

MAINTENANCE LOG REQUIREMENTS



Engineering Department
NATIONAL ASSOCIATION OF BROADCASTERS

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MAINTENANCE LOG REQUIREMENTS

INTRODUCTION

The Rules and Regulations of the Federal Communications Commission require that operating and maintenance logs be maintained by all broadcasting stations. These requirements are set forth in Part 73 of the FCC Rules and Regulations and in some instances in the instrument of authorization: i.e., license, construction permit, temporary authorization, etc. The following consolidates the FCC Rules and Regulations pertaining to AM, FM, and TV broadcast station maintenance logs, and, in addition, includes an up-to-date version of the NAB Sample Logs for these three services.

GENERAL RULE PERTAINING TO LOGS

73.111 General Requirements Relating To Logs.

(a) The licensee or permittee of each standard broadcast station shall maintain program, operating, and maintenance logs as set forth in 73.112, 73. 113, and 73.114. Each log shall be kept by the station employee or employees (or contract operator) competent to do so, having actual knowledge of the facts required, who in the case of program and operating logs shall sign the appropriate log when starting duty, and again when going off duty.

(b) The logs shall be kept in an orderly and legible manner, in suitable form, and in such detail that the data required for the particular class of station concerned is readily available. Key letters or abbreviations may be used if proper meaning or explanation is contained elsewhere in the log. Each sheet shall be numbered and dated. Time entries shall be made in local time. For the period from the last Sunday in April until the last Sunday in October of each year, the program and operating log entries showing times of sign-on, sign-off, and change of the station's mode of operation shall specifically be indicated as advanced or nonadvanced time.

(c) No log or preprinted log or schedule which becomes a log, or portion thereof, shall be erased, obliterated, or willfully destroyed within the period of retention provided by the provisions of this part. Any necessary correction shall be made only pursuant to 73.112, 73.113 and 73.114, and only by striking out the erroneous portion, or by making a corrective explanation on the log or attachment to it as provided in those sections.

(d) Entries shall be made in the logs as required by 73.112, 73.113 and 73.114. Additional information such as that needed for billing purposes or for the cuing of automatic equipment may be entered on the logs. Such additional information, so entered, shall not be subject to the restrictions and limitations in the Commission's rules on the making of corrections and changes in logs.

(e) The operating log and the maintenance log may be kept individually on the same sheet in one common log at the option of the permittee or licensee.

73:115 Retention Of Logs

Logs of standard broadcast stations shall be retained by the licensee or permittee for a period of 2 years: Provided, however, That logs involving communications incident to a disaster or which include communications incident to or involved in an investigation by the Commission and concerning which he is specifically authorized in writing by the Commission to destroy them: Provided, further, that logs incident to or involved in any claim or complaint of which the licensee or permittee has notice shall be retained by the licensee or permittee until such claim or complaint has been fully satisfied or until the same has been barred by statute limiting the time for the filing of suits upon such claims.

73.116 Availability Of Logs And Records

The following shall be made available upon request by an authorized representative of the Commission:

(a) Program, operating and maintenance logs.

(b) Equipment performance measurements required by 73.47.

(c) Copy of most recent antenna resistance or common-point impedance measurements submitted to the Commission.

(d) Copy of most recent field intensity measurements to establish performance of directional antennas required by 73.151.

AM BROADCASTING

73:114 Maintenance Log

(a) All entries in the maintenance log specified hereunder shall be made by the holder of a first class radiotelephone license, and shall reflect the results of maintenance procedures or of observations performed by him.

(1) An entry each week of the following shall be made where applicable:

(i) A notation indicating the readings of the tower base current ammeter(s) and the associated remote antenna ammeter(s) actual readings observed prior to remote antenna ammeter recalibration and indicating calibration of the remote ammeter(s) against the tower base ammeter(s).

(ii) Time and result of any auxiliary transmitter test(s).

(iii) A notation of the results of all frequency measurements including date performed and description of method used.

(iv) A notation of the calibration check of automatic recording devices as required by S.73.113(b) (3).

(v) A notation of the calibration check of the antenna monitor.

(vi) A notation of the calibration check of indicating instruments at each remote control point against the instruments at the transmitter.

(2) An entry of the date and time of removal from and restoration to services of any of the following equipment in the event it becomes defective:

(i) Modulation monitor.

(ii) Final stage plate voltmeter.

(iii) Final stage plate ammeter.

(iv) Base current ammeter(s).

(v) Common point ammeter.

(vi) Antenna monitor.

(3) The entries required by S.17.49(d) of this chapter concerning quarterly inspections of the condition of tower lights and associated control equipment and entry when towers are cleaned or repainted as required by S.17.50 of this chapter.

(4) Entries made so as to describe fully any experimental operation pursuant to S.73.10.

(5) Any other entries required by the current instrument of authorization of the station and the provisions of this subpart.

(6) If required by the station authorization or S.73.93(e) (4), the results of field strength measurements at the monitoring points specified in the station authorization.

(7) If a remote antenna ammeter normally employed to provide indications of antenna or common point current for entry in the operating log (see S.73.113) becomes defective, entries once each day, for each mode of operation, of such antenna or common point current, until such time as the defective remote antenna ammeter is repaired or replaced.

(8) For stations with directional antennas, in addition to those entries of operating parameters required in the operating log (see S.73.113), specific entries shall be made in the maintenance log, based on observations made without modulation, if instrument readings are affected by modulation. The date and time of each observation shall be shown. The schedule for making such observations and entries is set forth in subparagraph (9) of this paragraph.

The entries are as follows:

- (i) Common point current.
- (ii) Base currents, their ratios, and the deviations of those ratios, in percent, from the licensed values.
- (iii) Remote base current or sample current indications, the computed or indicated ratios of those currents, and the deviation of such ratios, in percent, from values specified in the license.
- (iv) Phase indications.

(9) The entries in subparagraph (8) of this paragraph shall be made pursuant to the following schedule:

(i) For stations not operated by remote control, entries shall be made once each day, 5 days of each week, for each directional radiation pattern, regardless of any provisions in the station authorization for more frequent entries: *Provided, That*, if a first-class radiotelephone operator is on duty at the transmitter for all periods of operation with a directional radiation pattern, and the station authorization permits antenna base current readings at less frequent intervals than specified in this subparagraph, entries may be made pursuant to the schedule specified in that authorization.

(ii) For stations operated by remote control, where phase indications are not observed and entered in the operating log at the remote control point, the entries specified in subparagraph (8) of this paragraph shall be based on observations made at the transmitter not more than 2 hours after the time of commencement of operation with each directional radiation pattern: *Provided, That*, if any separate period of operation with a specific pattern does not exceed 1 hour in duration, observations and entries for such period need not be made. If a station utilizes a single directional radiation pattern during all hours of operation, observations and entries shall be made once each day, with no fewer than 12 hours elapsing between successive observations.

(iii) For stations operated by remote control, where phase indications provided by a type-approved antenna monitor are observed and entered in the operating log at the remote control point, the entries specified in subparagraph (8) of this paragraph shall be based on observations made at the transmitter every second day for each directional radiation pattern, with no longer than 54 hours elapsing between successive observations for the same pattern. (This schedule shall apply regardless of any provision in the station authorization requiring more frequent observations.)

(b) Upon completion of the inspection required by S.73.93(e), the inspecting operator shall enter a signed statement that the required inspection has been made, noting in detail the tests, adjustments and repairs which were accomplished in order to insure operation in accordance with the provisions of this subpart and the current instrument of authorization of the station. The statement shall also specify the amount of time, exclusive of travel to and from the transmitter, which was devoted to such inspection duties. If complete repair could not be effected, the statement shall set forth in detail the items of equipment concerned, the manner and degree in which they are defective, and the reason for failure to make satisfactory repairs.

(c) The inspecting operator shall sign and date the maintenance log at the conclusion of each inspection. In preparing the maintenance log, original data may be recorded in rough form and later transcribed into the log, but in such cases all portions of the original memorandum shall be preserved as a part of the complete log.

(d) Any necessary corrections in the maintenance log shall be made by the inspecting operator who shall initial and date all changes prior to signing the log. If corrections or additions are made on the log after it has been so signed, explanation must be made the subject of a separate memorandum, dated and signed by the operator who made the entry in question,

or the station's technical supervisor or by any officer of the licensee. Such memorandum shall explain fully the circumstances surrounding the errors or ambiguities, and shall be affixed to the original log in question. If written and signed by other than the inspecting operator who made the entry, the memorandum shall contain a satisfactory explanation of why such signature is lacking.

FM BROADCASTING

73.284 Maintenance Log

(a) The following entries shall be made in the maintenance log:

- (1) Time and result of any auxiliary transmitter tests.
- (2) A notation of the results of all frequency measurements including date performed and description of method used.
- (3) A notation each week of the calibration check of automatic recording devices as required by S.73.283(b)(3).
- (4) An entry of the date and time of removal from and restoration to service of any of the following equipment in the event it becomes defective:
 - (i) Modulation monitor.
 - (ii) Final stage plate voltmeter.
 - (iii) Final stage plate ammeter.
 - (iv) Transmission line radio frequency voltage, current, or power meter.
- (5) The entries required by S.17.49(d) of this chapter concerning quarterly inspections of the conditions of tower lights and associated control equipment and an entry when towers are cleaned or repainted as required by S.17.50 of this chapter.
- (6) Entries shall be made so as to describe fully any experimental operation pursuant to S.73.262.
- (7) Any other entries required by the current instrument of authorization of the station and the provisions of this subpart.

(b) Upon completion of the inspection required by S.73.265(e), the inspecting operator shall enter a signed statement that the required inspection has been made, noting in detail the tests, adjustments, and repairs which were accomplished in order to insure operation in accordance with the provisions of this subpart and the current instrument of authorization of the station. The statement shall also specify the amount of time, exclusive of travel time to and from the transmitter, which was devoted to such inspection duties. If complete repair could not be effected, the statement shall set forth in detail the items of equipment concerned, the manner and degree in which they are defective, and the reasons for failure to make satisfactory repairs.

(c) The inspecting operator shall sign and date the maintenance log at the conclusion of each inspection. In preparing the maintenance log, original data may be recorded in rough form and later transcribed into the log, but in such cases all portions of the memorandum shall be preserved as a part of the complete log.

(d) Any necessary corrections in the maintenance log shall be made only by the inspecting operator who shall initial and date all changes prior to signing the log. If corrections or additions are made on the log after the log has been so signed explanation must be made the subject of a separate memorandum, dated and signed by the operator who made the entry in question or the station technical supervisor or by an officer of the licensee. Such memorandum should explain fully the circumstances surrounding the errors or ambiguities, and shall be affixed to the original log in question. If written and signed by other than the inspecting operator who made the entry, the memorandum shall contain a satisfactory explanation of why such signature is lacking.

TELEVISION BROADCASTING

73.672 Maintenance Log

(a) The following entries shall be made in the maintenance log:

- (1) Time and result of any auxiliary transmitter tests.
- (2) A notation each week of the calibration check of automatic recording devices as required by S.73.671(b) (3).
- (3) An entry whenever frequency measurements are made including the date performed and description of method used.
- (4) An entry of the date and time of removal from and restoration to service of any of the following equipment in the event it becomes defective:
 - (i) Visual modulation monitoring equipment or aural modulation monitor.
 - (ii) Final stage plate voltmeters of aural and visual transmitters.
 - (iii) Final stage plate ammeters of aural and visual transmitters.
 - (iv) Visual and aural transmitter transmission line radio frequency voltage, current, or power meter.
- (5) The entries required by S.17.49(d) of this chapter concerning quarterly inspections of the condition of tower lights and associated control equipment and an entry when towers are cleaned or repainted as required by S.17.50 of this chapter.
- (6) Entries shall be made so as to describe fully any operation for testing and maintenance purposes.
- (7) Whenever the calibration of the output power meter is made as required by S.73.689 (b) (1) and (2) with a brief description of the method and results
- (8) Any other entries required by the instrument of authorization or the provisions of this part.

(b) The inspecting operator shall sign and date the maintenance log at the conclusion of each inspection. In preparing the maintenance log, original data may be recorded in rough form and later transcribed into the log, but in such cases all portions of the original memorandum shall be preserved as a part of the complete log.

(c) Any necessary corrections in the maintenance log shall be made only by the inspecting operator who shall initial and date all changes prior to signing the log. If corrections or additions are made on the maintenance log after the log has been so signed, explanation must be made the subject of a separate memorandum, dated and signed by the operator who made the entry in question or the station technical supervisor or by an officer of the licensee. Such memorandum shall explain fully the circumstances surrounding the errors or ambiguities, and shall be affixed to the original log in question. If written and signed by other than the inspecting operator who made the entry the memorandum shall contain a satisfactory explanation of why such signature is lacking.

SAMPLE AM MAINTENANCE LOG

I. GENERAL

Attached is a sample maintenance log which fulfills the Commission's overall maintenance logging requirements. This form was developed as an example of how the logging requirements may be fulfilled. There are, undoubtedly numerous other ways that the maintenance log could be prepared and still comply with the rules. The Commission does not prescribe, authorize, or approve the form in which logs must be kept. It is the responsibility of each licensee to develop a form which will comply with all the logging requirements for a particular type of facility as set forth in the Rules. *All entries must be made by the holder of a valid first class radio telephone license.*

Although the attached sample log contains all the entries necessary for compliance with the Commission's maintenance log requirement, it does not provide for additional information which may be required by the Station's instrument of authorization. Such requirements should, of course, be added to those specified. Although this sample log was prepared for a remotely controlled directional AM station, it may be easily modified by following the directions indicated below.

II. LOG COMPOSITION

- A. The first section of the sample log pertains to the equipment inspection statement. A transmitting system and monitoring equipment inspection must be made for all AM stations at least once each calendar week at intervals of at least five days apart upon completion of which a statement must be inserted in this section attesting to the fact that the inspection has been made, noting in detail any tests, adjustments, repairs and any other maintenance work which was performed to assure compliance with the rules. If complete repairs were not effected, the statement must set forth in detail the items of equipment concerned, the manner and degree in which they are defective, and the reasons for failing to make satisfactory repairs. The log entry should include the time of arrival at the transmitter and the time the inspection was concluded.

(1) *Directional (not remote controlled)*

At least once each day, five days per week, entries must be made of the following observations: 1) common point current; 2) base currents, their ratios, and the deviation of such ratios, in percent, from values specified in the license; 3) remote base current or sample current indications, the computed or indicated ratios of those currents, and the deviation of such ratios, in percent, from values specified in the license; and 4) phase indications (except when the station license specifies less frequent readings).

(2) *Directional Stations (remote-controlled).*

Those stations who do not employ an FCC Type Approved Remote Antenna Monitor must, within 2-hours after the activation of each directional pattern, enter the observations as noted in (1) above (if operation is less than one-hour no entries are required). Stations utilizing FCC Type Approved Remote Antenna Monitors must enter every second day, for each directional pattern, with no more than 54 hours elapsing between successive readings for each pattern, the meter observations as noted in (1) above.

- B. The second section deals with inoperative monitoring equipment and meters and is self-explanatory.
- C. The third section pertains to the weekly remote meter calibration requirements. It should be noted that in reading the remote and main meters, the log entries should be made prior to re-calibration. Make the changes noted below for the different types of operation:

(1) *Non-directional (not remote-controlled)*

Delete entries in sample log dealing with remote control (R/C) meter calibration, antenna monitor, towers #1 and 2; and insert in lieu thereof ANTENNA CURRENT.

(2) *Non-directional (Remote-controlled)*

Follow above but retain entries dealing with calibration of remote control (R/C) meters.

(3) *Directional (not remote-controlled)*

Delete entries dealing with calibration of remote control (R/C) metering system.

(4) *Directional (remote-controlled)*

Follow sample log.

Stations using automatic logging equipment to record the operating parameters of the transmitter and antenna system should insert calibration entries in this section.

- D. The fourth section pertains to the external frequency measurement of the main and auxiliary transmitters. Effective November 21, 1973, the frequency monitor requirement has been deleted, and the frequency of the above transmitters must be measured at least once every forty days. Entries pertaining to these measurements should be recorded in this section.
- E. The fifth section (directional stations only) deals with field intensity entries. Directional stations operating with third-class license holders with broadcast endorsement are required to make field intensity measurements at the designated monitoring points at least once each 30 days and the results entered in the maintenance log. Any other field intensity measurements as required by the instrument of authorization should be recorded in this section. Non-directional stations should delete this section.
- F. The sixth section deals with entries during the experimental period, ie, testing the main and auxiliary transmitter, routine maintenance and repairs, including all other entries which are required during the non-programming portion of the day or by the instrument of authorization.
- G. The final section of the sample log deals with entries made of the quarterly tower-light and lighting control inspection.

SAMPLE AM MAINTENANCE LOG

EQUIPMENT INSPECTION

Date:	Time On:	Time Off:
Maintenance Performed (Note repairs and meter readings.):		
		Signature:

EQUIPMENT STATUS

Defective Equipment	Removed from Service		Restored to Service		Signature
	Date	Time	Date	Time	
Antenna Monitor					
Modulation Monitor					
Final Plate Ammeter					
Final Plate Voltmeter					
Base Current Ammeter					
Common Point Ammeter					

WEEKLY CALIBRATION ADJUSTMENTS

Date	Time	Meter Function	Main Meter Before Cal.	Remote Meter Before Cal.	Calibrated	Signature
		Ant. Mon.				
		Auto. Log				
		R/C Meters				
		Tower #1				
		Tower #2				
		Other ()				

MONTHLY FREQUENCY MEASUREMENT

Date	Time	Measurement Procedure and Result	Signature

MONITORING-POINT MEASUREMENTS

Date	Time	Field Intensity	Remarks	Signature

EXPERIMENTAL OPERATION

Date	Time	Description and Results
		Signature:

QUARTERLY TOWER-LIGHT AND LIGHTING-CONTROL INSPECTION

Date	Time	Description and Results	Signature

SAMPLE FM MAINTENANCE LOG

I. LOG COMPOSITION

All entries in the maintenance log must be made by the holder of a valid first-class radiotelephone license.

- a. The first section of the sample log pertains to the equipment inspection statement. An inspection must be made of the transmitter and monitoring equipment at least once during each calendar week; the interval between successive inspections must be at least five days. Upon completion of the inspection, a statement must be inserted in this section attesting to the fact that the inspection has been made and noting in detail any tests, adjustments, repairs, or other maintenance work which was performed to assure compliance with the rules. If complete repairs were not effected, the statement must set forth in detail the items of equipment concerned, and the manner and degree in which they are defective, and the reasons for failure to make satisfactory repairs. The long entry should include the time the first-class license holder arrived at the transmitter and the time the inspection was concluded.
- b. The second section deals with inoperative monitoring equipment and meters, and is self explanatory.
- c. The third section pertains to remote meter calibration. It should be noted that in reading the remote meters, the long entries should be made prior to calibration. Calibration compliance should be noted in this section. Those stations employing remote control (R/C) should list individual meters in lieu of the single entry. Automatic logger calibration should also be entered here.
- d. The fourth section pertains to the external frequency measurement of the main and auxiliary transmitters. Effective November 21, 1973, all frequency monitor requirements for the FM service have been deleted and all licensees must make an external frequency measurement of the main, auxiliary, SCA and pilot subcarriers at least once each 40 days.
- e. The fifth section deals with entries required during the experimental period, ie, testing the main and auxiliary transmitters, routine maintenance and repairs, including all other entries which are required during the non-programming portion of the day or the instrument of authorization.
- f. The sixth and final section of the sample log deals with entries made of the quarterly tower-light and lighting control inspection.

SAMPLE FM MAINTENANCE LOG

DAILY EQUIPMENT INSPECTION

[illegible]

EQUIPMENT STATUS

Defective Equipment	Removed from Service		Restored to Service		Signature
	Date	Time	Date	Time	
Modulation Monitor					
Final Plate Voltmeter					
Final Plate Ammeter					
Transmission Line Meter					

WEEKLY CALIBRATION ADJUSTMENTS

Date	Time	Meter Function	Main Meter Before Cal.	Remote Meter Before Cal.	Calibrated	Signature
		R/C Meters				
		Auto. Log				
		Other ()				

FREQUENCY MEASUREMENT

Date	Time	Measurement Procedure and Result	Signature

EXPERIMENTAL OPERATION

Date	Time	Description and Results
		Signature: _____

QUARTERLY TOWER-LIGHT AND LIGHTING-CONTROL INSPECTION

Date	Time	Description and Results	Signature

SAMPLE TV MAINTENANCE LOG

I. Log Composition

- a. The first section deals with inspection of transmitting facilities for remotely controlled television stations. The remote control and monitoring equipment must be calibrated and tested and the television broadcast transmitter inspected as often as is necessary to insure compliance with the rules but at least five days each week, with an interval of not less than 12 hours elapsing between successive inspections. However, if the station is equipped with such additional transmitting and/or switching facilities as may be necessary to insure that malfunctioning of the main visual or aural transmitters does not preclude continued operation at a transmitter power output level of not less than 20 percent of the authorized power of the malfunctioning transmitter, these transmitter inspections may be reduced to one each seven days. The facilities required for such continued operation shall be activated automatically by the malfunctioning of the main transmitter, or manually from the remote control point. Upon completion of the calibration, testing and inspection requirement enter a signed statement in the log that the required tests and inspection have been made, noting in detail the tests, adjustments and repairs which were made to insure proper operation. Specify the amount of time, exclusive of travel time to and from the transmitter, which was devoted to this task. If complete repair could not be effected, the statement shall set forth in detail the items of equipment concerned, the nature of the defect and the reasons for failure to make the needed repairs.
- b. The second section deals with defective monitoring equipment and is self explanatory.
- c. The third section deals with the calibration of meters and the remote control system as outlined above.
- d. The fourth section pertains to the external frequency measurement of the main and auxiliary transmitters. Effective November 21, 1973, the frequency monitor requirement has been deleted and all licensee must make a frequency measurement at least once every forty days. Entries pertaining to this should be recorded in this section.
- e. The fifth section deals with operation during non-programming or the experimental period. Entries such as testing the main and auxiliary transmitters, routine maintenance and repairs, including all other entries which may be required during the non-programming portion of the day or the instrument of authorization should be made in this section.
- f. The sixth and final section of the sample log deals with entries made of the quarterly tower light and lighting control inspection.

SAMPLE TV MAINTENANCE LOG

EQUIPMENT INSPECTION

[illegible]

INOPERATIVE EQUIPMENT

Item	Removed from Service		Restored to Service		Signature
	Date	Time	Date	Time	
Visual Modulation Monitor					
Aural Modulation Monitor					
Final Aural Plate Voltmeter					
Final Aural Plate Ammeter					
Final Visual Plate Voltmeter					
Final Visual Plate Ammeter					
Visual Transmission Line Meter					
Aural Transmission Line Meter					

WEEKLY CALIBRATION ADJUSTMENTS

Date	Time	Meter Function	Main Meter Before Cal.	Remote Meter Before Cal.	Main Meter After Cal.	Remote Meter After Cal.	Signature

FREQUENCY MEASUREMENT

Date	Time	Measurement Procedure and Result	Signature

EXPERIMENTAL OPERATION

Date	Time	Description and Results
		Signature:

QUARTERLY TOWER-LIGHT AND LIGHTING-CONTROL INSPECTION

Date	Time	Description and Results	Signature

