision of these office and industrial type buildings, "spreading the word" will not provide prompt notification to all building occupants of the need to evacuate the building.

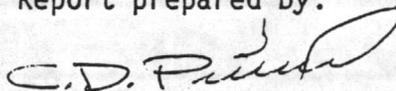
I-3-82: Provide 120 volt powered single station smoke detectors in the corridor outside of each duty bunk room to provide early warning of a fire and allow personnel to evacuate the building.

I-4-85: Remove the ceiling mounted Halon extinguishing cylinders and provide sprinkler protection in the Exchange computer room in Building 895. The Halon cylinders are equipped with fusible sprinkler heads which would release the Halon after a fire has grown to a size the cylinders are incapable of extinguishing. Sprinkler protection is required to prevent total loss of the facility.

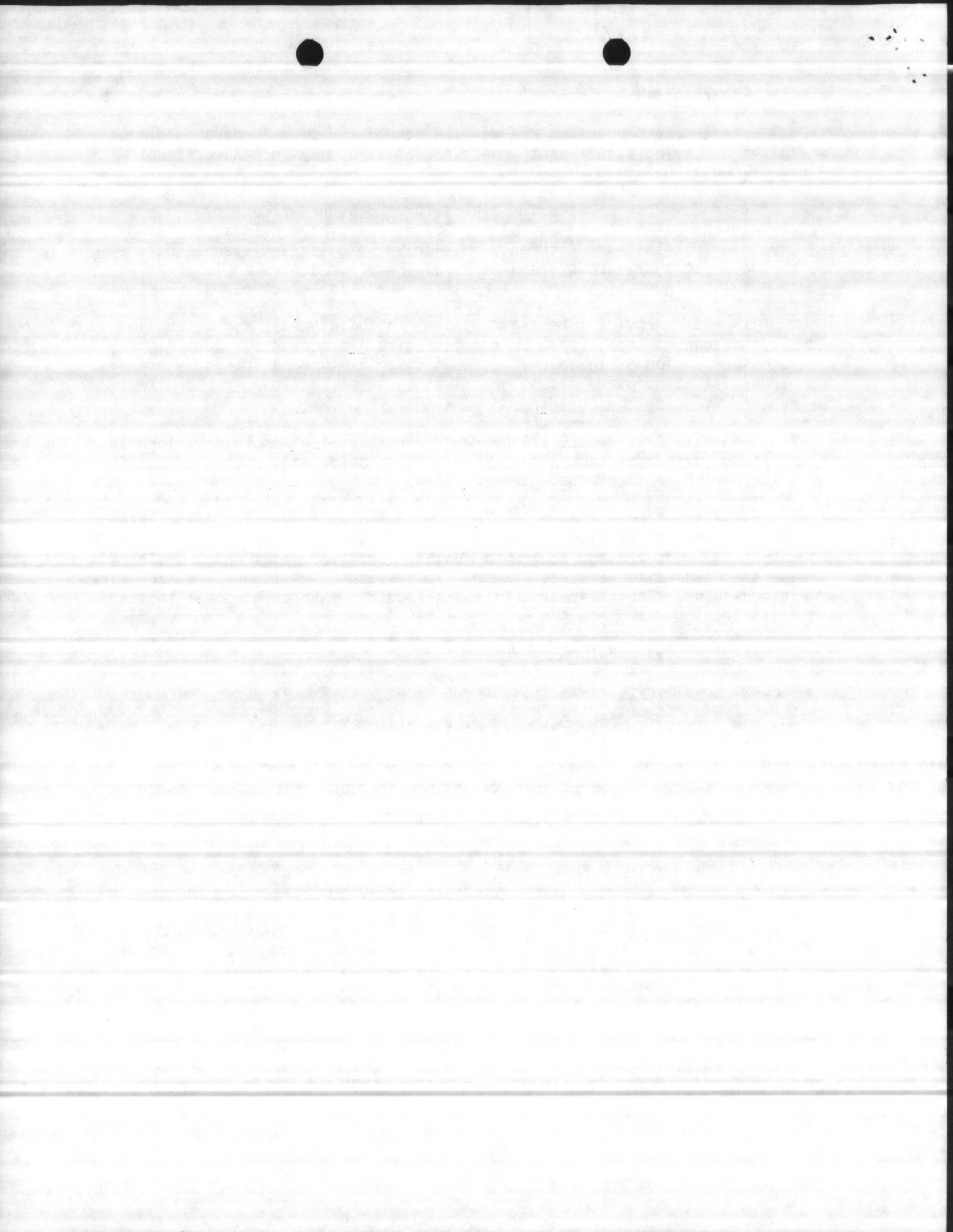
9. SURVEY FINDINGS DEBRIEFED WITH

COL M. G. Lilley, Chief of Staff
Mr.. E. J. Padgett, Fire Chief
Mr.. B. W. Elston, Deputy Facilities Officer

Report prepared by:



C. D. PRITCHARD
Fire Protection Engineer
Atlantic Division
Naval Facilities Engineering Command



11320/CAMP GEIGER
408:DAV
22 FEB 1985

From: Commander, Atlantic Division, Naval Facilities Engineering Command
To: Commandant of the Marine Corps

Via: Commanding General, Marine Corps Base, Camp Lejeune

Subj: FIRE PROTECTION ENGINEERING SURVEY REPORT

Ref: (a) NAVMATINST 11320.00
(b) REG P1100.01

Encl: (1) Fire Protection Engineering Survey Report of Camp Geiger, Marine Corps Base, Camp Lejeune, Jacksonville, North Carolina (3 copies)

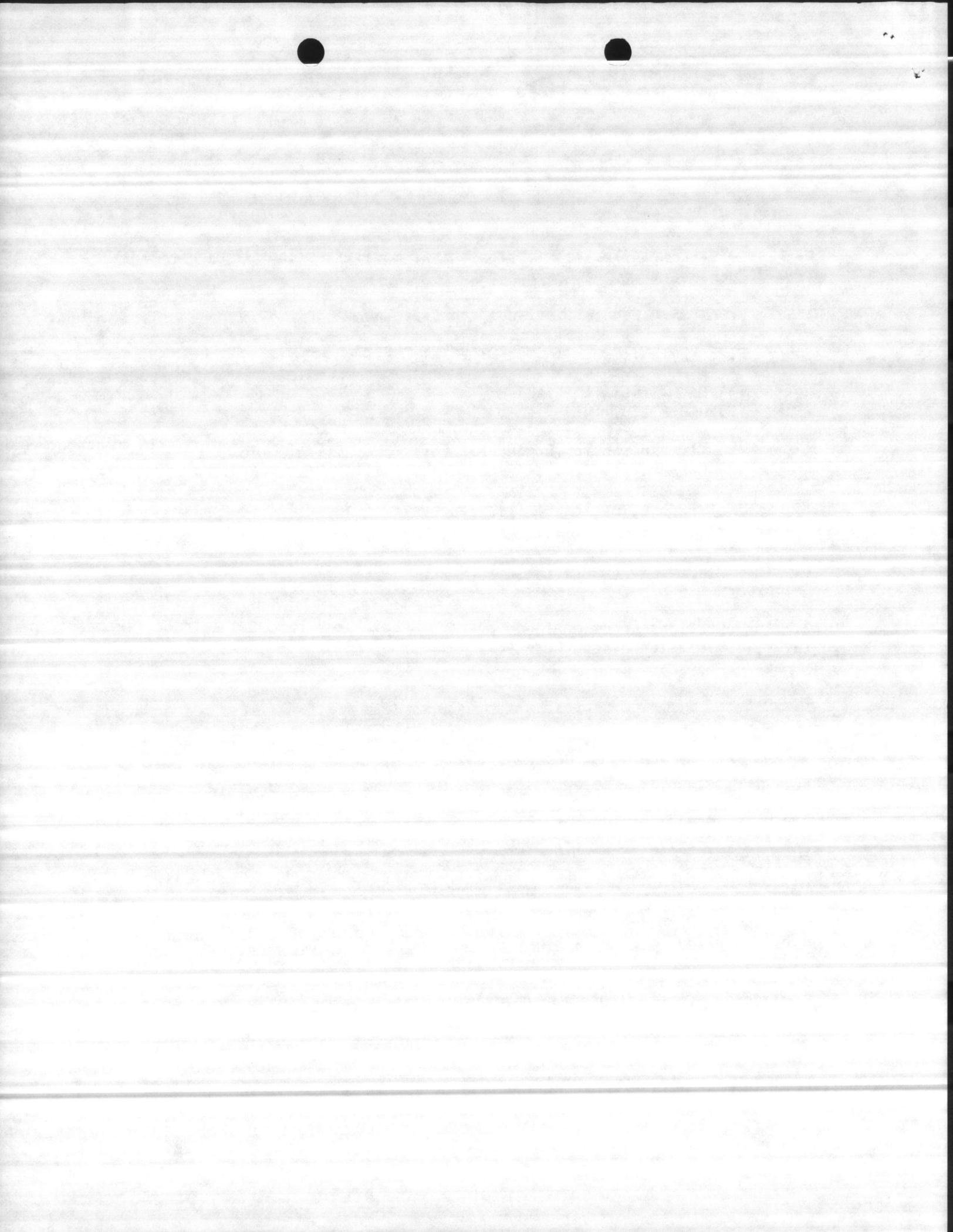
1. Subject report, enclosure (1), is forwarded in conformance with the requirements of reference (a) and (b).
2. I am pleased to report that there are no priority recommendations for Camp Geiger.
3. Any questions or comments concerning the subject report should be directed to Mr. David Malencowicz, Code 408, telephone (404) 444-9002.

K. E. GUFFEY
By direction

Copy to:
CNO
CHNAVANT (04F)
NAVFAE (04F)
CIC (LFF-2)

Blind copy to:
NAVSAFECEN HQRVA (44)
408 (4 copies)
114
10F

→ Fire Chief, Camp Lejeune (3 copies)

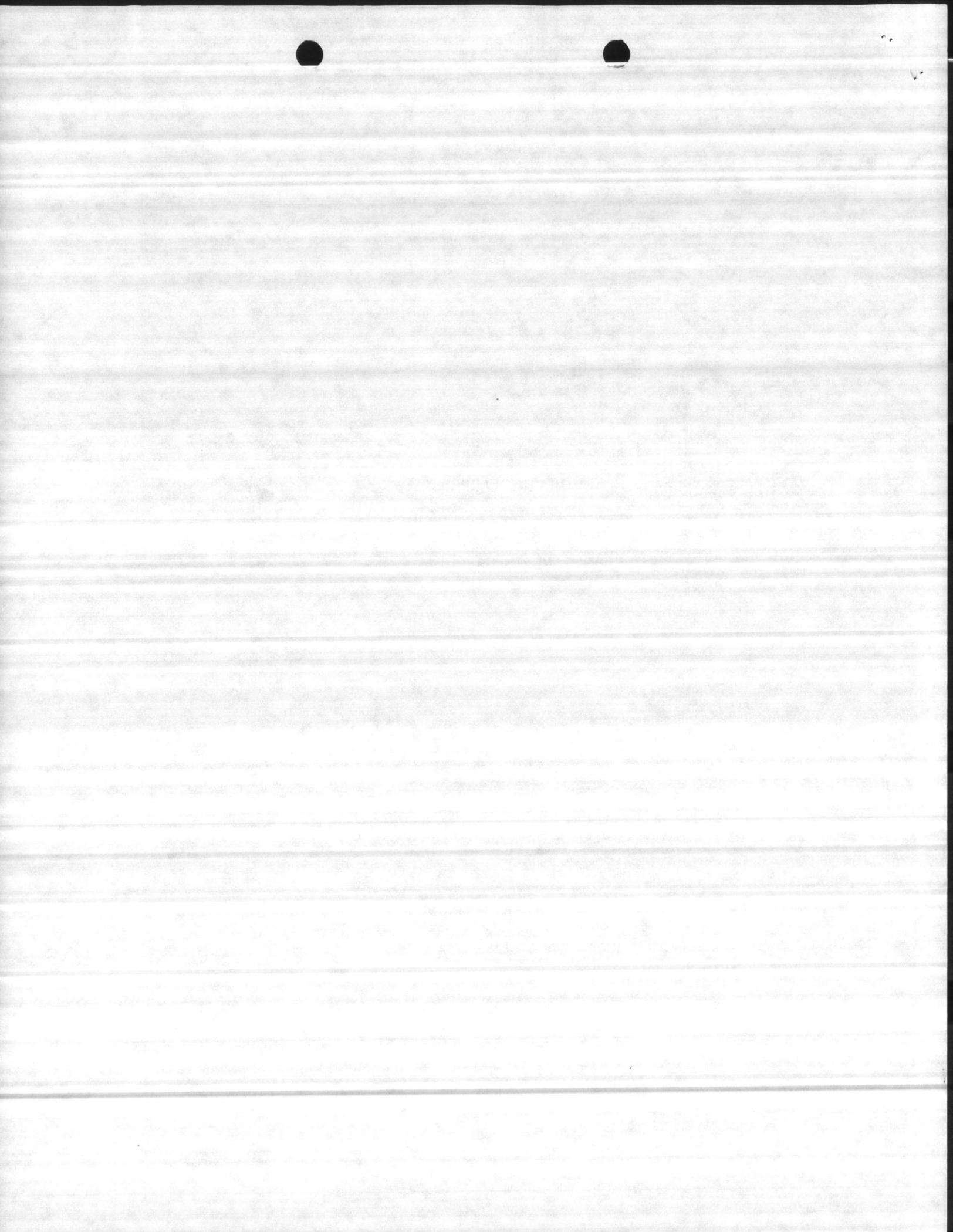


CAMP GEIGER
MARINE CORPS BASE
CAMP LEJEUNE
NORTH CAROLINA

FIRE PROTECTION ENGINEERING SURVEY REPORT

20 FEBRUARY 1985

Enclosure (1)



DATE OF REPORT: 20 FEBRUARY 1985

1. NAVAL SHORE INSTALLATION: Camp Geiger

LOCATION: Marine Corps Base, Camp Lejeune, North Carolina

2. DATE OF SURVEY: 28-31 January 1985

(32/16)

DATE OF LAST REPORT: 22 February 1982

3. SUMMARY OF CONDITIONS

The mission of this activity is to provide infantry training for Marine Corps Personnel. The majority of the buildings are of wood-frame and ordinary construction, less than 10,000 square feet, and 1940's vintage. Several of the newer and larger facilities are of noncombustible construction. There have not been any major changes at this activity in the last several years nor are any major facilities planned in the next three years.

4. MAJOR CHANGES

a. No major changes since the previous report.

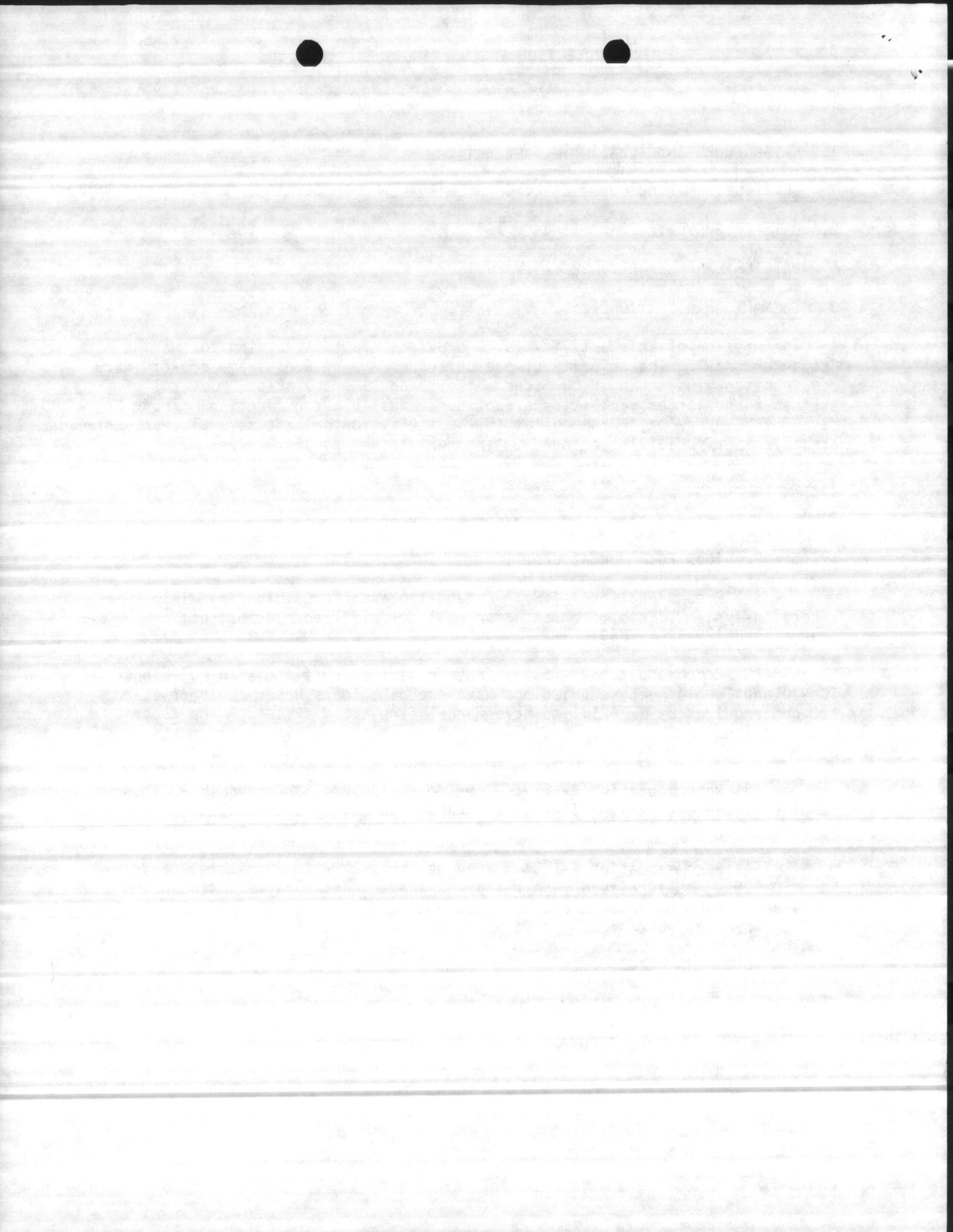
b. Previous Recommendations:

(1) Recommendation 1-(53): Extend the exterior radio fire alarm reporting system...This recommendation will be fulfilled by construction contract N62470-82-C-2059.

(2) Recommendation 2-(54): Provide fire alarm systems in Buildings TC-910 and TC-614. These buildings have occupant loads under 100 people and are not required by NFPA 101 to have manual fire alarm systems. The floor plans of these clubs are open and exits are adequate. This recommendation is being dropped.

(3) Recommendation 3-(82): Provide sprinklers in Warehouse Building TC-611. The use of this building has changed and there are no longer high valued contents to protect. This recommendation is being dropped.

(4) Recommendation 4-(82): Provide sprinklers in furniture Repair Shop TC-609. The furniture repair shop no longer does spray painting or furniture stripping which created a hazardous environment. A sprinkler system is therefore not warranted.



5. FIRE PREVENTION PROGRAM - COMMENTS AND RECOMMENDATIONS

a. Comments: The Marine Corps Base, Camp Lejeune Fire Prevention Office provides fire prevention inspection services and training to the Camp Geiger Area. Inspection frequencies to the facilities complies with the NAVMATINST 11320.14. Compliance with the fire prevention inspection recommendations by the Activity is satisfactory; however, the type and value of recommendations made are relative to the inspectors knowledge and training. The inspector for this area has not received any formal training in the last several years.

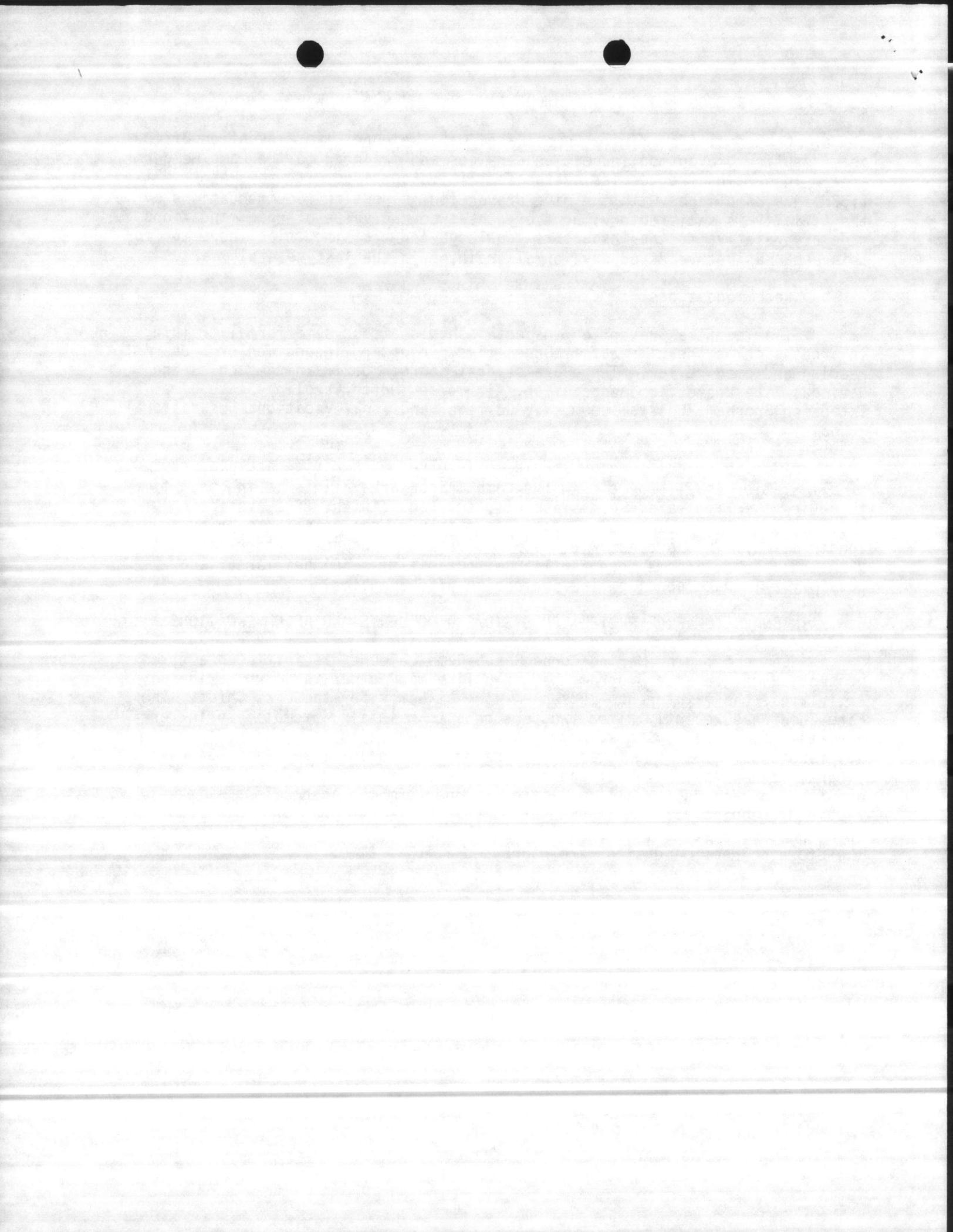
b. Recommendations:

(1) The fire prevention inspector should attend some formal training in areas such as the Life Safety Code, fire prevention inspection or blueprint reading and plan review. There are several sources of training such as the National Fire Protection Association, Air Force, North Carolina State Fire Extension Program, Coastal Community College, and local vocational educational schools.

(2) The fire inspector should be involved with design and plan review of all station level projects in the Camp Geiger area. This is the best time to review the life safety codes aspects, interior finish, fire protection systems, and other hazardous operations to insure code compliance prior to construction. This process will help motivate the inspectors to research the NFPA Code books, become more familiar with facilities in their area, and possibly eliminate pending fire protection discrepancies.

6. MAINTENANCE OF FIRE PROTECTION SYSTEMS - COMMENTS AND RECOMMENDATIONS

a. Comments: The Marine Corps Base, Camp Lejeune has initiated a fire protection maintenance program that is unlike many other Navy and Marine Corp Activities, the maintenance personnel work directly for the Fire Chief. The Fire Chief has recently hired two personnel to maintain automatic sprinkler systems, foam water systems, dry chemical extinguishing and gaseous suppression systems, and interior and exterior fire alarm systems. Since the program is new they have not had enough time to set up an adequate inspection and testing records for all facilities nor perform the inspections at the required frequencies. It is understood that the first year or two will be spent putting systems into service that have not been maintained in the past, therefore no recommendations are warranted at this time.



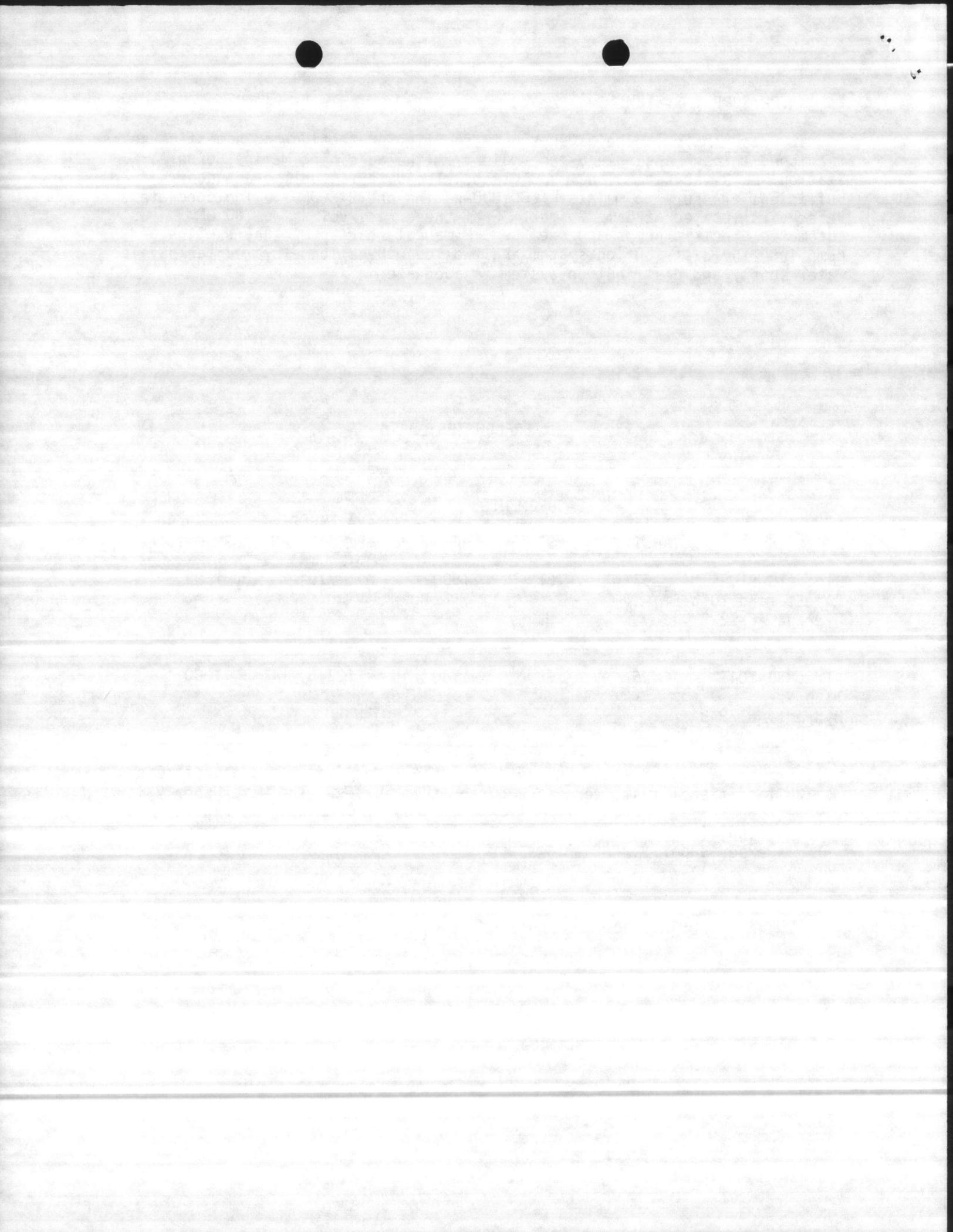
7. WATER SUPPLY SYSTEM

a. Description: The water supply for fire protection and domestic use is furnished through a single 8-inch main from the adjoining Marine Corps Air Station New River Water Treatment Plant. The water is delivered under sufficient pressure to maintain 600,000-gallon and 272,000-gallon concrete reservoirs located at Camp Geiger. From these reservoirs two 700 GPM automatic electric pumps and one 900 GPM manual-start pump take suction and pump into the distribution system and two 100,000-gallon elevated tanks. The water supply and distribution system is adequate.

WATERFLOW TEST DATA

LOCATION	STATIC PSI	MEASUREMENTS:			AVAILABLE GPM @ 20 PSI	REQUIRED GPM @ 20 PSI
		RESIDUAL PSI	FLOW GPM			
Bldg. TC-910 "A" St. and 10th St. Hydrant #6-72-8	63	31	1500	1770	1500	
Bldg. TC-1047 11th St. Hydrant #6-78-8	65	56	1180	2745	1000	

NOTE: Three main breaks occurred during the water flow test, therefore no additional tests were made during this survey. The water supply is considered adequate in all of the areas of Camp Geiger, but the condition of the mains is questionable as evidenced from this experience.



8. Engineering Recommendations:

a. Important:

These recommendations are for the correction of fire protection deficiencies considered as having significant impact potential.

84-(1): Provide smoke detectors in the sleeping areas of Barracks Buildings G-521, 522, 523, 524, 531, 532, 534, 541, 542, 544, 551, 552, 553, and 554. This recommendation should be implemented concurrent with any planned renovations or alterations for these buildings.

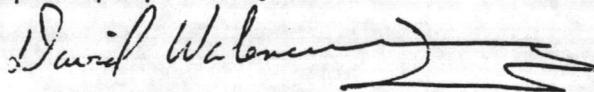
84-(2): Provide single station, 120VAC, smoke detectors in the barracks buildings such as TC-808 and TC-809.

84-(3): Provide a dry chemical extinguishing system in the Marine Exchange Snack Bar cooking hoods in Building TC-910.

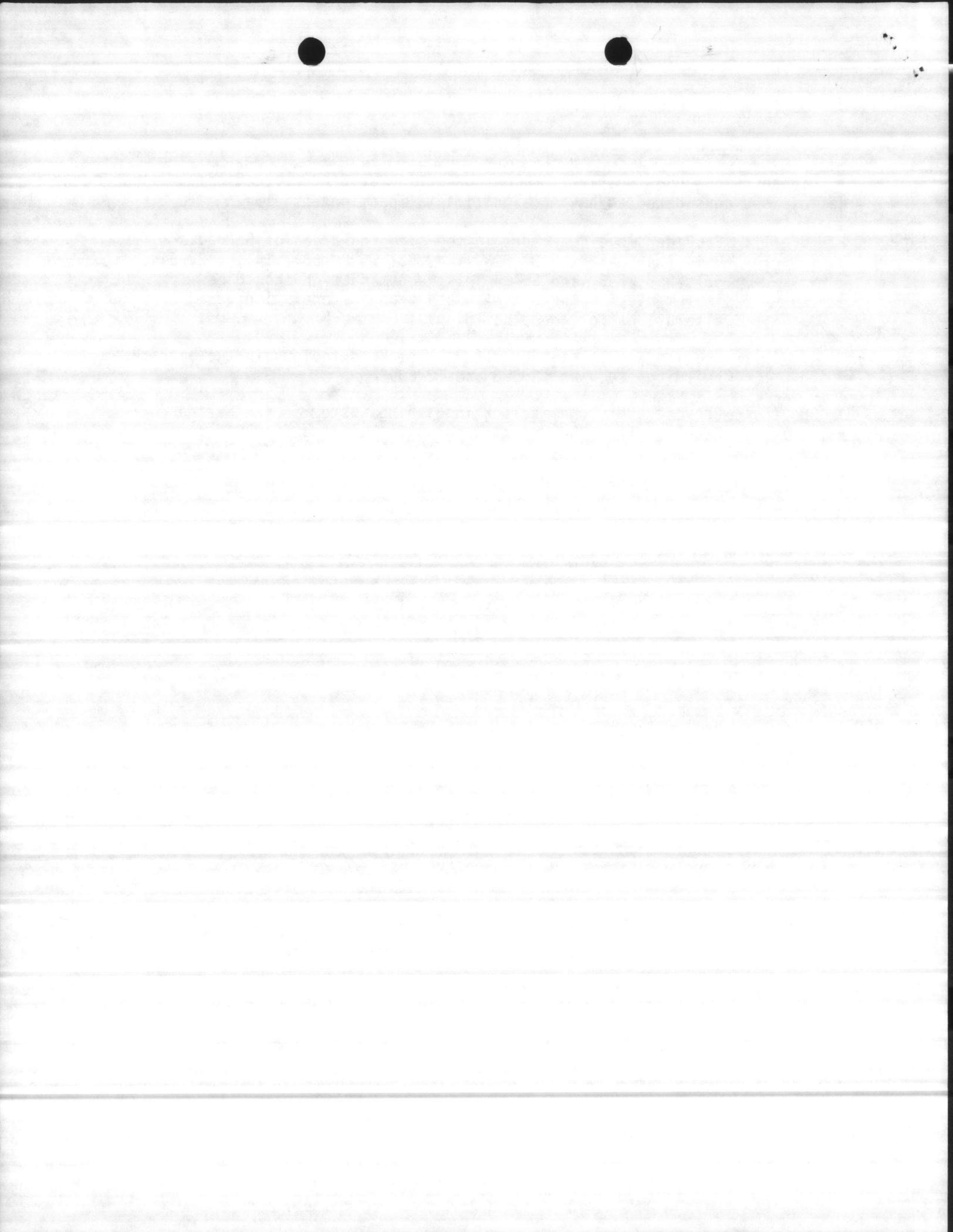
SURVEY FINDINGS DEBRIEFED WITH

Mr. B. W. Elston, Deputy Facilities Officer
Mr. E. J. Padgett, Fire Chief

Report prepared by:



DAVID M. WALENCIEWICZ
Fire Protection Engineer
Atlantic Division
Naval Facilities Engineering Command





DEPARTMENT OF THE NAVY
HEADQUARTERS NAVAL MATERIAL COMMAND
WASHINGTON, D. C. 20360

INSPECTORS

IN REPLY REFER TO
NAVMATINST 11320.6A
04F1/RLD
24 Apr 1980

NAVMAT INSTRUCTION 11320.6A

From: Chief of Naval Material

Subj: Fire protection engineering surveys of shore activities,
commands, and facilities

Ref: (a) OPNAVINST 5100.8E of 17 May 1978
(b) OPNAVINST 11320.23B of 30 Dec 1974
(c) NAVMATINST 5460.2A of 28 Jul 1975
(d) Marine Corps Order P11000.11 of 11 Jun 1974
(e) Marine Corps Order P11000R.17 of 9 Jul 1979

Encl: (1) Fire Protection Engineering Survey Report format
and preparation guidelines
(2) Fire Protection Engineering Survey Report sample
forwarding letter

1. Purpose. To up-date requirements for fire protection engineering surveys and reports in the implementation of responsibilities assigned by references (a) and (b).

2. Cancellation. NAVMATINST 11320.6 of 9 June 1966 and Report Control Symbol NAVMAT 11320-2 are canceled.

3. Background. By reference (a), the Chief of Naval Operations assigns responsibility to the Chief of Naval Material for developing and administering a Navy-wide fire protection program. Fire protection engineering for buildings and structures is an essential element of this program. Reference (c) assigns the Commander Naval Facilities Engineering Command (NAVFAC) the responsibility of providing technical and managerial advice and assistance regarding facilities fire protection engineering. In this capacity NAVFAC develops criteria and performs design review, technical consultations, fire investigations, and other related functions to ensure that adequate fire protection engineering practices and standards are applied in the planning, design, and construction of shore facilities. Additionally, NAVFAC is responsible for periodic fire protection engineering surveys of existing shore facilities as specifically required by reference (b).

4. Objective To provide an engineering service to naval shore activities directed toward reducing the potential for loss of life, property, and mission capability due to fire by:

a. Identifying conditions which could cause or contribute to fires involving loss of life, property loss having high economic impact, or critical reduction in mission capability.

b. Recommending corrective actions for these conditions and establishing an order of priority along with an estimate of costs for compliance.

c. Endorsing an effective fire prevention and inspection program and supporting same by emphasizing to activities the prompt identification and abatement of hazards at the local level.

5. General Direction

a. Good judgment shall be exercised in the depth of the survey conducted, and in the report produced. It is not the intent that time and resources be allotted to ferret out every code/criteria violation and hazard that exists at a shore installation.

b. Recommendations shall be realistic in regard to cost and physical feasibility. It may well be more appropriate to recommend that functions/personnel be relocated in lieu of bringing a structure into compliance relative to the hazard(s) identified. Such recommendations must include an analysis of the hazards and complete justification data.

6. Scheduling of Fire Protection Engineering Surveys

a. Definition

For the purpose of this instruction, a naval shore installation is a tract of land, the whole of which comprises a named naval station, yard, center, base, etc. One survey will be conducted to cover an entire shore installation including all tenant commands and other occupants with the exception of those facilities which are not Navy owned.

b. Scheduling criteria

(1) Naval shore installations and industrial reserve plants shall be surveyed at least once every 3 years. The engineering field division (EFD), with NAVFAC approval, may waive this requirement for specific selected installations. Prime categories for waiver are:

- (a) Reserve Centers
- (b) Reserve Facilities
- (c) Communication Stations
- (d) Radio Stations
- (e) Housing Complexes

The waiver analysis shall include consideration of: content plus structures replacement value of less than four million dollars (adjusted to 1979), a noncritical mission, a critical mission readily transferable to another facility, and a low life hazard risk. The waived locations shall be surveyed at least once every 6 years unless the nature of the installation is so minor as not to justify scheduled surveys.

(2) NATO or foreign government-owned facilities occupied by the Navy shall be surveyed in accordance with the preceding criteria.

(3) Privately owned facilities leased by the Navy on foreign land shall be surveyed at the request of the commanding officer of the occupying or lease contracting activity.

(4) Marine Corps activities shall be surveyed in accordance with provisions of references (d) and (e).

c. Scheduling action

(1) EFD's shall compile a list of shore installations within their areas and designate an inspection cycle for each. Under each shore installation heading, the major activities/commands included shall be listed. The cycle designated shall range from nonscheduled basis to 4, 5, or 6 years for waived installations, and designation of 1, 2, or 3 years for the others, as determined appropriate to the risk by the EFD. EFD's shall monitor physical and mission changes at installations with respect to revision of survey frequencies, as deemed appropriate. Where, in the judgment of the cognizant EFD, conditions are such that the best interest of fire protection would be served by surveying a tenant separately, such action may be scheduled with approval of NAVFAC.

(2) The original list of shore installations to be inspected and revisions thereto shall be forwarded to NAVFAC for approval of cycle designations. NAVFAC is thus charged with maintaining a master list of shore installations, major activities thereon, and assigned survey frequency.

7. Reports of Fire Protection Engineering Surveys

a. Format. The report shall be prepared in accordance with the format and guidelines contained in enclosure (1).

b. Routing. The report shall be forwarded by the commanding officer of the engineering field division within 30 days after completion of the survey as follows:

(1) Report addressee shall be the commanding officer of the shore installation, the local Navy representative for industrial reserve plants, or the CO of the tenant activity, as applicable.

(2) Copies of reports shall be sent to superiors in the chain of command of the report addressee, the Chief of Naval Material (MAT 04F), the Commander, Naval Facilities Engineering Command (FAC 04F), and the area fire marshal (fire marshal copy to include "local recommendations").

(3) Reports on Marine Corps activities shall be forwarded in accordance with the requirements of references (d) and (e).

c. Local recommendations

(1) Those recommendations which the commanding officer or public works officer agree can and will be accomplished with available local resources shall be submitted separately as "local recommendations," unless, in the judgment of the fire protection engineer, their significance warrants recording within the report.

(2) Local recommendations shall be submitted to the addressee as an attachment to the report and titled "Local Recommendations Submitted with (Name of Shore Installation) Fire Protection Engineering Survey Report of (date)."

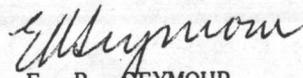
(3) The format shall be a list of applicable building/structure numbers in numerical order followed by the recommendations for that building/structure numbered as 1, 2, 3, etc.

8. Action

a. The Commander, Naval Facilities Engineering Command shall ensure that subject surveys are conducted by engineering field divisions with qualified personnel and in compliance with the requirements of this instruction.

b. Appropriate action relating to the recommendations contained in the reports shall be initiated by the addressees in accordance with normal support and funding procedures of the command. Superiors in the chain of command, information addressees, and originator of reports shall be advised by action addressee of actions taken, or proposed, within 60 days of receipt of the report. The cognizant engineering field division shall be advised of the disposition of "local recommendations" within 90 days of receipt of the report.

9. Report Symbols. Reports required by this instruction are exempt from report control in accordance with DOD Directive 5000.19.



E. R. SEYMOUR
Vice Chief of Naval Material

Distribution:

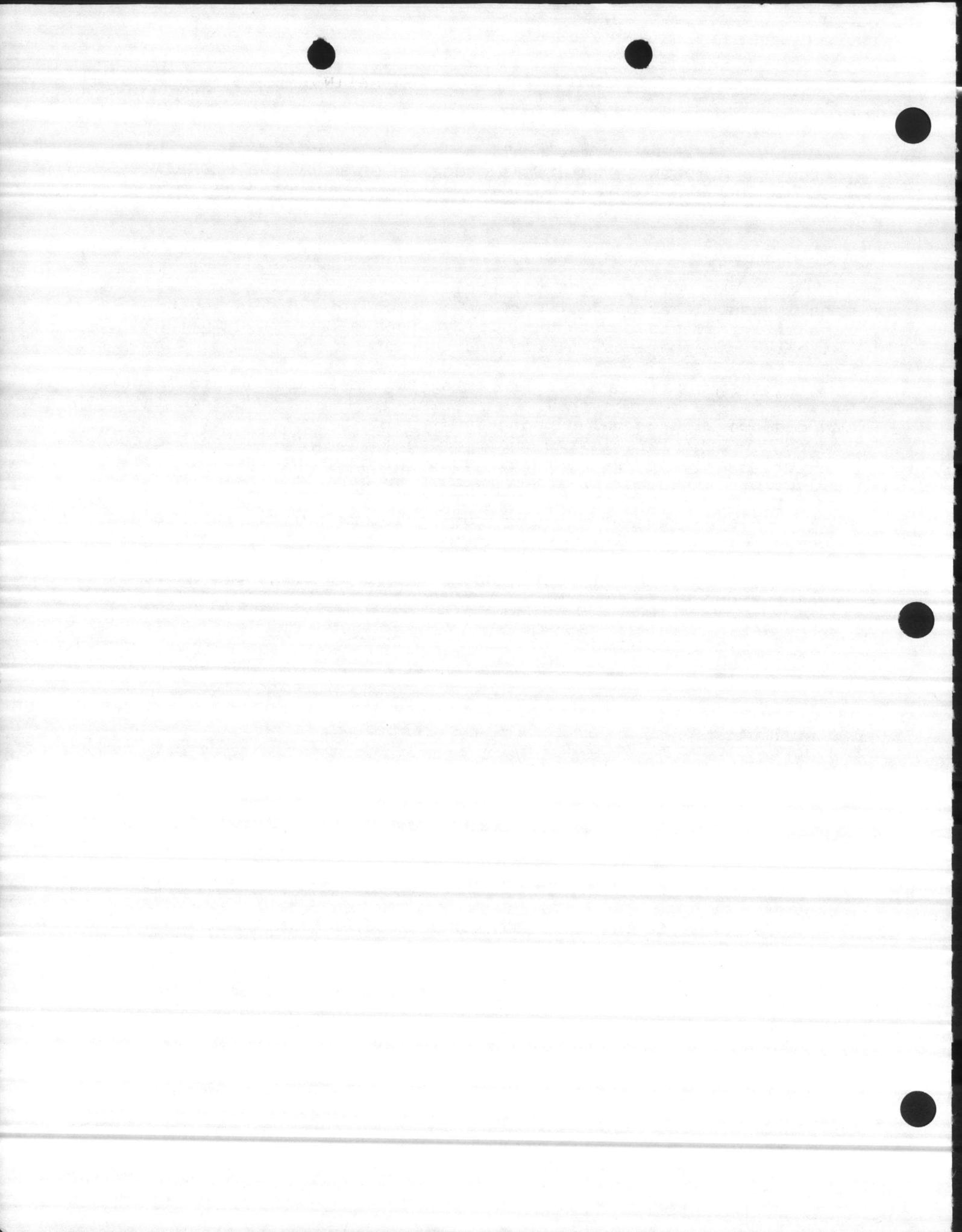
SNDL C4F8
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SNDL A2A (JAG, COMPT, ONR, OGC, CHINFO)
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24

Stocked:

CO, NAVPUBFORMCEN
5801 Tabor avenue
Phila, PA 19120



FORMAT AND PREPARATION GUIDELINES
 FIRE PROTECTION ENGINEERING SURVEY REPORT

Note: At very large installations where isolated built-up complexes exist, the report shall be subdivided for items 5, 6, 7 and 10. Items 1, 2, 3, 4, 8 and 9 shall be a composite.

DATE OF REPORT _____

1. NAVAL SHORE INSTALLATION: _____

Location: _____

2. DATE(S) OF SURVEY: _____ DATE OF LAST REPORT _____

Note: List specific date(s) during which the survey was conducted. If dates are numerous or scattered, indicate the period during which the survey was conducted.

3. TOTAL MANHOURS (Survey plus report preparation): _____

SURVEYED BY: _____, _____
 (Name) (Title)

APPROVED BY: _____, _____
 (Name) (Title)

4. SURVEY DISCUSSED WITH:

_____, _____
 (Name) (Title)

_____, _____

_____, _____

Note: List, in order of rank, the name and title of each person with whom the survey was discussed. Survey should be discussed with Commanding or Executive Officer, the Public Works Officer, the Fire Chief and others designated by Commanding Officer.

5. SUMMARY OF CONDITIONS

Note: Provide a brief summary of the significant fire protection features, both favorable and unfavor-

able. Example: "This installation is large and congested with combustible construction predominant. Major deficiencies include numerous unsprinklered storehouses containing high valued materials, deteriorated station fire alarm system, and marginal exit facilities. Significant favorable conditions include a strong water supply and distribution system, and a dynamic fire prevention program." Include a mission statement.

6. FIRE PROTECTION ENGINEERING EVALUATION: _____

Comments:

- Notes:
- a. Only the adjectives "EXCELLENT", "GOOD", "FAIR", or "POOR", may be used.
 - b. If evaluation of "POOR" OR "FAIR" is assigned, or the evaluation is changed from that in the previous report, the reason for the low rating or the change should be clearly stated under "Comments" immediately following the evaluation.
 - c. The evaluation shall be consistent with the information contained in other sections of the report; i.e., the Summary, Recommendations, and Major Changes. A more objective evaluation will result if it is developed as the last step in preparing the report.

7. MAJOR CHANGES

Notes: Major changes in mission, change in the name of installation, major construction changes.

8. STATUS OF RECOMMENDATIONS APPEARING IN PREVIOUS REPORT BUT NOT IN THIS REPORT:

- Note:
- a. This section shall include a list of subject recommendations briefly stated and numbered as in the report and a statement of accomplishment or why deleted. Examples:
 - 3-(77) Sprinkler building 1003. - installation completed and placed in service May 1979.
 - 7-(72) Provide an interior fire alarm system for building 4302. - structure vacated and demolished during 1978.
 - b. Do not list previous report recommendations that have been revised and included in this report.

RECOMMENDATIONS

Notes: a. Recommendations shall be arranged in descending order of priority, and numbered consecutively, followed by the year in which first submitted, e.g. 1-(65), 2-(67 revised) etc. They shall provide clear and specific statements as to what is required. The activity should not be required to ferret out and interpret standards.

b. Justification:

(1) Code/criteria reference

Note: State specific reference and section/paragraph therein. State "established practice" if no written criteria exists.

(2) Approximate current cost of accomplishing recommendation; \$ _____

(3) Monetary Justification.(a) Estimated Replacement Value at Risk:
\$ _____

(b) Estimated Probable Loss without implementation of recommendation.

\$ _____ (Describe facilities involved i.e. loss of roof, loss of 1 wing, loss of ADP room contents)

(c) Estimated Probable loss with implementation of recommendation.
\$ _____, (description)

(4) Life Safety. (Indicate potential loss of life and the contributing conditions)

(5) Strategic Importance. (Indicate the impact on the activity or the Navy, if facility was damaged by fire).

(6) Brief supporting statement

Note: Items (3), (4) and (5) shall be (designated as "NOT APPLICABLE" when appropriate. Example: Item (3) would show "NOT APPLICABLE" if the recommendation is only to enhance life and implementation will not result in a reduction of dollar loss.

10. WATER SUPPLY SYSTEM

- Notes:
- a. Briefly describe overall system covering water sources, pumping capability, and general layout of distribution system.
 - b. Water flow tests shall be conducted during each survey. When impossible to conduct tests, reasons for omission of tests shall be stated and previous test data included in report.
 - c. Tests should be made in areas of varying demands to provide a thorough evaluation of the entire water distribution system. These tests shall specifically include firefighting water available for ship and fire dept. use at ship berthing and repair docks.

WATERFLOW TEST DATA:

Location	Measurements:			Available	Required
	Static PSI	Residual PSI	Flow GPM	GPM @ 20 PSI	GPM @ 20 PSI

SAMPLE FORWARDING LETTER FOR FIRE
PROTECTION ENGINEERING SURVEY REPORT

From: Commanding Officer, _____ Division, Naval Facilities
Engineering Command
To: Commanding Officer, _____

Subj: Report of Fire Protection Engineering Survey;
forwarding of

Ref: (a) NAVMATINST 11320.6A

Encl: (1) Subject report

1. Subject survey was conducted in conformance with the requirement of reference (a). The report is forwarded as enclosure (1).

2. Action required of addressee:

Reference (a) establishes the following procedures:

(a) Appropriate action relating to the recommendations in the report should be initiated in accordance with normal command, support and funding procedures.

(b) Superiors in the Chain of Command, information addressees and the originator of the report shall be advised of the actions taken or proposed within 60 days of receipt of the report.

(c) That this Command be advised of the disposition of "Local Recommendations" within 90 days of receipt of the report.

Copy to:
Superiors in Chain of Command
CHNAVMAT (MAT 04F)
COMNAVFACENGCOM (FAC 04F)
Area Fire Marshal (incl'd. local recs.)

Enclosure (2)

