

RADIO—ADMINISTRATION
MICROWAVE RADIO
PERFORMANCE RECORD—FORM E-4101

1. GENERAL

1.01 This section describes Form E-4101, which provides a means for recording troubles and other items affecting the performance or operation and maintenance of point-to-point radio systems. The form also may be used for other types of radio, carrier, and voice systems and circuits or services, as occasion may arise.

1.02 This section is reissued to indicate the title change from Form E-4104 to Form E-4101.

1.03 For the purpose of this form, the term *point-to-point radio systems* includes microwave, VHF, and UHF systems used to provide message, television, data, or other forms of service. Information that is derived from this form is used to acquire statistical data on the reliability of the various types of systems used for service in several frequency bands. It is also helpful as a guide in the development of new systems and in the improvement of existing systems.

1.04 It is not necessary to provide information on all point-to-point systems that are in operation. The American Telephone and Telegraph Company will request, by letter, reports on those systems which are of current interest in providing representative results for the Bell System as a whole. In addition, local instructions may call for data on other systems for specific studies. Reports should be forwarded monthly. If there is no activity to report, the form should state, "Nothing to report."

1.05 To illustrate use of the form, as well as the general type of information to be recorded, a sample form has been completed and is included in this section. This form has been revised from the one that was attached to Issue 1 of this practice.

2. DESCRIPTION OF ENTRIES

2.01 Appropriate entries should be made in the spaces provided at the bottom of the form, to identify the operating company, location, radio system involved, and monthly period covered by the particular record. All entries in the upper portion of the form should be made in chronological order for the entire system, using additional sheets only if space does not permit recording a full month's data on one sheet. Do not use separate sheets for each station on the route.

2.02 *Column 1—Date:* Indicate for each entry the date when trouble was reported or observed, or the date when routine maintenance or other work was done.

2.03 *Column 2—Time From:* Enter the time at which a trouble condition or a period of lost service actually began. For routine maintenance, enter the time at which it was necessary to remove regular or standby equipment from service.

2.04 *Column 3—Time To:* Enter the time at which lost service was actually restored or when a trouble condition which did not result in lost service was cleared. For routine maintenance, enter the time at which regular or standby equipment was restored to service, so that the length of time during which diversity or standby equipment was not available can be determined.

2.05 *Column 4—Lost Service, Hours—Minutes:* Enter the length of time during which a service provided over the system was interrupted for any cause. Enter the word "None" if service was maintained via diversity or standby equipment during periods of trouble or routine maintenance and where the alternate equipment was provided specifically for that purpose.

2.06 If service was restored or routed over facilities *not* normally intended for that

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purpose, show the time as *lost service* and enter the details of such action under "Remarks" (Column 6). The remarks should include an estimate of the time, if any, that normal restoration was delayed by such action.

2.07 On systems not provided with standby or diversity facilities, enter the period of lost service due either to system failure or maintenance work, even though the interruption was covered by a release.

2.08 For the purpose of this practice, all system failures are to be recorded as lost service even though the interruption occurs outside the period referred to as "Normal Business Day" (N.B.D.) in other plant practices covering the Toll Service Results Plan.

2.09 *Column 5—Trouble Location and Trouble Reported or Found:* Enter the name of the station involved, if applicable, or otherwise identify the location where trouble occurred. Identify the item of equipment in which trouble occurred and briefly describe the nature of the trouble, such as electron tube failures, etc. Use channel numbers, R-unit numbers, or frequencies to identify channels

in trouble. Do not record by bay number or alarm system number unless a clarifying sketch is attached. Include reports on all conditions which result in lost service or in failure of regular or standby radio equipment. Report and identify radio switching, alarm, or order circuit troubles that affect the reliability of the associated radio system.

2.10 To the greatest extent possible, describe any conditions that may help identify the reason for any lost service where the exact cause is unknown. Examples of the latter might be: fading due to heavy rain, or intermittent conditions of equipment trouble which were later isolated and identified as the probable cause of earlier failures.

2.11 *Column 6—Work Performed and Remarks:* Enter a brief description of work performed and identify items replaced or repaired. It is not necessary to list all tube replacements or minor items of repair work unless they seem unusual. Use this column to amplify, as necessary, any of the previous entries. Remarks which will allow classifying the cause of outages into major categories such as propagation, radio equipment, or primary power source failures will be helpful.

POINT-TO-POINT RADIO SYSTEMS

Date	Time		Lost Service Hrs-Mins	Trouble Location and Trouble Reported or Found	Work Performed and Remarks
	From	To			
1	2	3	4	5	6
7-5	2:00P	5:35P	None	Norton - Trans. Klystron failed, Channel 2B. Switched to diversity channel.	Replaced Klystron.
7-7	8:25A & 1:10P	12:20P 4:09P	None	Logan - Routine Mtnc. Trans. 3B & 4B Rec. 3A & 4A.	Replaced Trans. 4B baseband Amp. which would not meet Freq. response requirements. RCVR 4A Linearity improved from 4% to 1%.
7-12	11:45A	12:25P	OH-40M	Norton - Engc. engine did not start when commercial power failed.	None - AC power to station came back on before man arrived. He could not find reason for failure of engine to start. Engine to be routined.
7-17	10:00P	10:08P	OH-8M	Line open west of Eagle Ridge.	None - Came clear, heavy rain in Area.
7-25	8:45A	10:07A	None	Eagle Ridge - AFC. failed, causing switch to turn off Trans. 1A. Working on diversity channel.	Retuned Trans. and cleaned contacts on AFC relay.

System Route Name Center City - Marysville
 Type of Radio Equipment Western Electric - TJ
 Number of Hops 4
 Alarm Center Location Center City

Company ABC Bell Tel. Co.
 Oper. Area or Areas Southern
 Month-Year July 1963
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