

**CHANGE**

U.S. DEPARTMENT OF TRANSPORTATION  
FEDERAL AVIATION ADMINISTRATION

6770.2B  
CHG 1

1/15/2002

**SUBJ:** MAINTENANCE OF 75MHZ FAN MARKER (FM) FACILITIES

1. PURPOSE. This directive transmits page changes to Order 6770.2B, Maintenance of 75MHz Fan Marker (FM) Facilities, implementing the recommended changes from the Maintenance Handbook Periodic Maintenance (PM) review. This directive implements Configuration Control Decision (CCD) No. N23216, Update Periodic Maintenance and Certification Interval Schedules in Order 6770.2B.

2. DISTRIBUTION.

a. This directive is distributed to selected offices and services within Washington headquarters, the William J. Hughes Technical Center, the Mike Monroney Aeronautical Center, regional Airway Facilities divisions, and Airway Facilities field offices having the following facilities/equipment: Fan Marker.

b. An electronic version and distribution report of this directive is available on an Intranet site located at <http://aos-ext.amc.faa.gov/> under the "Technical Documentation" heading.

c. To obtain additional hard copies of this publication, contact Printing & Distribution Team, AMI-700B, at (405) 954-3771.

3. DISPOSITION OF TRANSMITTAL. Retain this transmittal.

PAGE CONTROL CHART

Remove Pages	Dated	Insert Pages	Dated
iii and iv	6/5/89	iii	6/5/89
21 and 22	6/5/89	iv	1/15/2002
Appendix 1	6/5/89	21 and 22	1/15/2002
		Appendix 1	1/15/2002

Tue Jan 15 10:22:51 2002

Gregg W. Dvorak  
Program Director for Operational Support

**Distribution:** Selected Airway Facilities Field  
and Regional Offices, ZAF-601

**Initiated By:** AOS-240

## TABLE OF CONTENTS

*Paragraph*

*Page*

### Chapter 1. GENERAL INFORMATION AND REQUIREMENTS

1.	Objective .....	1
2.	Certification Requirements .....	1
3.	Aircraft Accident .....	1
4.	Monitoring .....	1
5.	Flight Inspection Considerations .....	1
6.-20.	Reserved.	

### Chapter 2. TECHNICAL CHARACTERISTICS

#### Section 1. EQUIPMENT DESCRIPTION

21.	General .....	3
22.	Low-Power Fan Marker (LFM) and Fan Marker (FM) Equipment.....	3
23.-30.	Reserved.	

#### Section 2. ANTENNA DESCRIPTION

31.	General .....	4
32.	LFM Antenna Array .....	4
33.	FM Antenna Array .....	4
34.-50.	Reserved.	

#### Section 3. ANTENNA THEORY

51.	General .....	4
52.	Basic Dipole Antenna Theory .....	4
53.	LM Antenna Array Theory.....	6
54.	FM Standard Antenna Array Theory .....	7
55.	FM Improved Antenna Array Theory.....	8
56.-80.	Reserved.	

### Chapter 3. STANDARDS AND TOLERANCES

81.	General .....	19
82.	Carrier Power Output.....	19
83.	Frequency .....	19
84.	Modulation Level .....	19
85.	Monitor Alarms .....	19
86.	Automatic Transfer and/or Shutdown.....	19
87.	Transmitter Output Balance.....	19
88.	Antenna System .....	20
89.-100.	Reserved.	

**Chapter 4. PERIODIC MAINTENANCE**

101.	General .....	21
------	---------------	----

**Section 1. PERFORMANCE CHECKS**

102.	Monthly .....	21
* 103.	Semiannually.....	21
104.	Annually .....	21
105.-115.	Reserved.	

**Section 2. OTHER MAINTENANCE TASKS**

* 116.	Semiannually.....	22
117.	As Required.....	22
118.-120.	Reserved.	*

**Chapter 5. MAINTENANCE PROCEDURES**

121.	General .....	23
122.-130.	Reserved.	

**Section 1. PERFORMANCE CHECK PROCEDURES**

131.	Technical Performance Record Form Use.....	23
132.	Radio Frequency (RF) Power.....	23
133.	Antenna System Voltage Standing-Wave Ratio (VSWR).....	23
134.	Carrier and Modulation Frequencies .....	25
135.	Modulation Level .....	25
136.	Monitor Alarm Points .....	26
137.	Transfer and/or Shutdown .....	26
138.	Transmission Line Insulation Resistance.....	26
139.-150.	Reserved.	

**Section 2. OTHER MAINTENANCE TASKS PROCEDURES**

151.	Mechanical Keyers .....	27
152.	Alternate Equipment.....	27
153.-160.	Reserved.	

**Section 3. SPECIAL MAINTENANCE PROCEDURES**

161.	Tube-Type Transmitter Neutralization .....	28
162.	Transmitter Output Balance.....	28
163.	Phasing and Matching Transmission Line Equivalence of .....	30
	Collinear Arrays	
164.	Collinear Antenna Element Currents .....	30
165.-180.	Reserved.	

**Chapter 6. FLIGHT INSPECTION**

181.	General .....	35
------	---------------	----

## CHAPTER 4. PERIODIC MAINTENANCE

**101. GENERAL.**

a. This chapter establishes the maintenance activities required for 75MHz fan marker equipment on a periodic, recurring basis, and the schedules for their accomplishment. The chapter is divided into two sections. The first section identifies the performance checks (i.e., tests, measurements, and observations) of normal operating controls and functions that are necessary to determine whether operation is within established tolerance/limits. The second section identifies other tasks that are necessary to prevent deterioration and/or insure reliable operation. Refer to Order 6000.15C for additional general guidance.

b. The following are required key performance checks and maintenance tasks and the maximum intervals between successive accomplishments to insure that the performance of the facility is reliable and within designated technical tolerances. The regions may shorten the time intervals specified, but may not lengthen them, except on a test basis at a limited number of locations. A copy of each regionally authorized increase in the established time intervals, complete with justification, shall be forwarded to the Systems Maintenance Service.

### Section 1. PERFORMANCE CHECKS

<i>Performance Check</i>	<i>Reference Paragraph</i>	
	<i>Standards &amp; Tolerances</i>	<i>Maintenance Procedures</i>
<b>102. MONTHLY.</b>		
a. Check rf power (tube-type) .....	82	132
b. Reserved.		
* <b>103. SEMIANNUALLY.</b>		*
a. Check rf power (solid-state) .....	82	132
b. Measure vswr .....	88a	133
c. Check modulation .....	84	135
d. Check monitor alarm points .....	85	136
e. Check automatic transfer/shutdown .....	86	137
<b>104. ANNUALLY.</b>		
a. Measure frequencies .....	83	134
b. Check antenna system .....	88	138
* c. Perform facility performance tests on .....		Order 6980.25
batteries in accordance with the latest edition of Order 6980.25		*
<b>105.-115. RESERVED.</b>		

**Section 2. OTHER MAINTENANCE TASKS**

<i>Maintenance Task</i>	<i>Reference Paragraph</i>	
	<i>Standards &amp; Tolerances</i>	<i>Maintenance Procedures</i>
* 116. SEMIANNUALLY ..... Check alternate equipment (dual systems).	N/A	152
117. AS REQUIRED ..... Clean and lubricate mechanical keyers.	N/A	151
118.-120. RESERVED.		

\*

