



20 August 1987

Mr. Flick Acosta S-4
MCAS New River
Jacksonville, NC 28545

Dear Sir:

As we discussed 20 August 1987, the following is a list of MILCON Projects who's DD-1391s we need to complete our assessment of MCAS New River:

<u>Cat Code</u>	<u>Title</u>	<u>Project</u>
211-05	Acft. Maint. Hangar	P-404
124-30	Aviation Fuel Storage	P-476
211-05/06/07	Maint. Hangar Modernization	P-451
211-60	GSE Facility	P-211
610-71	Group HQ	P-305
211-21	Corrosion Control Hangar	P-433
441-10	Warehouse	P-357
441-12	Warehouse	P-185
171-35	Trainer Addition	P-430
211-06	Maint. Hangar Modernization	P-507
211-05	Hangar Addition	P-543
113-20	Acft. Parking Apron Addition	P-536
121-10	Acft. Rapid Refueler Modernization	P-545
211-75	Parachute/Survival Equipment Shop	P-188 ✓
441-12	Gnr1. Purpose Warehouse	P-515
441-12	Gnr1. Purpose Warehouse	P-500 ✓
441-12	Warehouse	P-514 ✓
441-12	Warehouse	P-512
610-71	Group HQ Addition	P-389
116-15	Acft. Rinse Facility	P-528
124-30	Rpt1 FUEL FANIN STORAGE TANKS	WR-5531M 520 525

*Projects
E NIT
9-14-87
COMING
V-22*

This list was compiled using a listing you provided last year to Mr. Bob Cawley, V-22 Facilities. Feel free to delete those projects not related to the air station operations areas or add those not identified but relevant to our effort.

The revised report is due to NAVAIR by the end of the summer so your prompt attention to this request will be greatly appreciated. If you have any questions, I may be reached at 215-591-8129 or 8135. Thank you for your help.

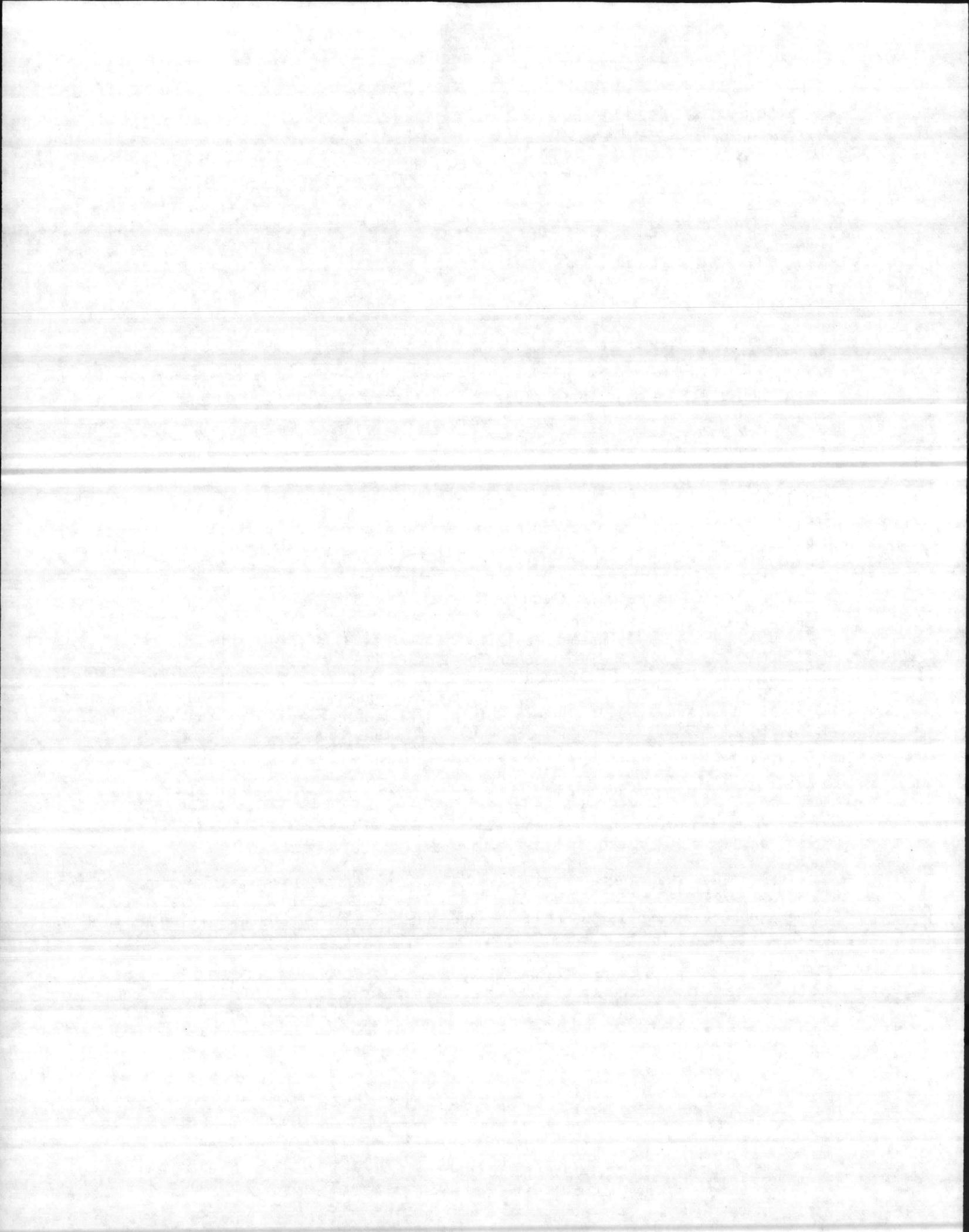
Sincerely,

Thomas C. Lucas
V-22 Logistics Integration

TCL/djf

BELL-BOEING JOINT PROGRAM OFFICE

Crystal Gateway One, Suite 401, 1235 Jefferson Davis Highway, Arlington, Virginia 22202 • (703)553-8850



File
MK-22



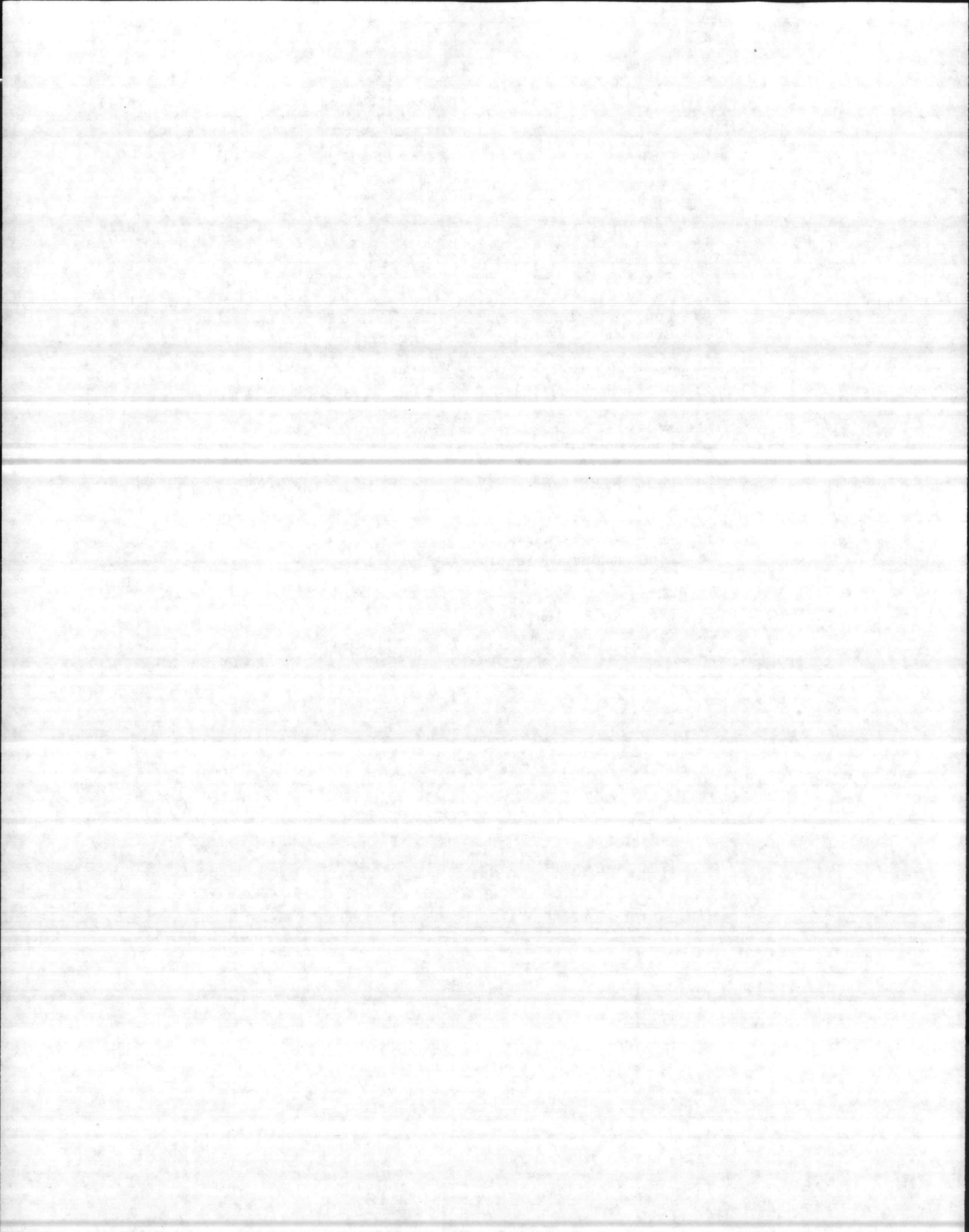
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I. INTRODUCTION

1.1 PURPOSE

This document provides the facility planner with the site analysis and recommendations required to assess the current and planned facility configuration to determine what additional construction, modifications, and alterations would be necessary to support the T406-AD-400 engine.

1.2 AUTHORITY

This report is prepared by Allison Gas Turbine for the Department of the Navy, Naval Air Systems Command (NAVAIR) under contract N00019-85-C-0034 Contract Data Requirements List (CDRL) Exhibit 5 (Item 0039), Sequence No. S001. This document is prepared in accordance with Data Item Description (DID) UDI-P-21038, Site Evaluation Report, as established by chapter 11 of the T406-AD-400 integrated logistics support (ILS) detail specification ILS-DS-30A-114.

1.3 CONSIDERATIONS

The following preliminary considerations were used in the preparation of this document:

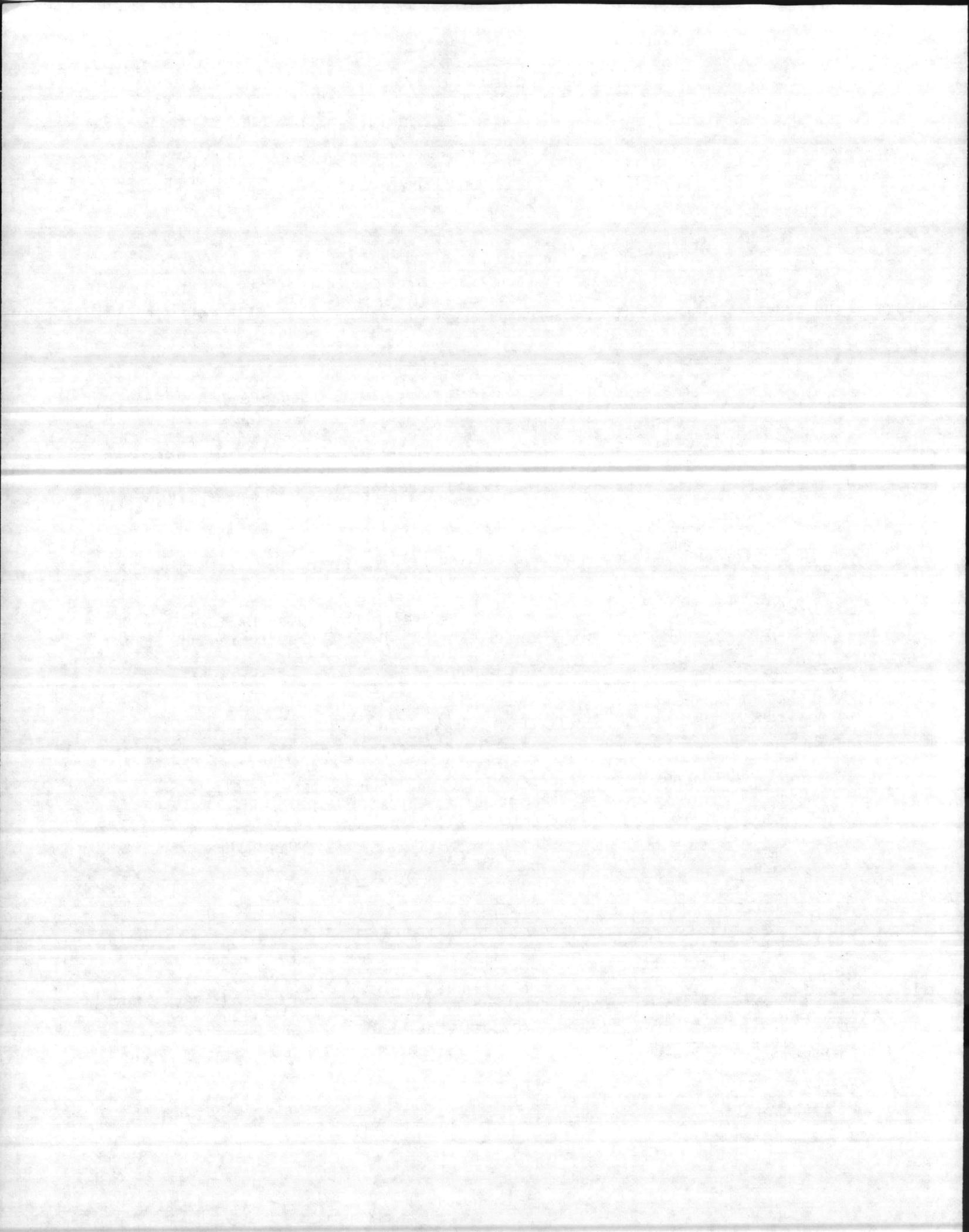
- o Marine Air Groups (MAGs) 26 and 29, currently located at Marine Corps Air Station (MCAS) New River, will receive the MV-22 Osprey to replace the CH-46 helicopter
- o MAG-26 will consist of four (4) squadrons and MAG-29 of three (3) squadrons of MV-22 Osprey aircraft
- o each squadron will consist of 15 aircraft — 3/15 1/27
- o first aircraft will be delivered in 1992
- o there will be a period of transition during the phase-in of the MV-22 and the phase-out of the CH-46 aircraft
- o existing assigned operational/training squadron facilities will make the transition to the new aircraft under a typical standup scenario
- o organizational (O) and intermediate (I) maintenance activity will be accomplished at MCAS New River to the same degree as it currently exists

1.4 GENERAL

1.1.1 Scope

This report contains information obtained from the site survey conducted at Marine Corps Air Station (MCAS) New River, North Carolina from 23 September to 25 September 1986. This report evaluates the present method of engine support being used by Marine Air Groups 26 and 29 relative to organizational- (O-) and intermediate- (I-) levels of maintenance. The Marine Corps air station is located along the New River in Onslow County, approximately four miles south of Jacksonville on Route 17.

MAG-26 and MAG-29 are the first line mission-oriented air groups. Each group is a mirror image of the other as it pertains to:





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- o organizational maintenance
- o intermediate maintenance
- o training
- o spare parts supply
- o production control
- o quality assurance
- o security and intelligence
- o nondestructive inspection (NDI)
- o safety
- o avionics maintenance

1.1.2 Organizational Maintenance

Four hangars are used for 0-level maintenance (Bldg 504-515 at MAG-26 and Bldg 4104108 at MAG-29).

The hangars are constructed of ^{error}reinforced concrete and have the space and necessary utilities, such as water and electrical services and compressed air, required to provide organizational maintenance for the entire air group. The 0-level engine maintenance performed generally consists of the following:

- o removing and replacing weapon replaceable assemblies (WRA)
- o removing and replacing complete engines
- o water washing engines with engine wash cart
- o general line servicing of lubricants

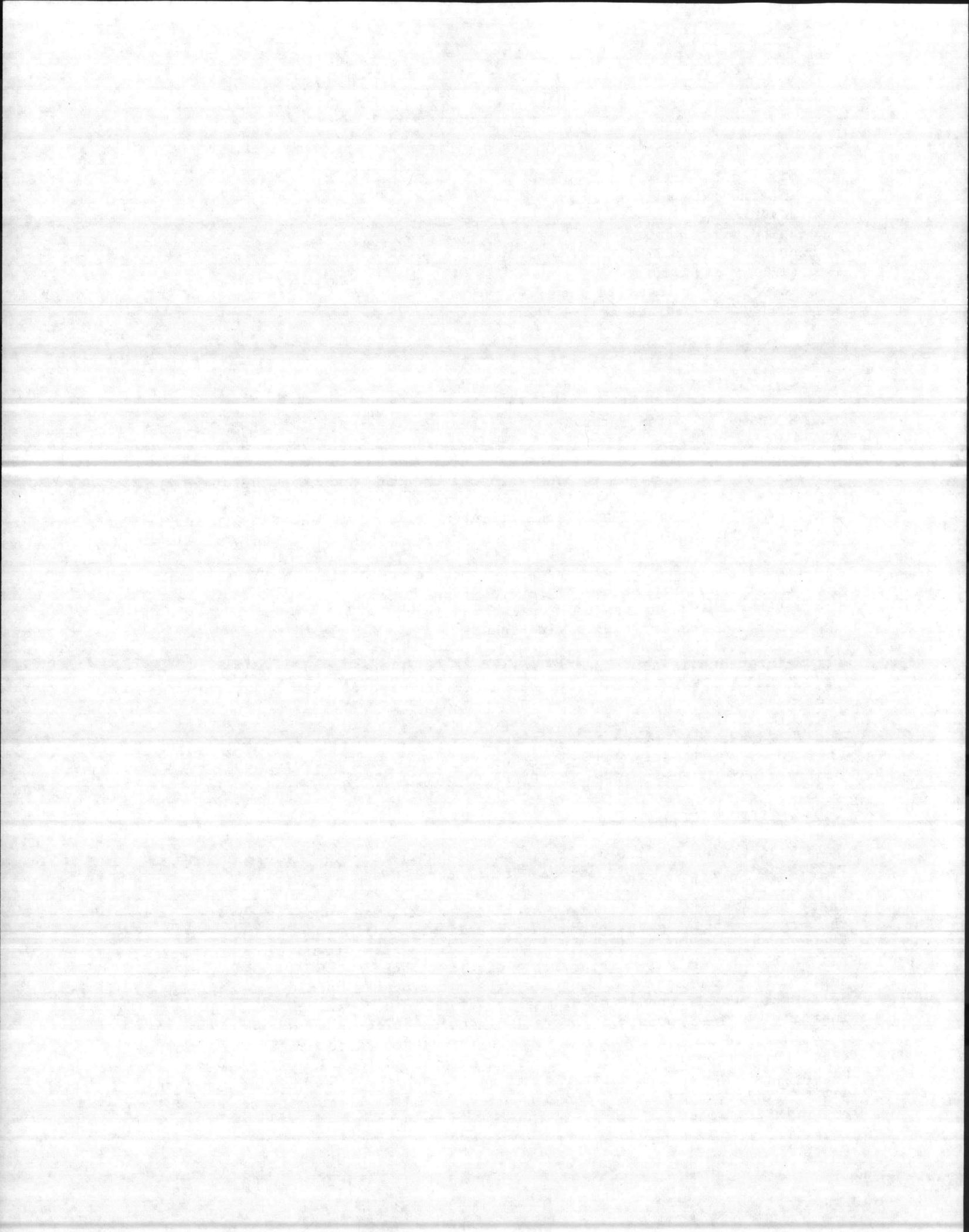
All maintenance is performed in accordance with published technical orders (T.O.) and the work is recorded on the OP NAV 4790/60 (Rev 2-82) form, as attached.

The V-22 Osprey aircraft is designated to replace the CH-46E helicopter. Therefore, the T406-AD-400 engine support requirements would replace those currently required for the General Electric T58-16 engine.

1.1.3 Recommendations

Review of the existing 0-level maintenance activities at MAG-26 and MAG-29 reveals they are acceptable for support of the T406 engine.

There appears to be no requirement to alter existing space or services. Within the organizational maintenance unit facility an engine monitoring system (EMS) ground station will be installed to retrieve engine diagnostic information from the on-board computer. This ground station requires a humidity and climate controlled atmosphere. A location within the hangar should be designated for personnel and air conditioning meeting standard office requirements should be installed. The approximate overall dimension of the ground station is 48 in. x 36 in. x 30 in. (l x w x h). The technical orders for engine maintenance require additional space in the technical publications library. A nonpermanent bookcase of 3.5 ft x 3.5 ft, with moveable shelving, can be used until the T58 engine publications are phased out and the T406 publications are phased into the existing space.





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II. ORGANIZATIONAL MAINTENANCE FACILITIES

2.1 ORGANIZATIONAL MAINTENANCE FACILITIES COMPOSITION

This section addresses the functional requirements for organizational maintenance facilities applicable to support operational squadrons assigned to the MAG. This section also addresses the evaluation of existing and programmed facilities resources and, where deficiencies exist, provides recommendations for corrective action. Facility items addressed by the facility category codes and nomenclatures (GCN) are the following:

- o 211-05 Maintenance Hangar--OH Space
- o 211-06 Maintenance Hangar--01 Space
- o 211-07 Maintenance Hangar--02 Space
- o 211-15 Line Maintenance Shelter

2.1.1 211-05 Maintenance Hangar--OH Space

Functional Requirements

The maintenance hangars are required to provide a weather-protected shelter for inspection, servicing, and maintenance of airframe and engines assigned to the Marine air group. The gross area required for one squadron is 54,506 ft².

Facility Evaluation

Building AS-515, AS-410~~Q~~, AS-4108, and AS-504 provide the required area to support the MAG. The hangars are of concrete and steel construction and can accommodate approximately 75% of the aircraft OH requirement. This requirement exceeds the Navy required hangar space by 50% (Ref P-80 regulation). The existing facilities are adequate to support the T406-AD-400 OH requirement.

Recommended Corrective Action

None

2.1.2 211-06 Maintenance Hangar--01 Space

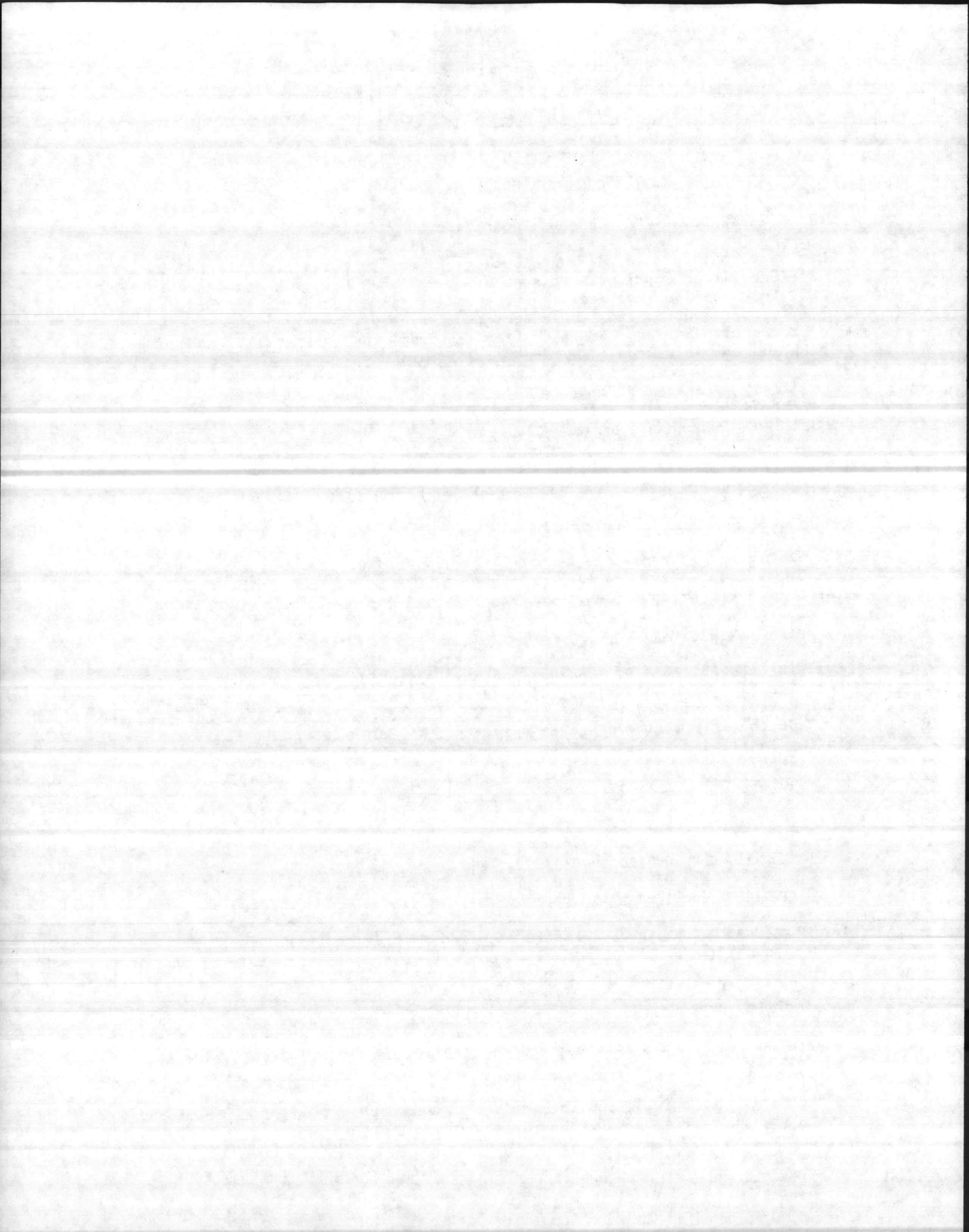
Functional Requirements

The maintenance hangar 01 space is required to provide limited work center space for equipment and personnel in support of organizational-level maintenance.

Facility Evaluation

Hangars AS-504, AS-515, AS-410~~Q~~, and AS-4108 are used for O-level maintenance. The following is an evaluation of the O-level maintenance requirements:

- o Nuclear, biological, and chemical (NBC) decontamination of aircraft filters is not currently accomplished during O-level maintenance.





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- o 0-level maintenance is currently accomplished with engines in the horizontal position with the rotor unfolded.'
- o An engine water wash is accomplished by attaching a hose from a mobile engine wash cart to the aircraft access panel that is plumbed to each engine compressor inlet. The engine water wash cart contains a tank of soap/water solution (B&B 3100), a pump, and hose.
- o Engines are serviced per T.O. requirements.
- o Some fiberglass repair work is done on CH-53 aircraft.
- o A Pettibone (cherry picker) is used to remove the rotor head from the aircraft.
- o A Pettibone, A-frame hoist, or overhead hoist are used to remove engines from the aircraft.
- o Generally, engine removals are accomplished as follows on various aircraft: A-frame hoist on H-1, Pettibone crane on H-53, and special hoist on CH-46.
- o A five-part form is filled out by the maintenance control section to identify discrepancies, action taken, and corrective action. This section also assigns special aircraft to fulfill specific missions.
- o 90% of the work consists of removing and replacing component parts, which includes engine accessories.
- o Complete engines are removed from the nacelles and replaced if necessary with serviceable engines.
- o MAG-26 has its own spare part supply and must turn in old units in order to get a serviceable replacement unit.
- o Specific tool boxes are issued for each work center relative to the type of aircraft.

The evaluation of the hangar services is as follows.

No ground air conditioning capability currently exists at 0-level maintenance unless the auxiliary power units (APUs) are running. MAG-26 does not plan to use APUs due to noise levels for V-22 aircraft.

Electrical power in 0-level hangars is regular 110V, one phase, 60 Hz and 208 V, three phase, four wire. MAG-26 was planning to obtain a trailer (MMG-1) for electrical power which would supply 50 KVA. They could change the requirement to 60 KVA--85-90 amps, 440 V, 60 Hz, three phase.

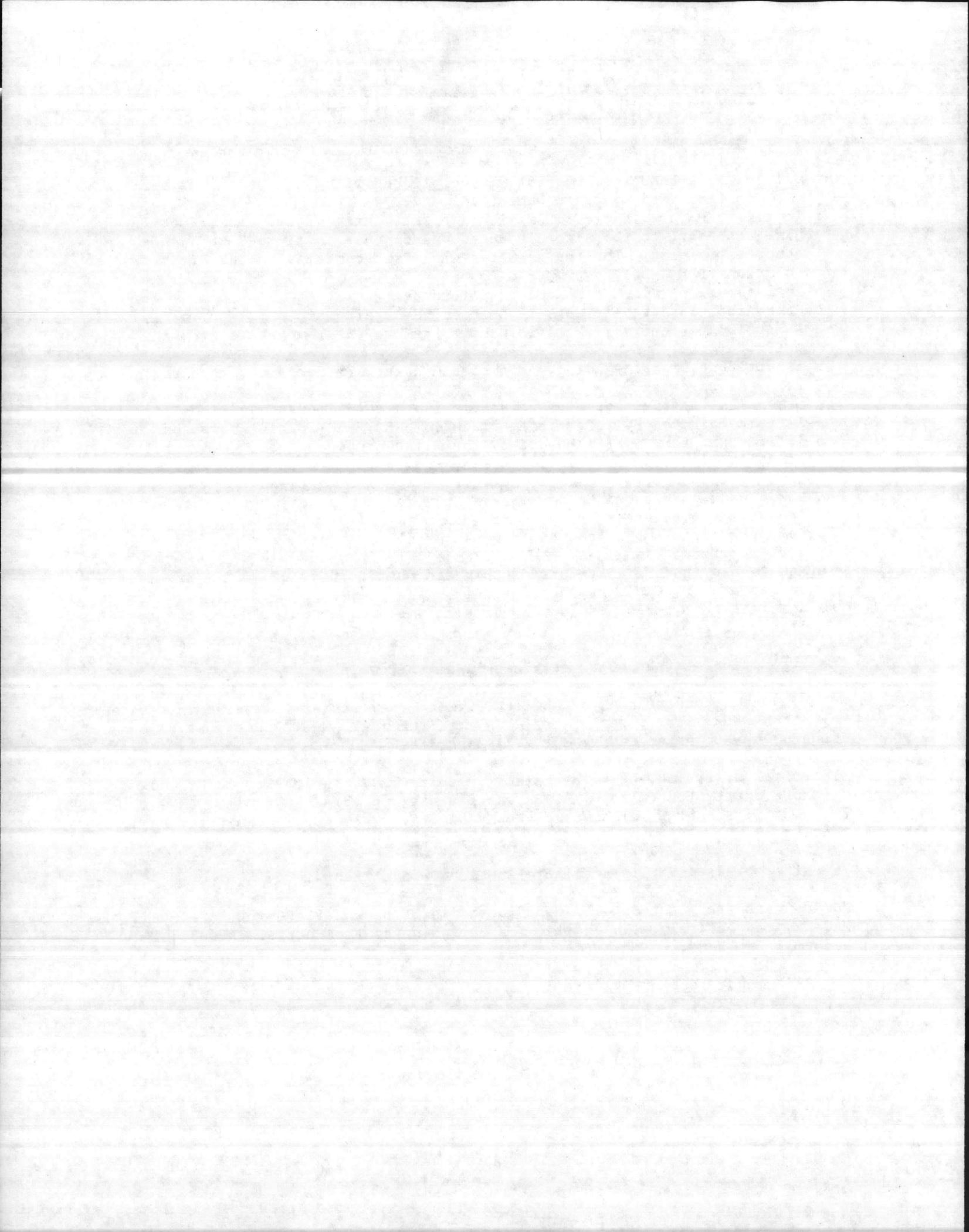
75 psi compressed air is available in each 0-level hangar.

New hangars are planned to be constructed in FY 87 and FY 90 for MAG-26 and MAG-29, respectively. In addition, a corrosion control hangar is scheduled to be built by FY 89.

Recommended Corrective Action

None

2.1.3 211-07 Maintenance Hangar--02 Space





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Functional Requirements

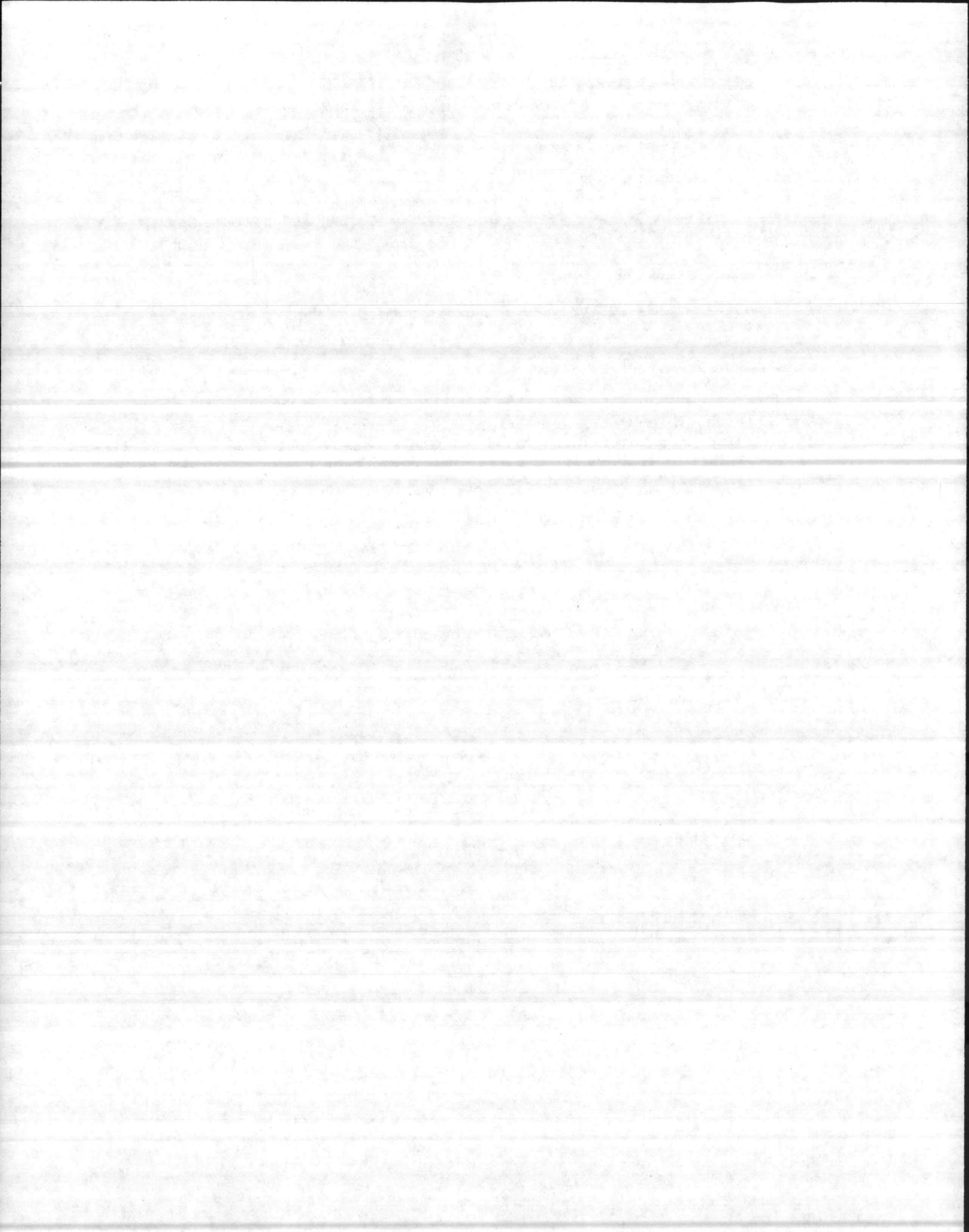
The facility should provide space for personnel and equipment involved in squadron administrative and operational functions.

Facility Evaluation

Hangar AS-515 and AS-4108 provide adequate space for support of squadron administrative duties.

Recommended Corrective Action

Air conditioning should be installed to support the installation of the EMS ground station, which retrieves the engine diagnostic information from the aircraft on-board computer. This ground station measures approximately 4 ft x 3 ft x 2.5 ft (l x w x h). Air conditioning should meet typical office requirements for personal desktop computers.





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III. INTERMEDIATE MAINTENANCE FACILITY

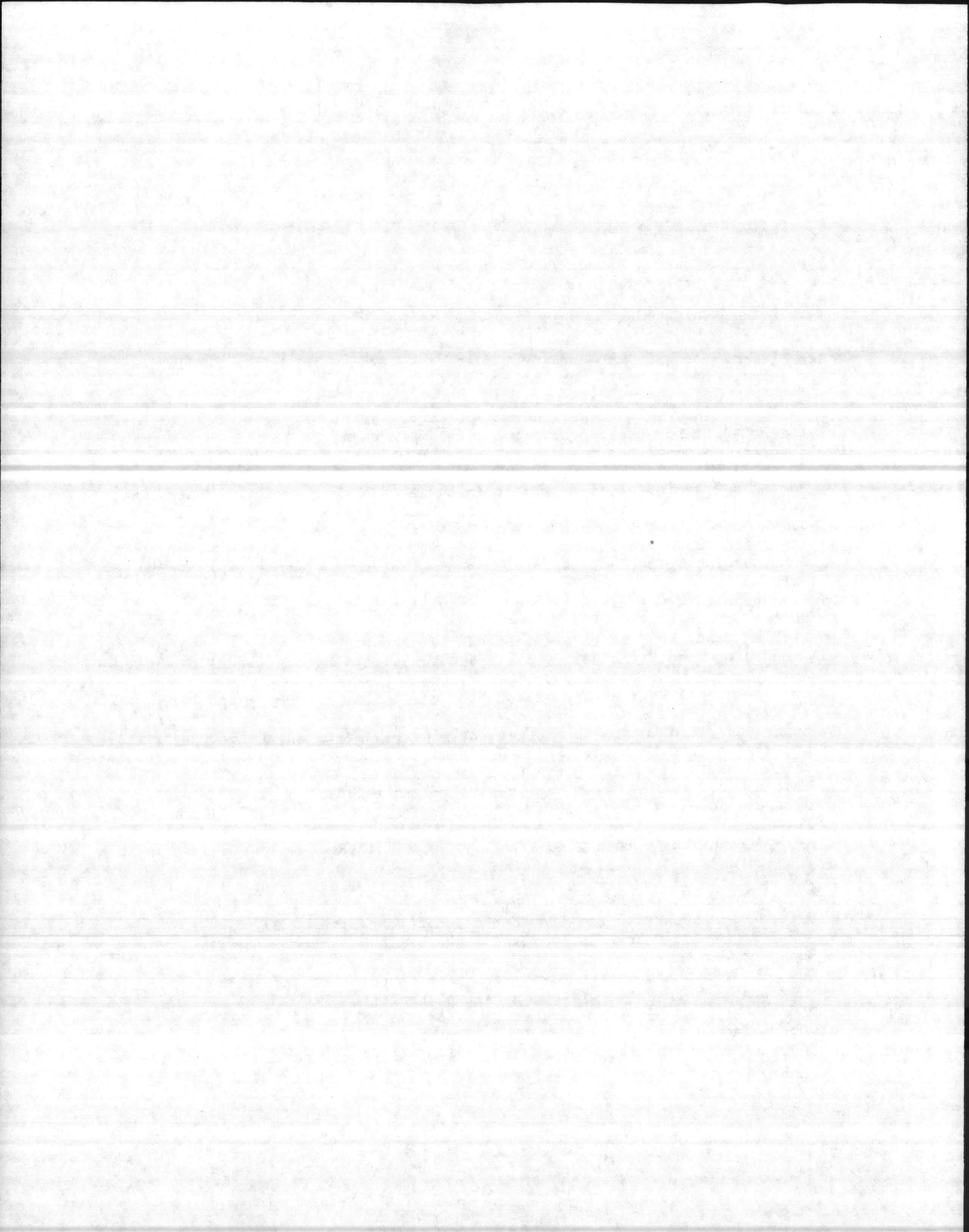
3.1 FUNCTIONAL REQUIREMENTS

The maintenance hangar 02 space is required to provide space for equipment and personnel in support of intermediate- (I-) level maintenance.

3.2 FACILITY EVALUATION

Hangars AS-518 and AS-4106 are identified as I-level maintenance facilities. The requirements of these facilities are as follows:

- o Engine cleaning, teardown, inspection, replacement of parts, assembly, and engine testing are performed at I-level maintenance.
- o Each engine model has a dedicated area in which the above operations are accomplished.
- o No balance equipment is available in the facility; therefore, assemblies that require balancing are not disassembled. Units requiring disassembly of balanced assemblies are sent to depot maintenance.
- o T64 engine shop area is approximately 2000 ft².
- o Compressors are rebladed using the pan weight system and revalved if necessary.
- o Oven capability of 220°C is used to assemble interference fit parts. No shrinking capability exists.
- o Turbine blades and vanes are replaced if necessary.
- o Compressor rotor (including blades and vanes) are hand cleaned to remove any foreign material build-up.
- o Currently, all engines are reassembled vertically on a milk stool type stand.
- o Following teardown and inspection, serviceable parts are held together for a specific serial number (S/N) engine and stacked in wooden containers until new parts are available for reassembly.
- o No component machining or repairs are accomplished.
- o Overhead hoists are available with load carrying capacity of 4000 and 2000 lb.
- o X-ray--Magnaflux machine 150 KVA power. It uses Kodak paper and is developed using a wet process.
- o FPI--Zyglo Z-28 Level VI per MIL-I-25135C. Water wash-post emulsifier.
- o Magnetic inspection--Magnaflux Model H-70-5 turn coil with demagnetizer.
- o Ultrasonic inspection for flaw detection, probe sizes 0.312 and 0.500. Model ANGSM-238. Nova 200 thickness gage. Leak detector.
- o Eddy current model ED-520.
- o The ultrasonic and eddy current equipment is portable and is used to check components on the aircraft or in O-level hangars.
- o MAG-29 shop has a static balance room for T76 engine propeller and tail rotor blades.
- o T64 and T58 engine shops do second level I-level maintenance and send first level maintenance work to MAG-26.





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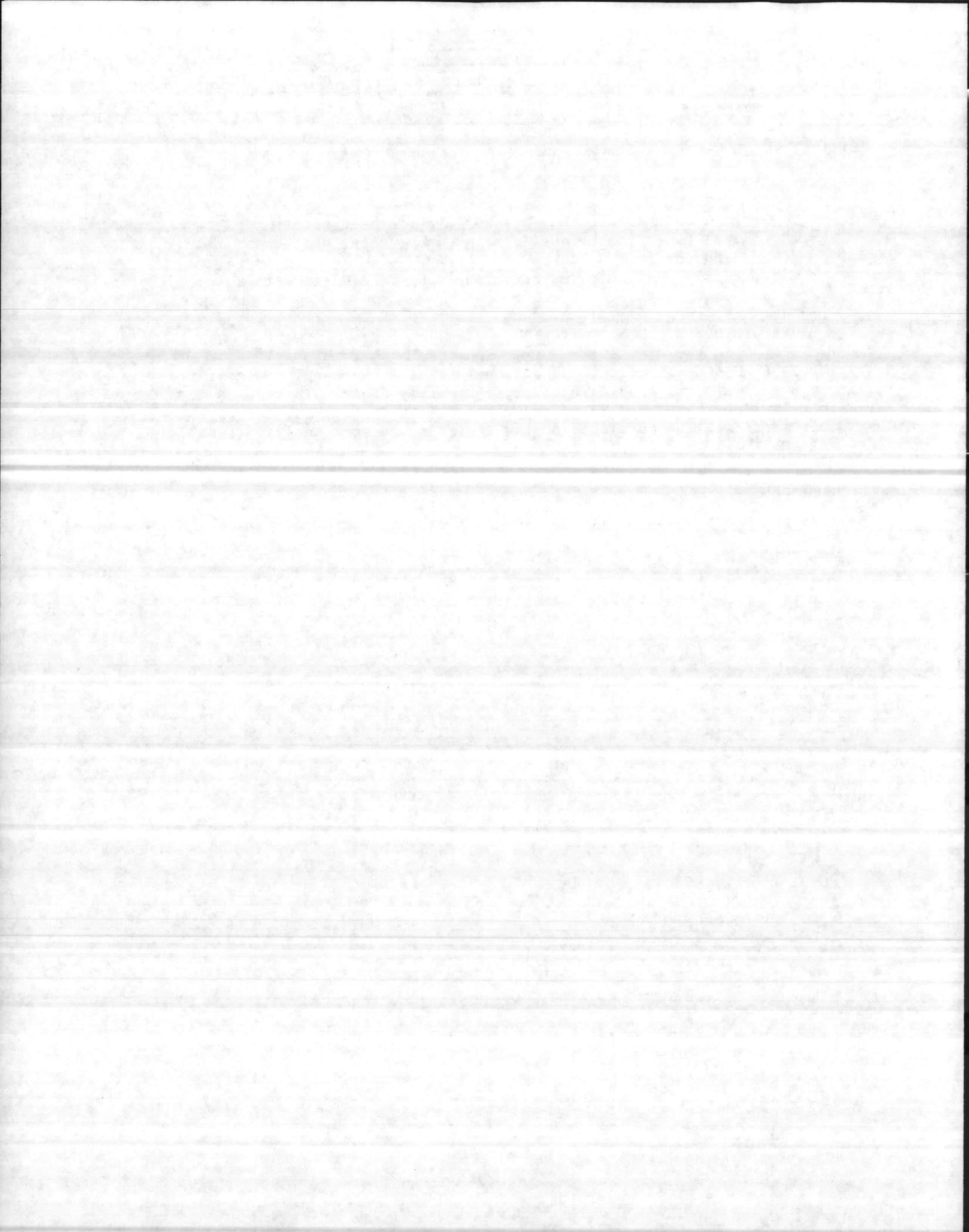
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The evaluation of I-level services is as follows:

- o The engine maintenance shop has 2000 lb overhead hoists.
- o Electrical power in the engine maintenance shop consists of 110V and 220V, 60 Hz, and one 28 VDC hookup.
- o Air pressure available in the engine shop is 110 psi with no humidity control.

3.3 RECOMMENDED CORRECTIVE ACTION

The T406-AD-400 will require additional space in the engine tiedown and assembly area. A total floor area of approximately 5664 ft² at MAG-26 and approximately 3540 ft² at MAG-29 is recommended. Further definition of I-level requirements will be developed during logistics support analysis (LSA) plan development.





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IV. ENGINE TEST FACILITY

This section addresses requirements for engine test capabilities applicable to support of operational squadrons assigned to the MAGs.

4.1 FACILITY EVALUATION

Facility evaluation for existing engine testing is as follows:

Engine test stands were located outside, approximately one mile from the maintenance hangar on the other side of the taxiways from the hangar. Engine testing is somewhat limited depending upon weather conditions. For example, no testing is done if the temperature exceeds 120°F or is below 30°F.

Dyna Electronics has a contract to support all the testing equipment.

MAG-26 has three engine test setups. T64 and T58 engine test setup consists of a mobile dynamometer on which an engine can be installed, a control room, and a mobile fuel and oil tank. These engines are taken to the test site, installed on the dynamometer mobile cart, connected to the control room, fuel and oil sourced, and tested. The T400 engine twin-pack mobile setup contains a dynamometer, fuel and oil supply, filters, single gearbox, etc, all on the same mobile stand. The T400 intermediate maintenance shop installs the two engines on the mobile test stand. The test stand is moved to the engine test site, connected mechanically and electrically to the control room, and tested.

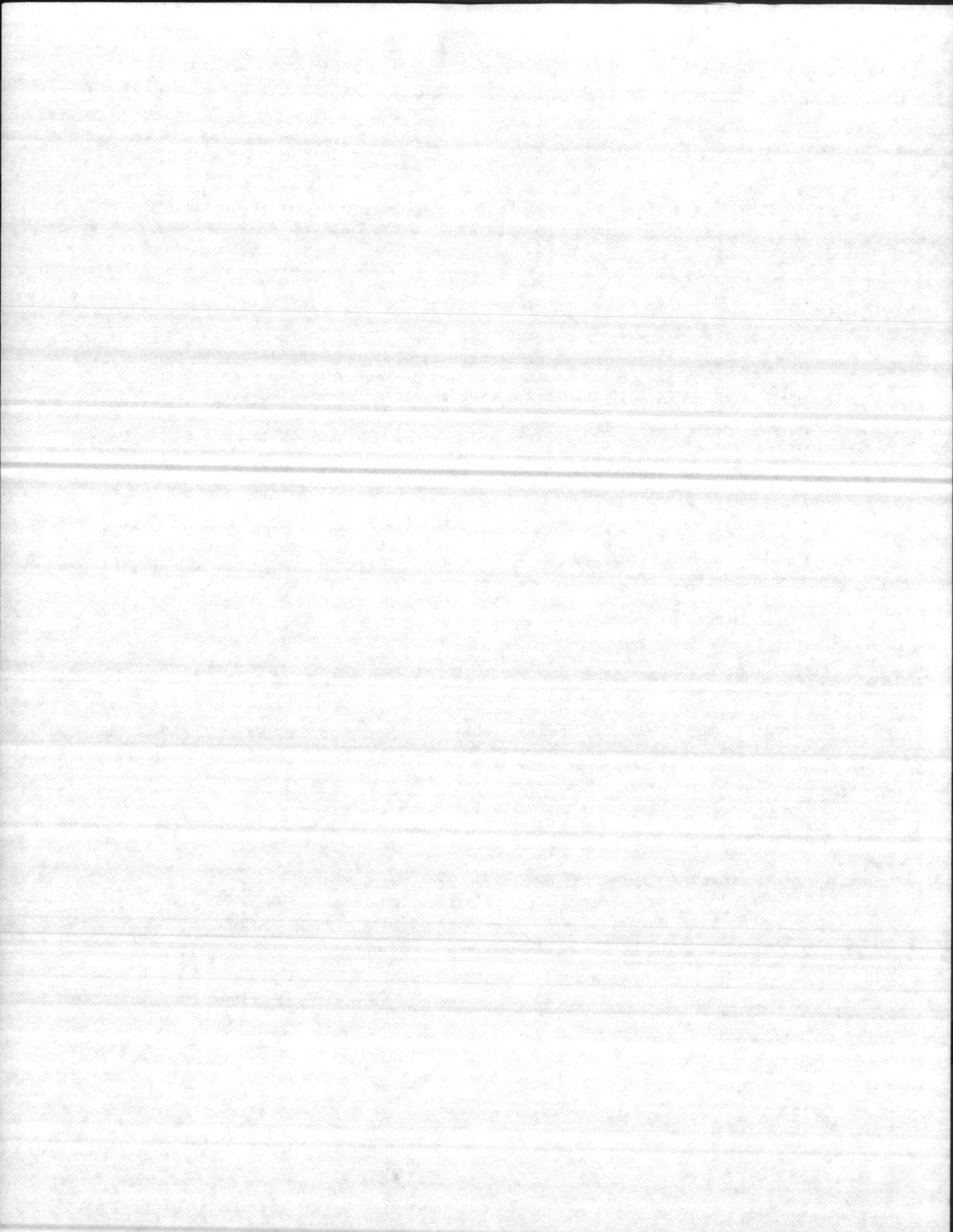
The engine test site also consisted of a steel shell of a building (Hush House), which is sometimes used to house the T400 twin-pack or the T64 engine mobile stand to reduce noise.

The engine test stands use station power, which is 208V, three phase, four wire and they have a mobile cart for starting the T400 and T58 engines with a generator that supplies 28 VDC.

One A-frame 2000 lb hoist was available at the test site.

4.2 RECOMMENDED CORRECTIVE ACTION

It is recommended that an existing T28 air dynamometer be modified to accept the higher horsepower and engine speeds required to test the T406-AD-400 engine. Further details of engine test capabilities are identified in SERD 7000.





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V. ENGINE TRAINING FACILITY

This section addresses the engine training facilities required to support the T406-AD-400 engine installed in the V-22 Osprey aircraft.

5.1 FACILITY EVALUATION

The existing training facility is specifically for the support of the CH-46 helicopter, which includes the T58 engine. T58 engine intermediate-level maintenance training is conducted at building AS-312. The training classroom is approximately 1120 ft², which is divided in half by a flexible curtain divider to provide both an academic lecture area and an applied instruction area. The facility is equipped with the following services:

- o 115 VDC, 60 Hz power
- o portable 2000 lb cap hydraulic hoist
- o The classroom is furnished with six (6) 3 ft x 5 ft student desks (tables) and two 3 ft x 5 ft work tables, as well as storage lockers, display shelves, and tool storage shelves.

All existing training facilities are being fully utilized for CH-46/T58 engine training. There is no existing excess capacity available for T406 engine training, so additional space would be required.

5.2 RECOMMENDED CORRECTIVE ACTION

The existing classroom used for T58 engine I-level maintenance training is judged to be inadequate for T406 engine training for the following reasons:

- o Doorways are not wide enough to allow entry of the T406 engine mounted on a Model 3000 transportation trailer. A minimum doorway width of six ft is recommended.
- o Overhead clearance in lab area is judged to be inadequate for T406 engine disassembly/reassembly. An overhead clearance of 15 ft is required.
- o Lab area has no compressed air supply. Recommend one shop air outlet capable of supplying 100 psi.
- o Classroom has no 28 VDC supply. It should be considered since the T406 engine control system uses 28 VDC power.
- o The portable hydraulic hoist currently used for T58 engine training is judged to be inadequate due to lift height and mobility restrictions. Recommend the use of a fixed overhead rail and hoist or an A-frame with overhead rail and hoist.

Storage space for T406 support equipment may impact the available workspace in the lab area. All T58 engine I-level support equipment is stored within the lab area. As the T58 engine is smaller than the T406 engine, the associated T406 support equipment may require additional floor space for storage. This requirement will be defined as the engine maintenance concept is defined.

