

**SWITCHING SYSTEM MANAGEMENT**  
**NO. 5 CROSSBAR (2-WIRE)**  
**TRAFFIC MEASUREMENTS**  
**NETWORK MAINTENANCE REGISTER OPERATION AND PROVISION**

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**1. GENERAL**

**1.01** This section describes the various No. 5 crossbar network maintenance measurement facilities. The measured data are required by network administration, maintenance, and design engineering groups for various uses.

**1.02** Whenever this section is reissued, the reason for reissue will be listed in this paragraph.

**1.03** Registers and 5-digit counters are provided in the No. 5 crossbar office for the use of the network maintenance personnel in trouble analysis and central office (CO) maintenance. These registers are also used by the network administrator and the network design engineer when investigating missed load service objectives or other problems of equipment utilization.

**1.04** This section is in accordance with the latest Bell System Practices and drawing issues as listed in Part 3 (References).

**1.05** References in this section to methods, planning, data requirements, service levels, and equipment quantities are based on American Telephone and Telegraph Company recommendations.

**1.06** One network maintenance register cabinet will accommodate one No. 5 crossbar marker group of six dial tone markers and eight completing markers. When a marker group has more than eight completing markers, a second register cabinet is required.

**1.07** The No. 14 message register has four number discs that advance from 0000 to 9999 and recycle. A magnetic counter (or 5-digit counter) with five number discs is used to register up to 10<sup>5</sup> operations (00000 to 99,999) maximum. To

register operations which may exceed a total of 10<sup>5</sup> maximum, a pulse divider circuit using a 2-wheel magnetic counter provides a single output pulse to a totalizing counter for each 100 input pulses it receives. The capacity of the associated totalizing counter is increased by a factor of 100, and the right-hand digit of the totalizing counter indicates 100s of operations. The registers and counters are not resettable, and they recycle to zero after attaining their maximum indication.

**1.08** No provision is made for recording the register readings by photographic processes. The register cabinet was designed for manually reading the registers.

**2. NETWORK MAINTENANCE REGISTER PROVISION AND DESCRIPTION**

**2.01** In this section, each register is described using the following format:

**Item Number Column:** Item number of the register which agrees with the index.

**Register Column:** The title of each register.

**User Column:** The primary users of the data are listed first. The users are abbreviated as follows:

Network Administration — NA

Network Maintenance — NM

Network Design Engineer — NDE

Also in this column are the basis for register provision and the designation of the particular register.

**Description Column:** The information listed under this column consists of the circuit scoring the register, whether an alarm (major or minor) is sounded, and a description of the recorded data. All operations are on service calls unless otherwise noted.

<u>ITEM NO.</u>	<u>REGISTER DESIGNATION</u>	<u>USER</u>	<u>DESCRIPTION</u>
<b>A. COMMON CONTROL EQUIPMENT REGISTERS</b>			
<b>(1) Completing or Combined Markers</b>			
a.	<i>First Trial Failures (MTR)</i> One register provided per completing (CM) or combined (COM) marker.	NA, NM	MTR register scores over the TR lead on the CM or combined (COM) marker on a first trial service call failure. A minor alarm sounds in the central office (CO) maintenance center.
b.	<i>Second Trial Failures (CMST)</i> One register provided per marker group (MG).	NA, NM	CMST register scores over the MST lead on CM or COM second trial service call failure after a trouble record request is made. A major alarm sounds in the CO maintenance center.
c.	<i>Glare Detection (GRA)</i> One register provided per MG.	NA, NM	GRA register scores over the GRA lead when the marker encounters glare on an outgoing call using a two-way trunk, and route advances to an alternate route. (Does not score on test calls when ZYB option is provided).
d.	<i>Customer Reorders (GRO)</i> One register provided per MG.	NA, NM	GRO register scores over the GRO lead when the marker encounters glare on an outgoing call using a two-way trunk and sets the sender to reorder. (Does not score on test calls when ZYB option is provided).
e.	<i>Ground Test Failures (GTF)</i> One register provided per MG.	NA, NM	GTF register scores over the GTF lead when the marker encounters a ground test or loop test failure (does not score on test calls).
f.	<i>Completing Marker Peg Count (TPC)</i> One register provided per CM or COM type.	NA, NM	TPC register scores over the TPC lead when a CM or COM is seized for a service or test call.
g.	<i>Completing Marker Totalizer (TTC)</i> One register provided per maximum of two CM's or COM's.	NA, NDE, NM	TTC register scores once for every 100 registrations of the TPC register.
b.	<i>Wide Band CM First Trial Failures (WTR-0, WTR-1, WTR-2)</i> One register provided per marker arranged for Wide Band (WB) per class of service.	NA, NDE, NM	WTR-0, 1, or 2 registers scored over the WTR-0, 1 or 2 leads when a first trial failure occurs.

<u>ITEM NO.</u>	<u>REGISTER DESIGNATION</u>	<u>USER</u>	<u>DESCRIPTION</u>
<i>i.</i>	<i>WB-CM Second Trial Failures (WMST0, WMST1, WMST2)</i> One register provided per marker group arranged for WB service.	NA, NDE, NM	WTPC0, 1, or 2 register scores over the WMST0, 1, or 2 leads when the WB-CM second trial failures occur.
<i>j.</i>	<i>WB-CM Peg Count (WTPC0, WTPC1, WTPC2)</i> One register provided per marker arranged for WB service per class of service.	NA, NDE, NM	WTPC0, 1, or 2 register scores over the WTPC0, 1, 2 leads on all WB-CM seizures on the WB switching class basis.
<i>k.</i>	<i>Totalizer Register For WTPC Register (WTTC0, WTTC1, WTTC2)</i> One register provided per marker group (MG) for WB service per class of service.	NA, NDE, NM	WTTC0, 1, or 2 register scores once for every 100 registrations of WTPC0, 1, or 2 registers.
<b>(2) Dial Tone Markers</b>			
<i>a.</i>	<i>Dial Tone Marker First Trial Failures (DMTR)</i> One register provided per dial tone marker (DM).	NA, NM	DMTR register scores over the TR lead when a DM encounters a first trial service call failure. A minor alarm sounds.
<i>b.</i>	<i>DM Second Trial Failures (DMST)</i> One register provided per marker group.	NA, NM	DMST register scores over the MST Lead when the DM encounters a second trial service call failure. A <i>major alarm sounds</i> .
<i>c.</i>	<i>DM Peg Count (DTPC)</i> One register provided per DM.	NA, NDE, NM	DTPC register scores over the DTPC lead on test or service calls when the DM or COM is seized.
<i>d.</i>	<i>Totalizer For DM-DTPC Registers (DTTC)</i> One register provided per maximum 6 COM's or 4 DM's.	NA, NDE, NM	DTTC register scores once for every 100 registrations of the DTPC register.
<b>(3) Incoming Registers</b>			
<i>a.</i>	<i>Incoming Register Peg Count (IRPC)</i> One register provided per IR group per associated marker connector (MC).	NA, NM	IRPC register scores over the PCI lead to record the number of incoming register seizures on service calls.

<u>ITEM NO.</u>	<u>REGISTER DESIGNATION</u>	<u>USER</u>	<u>DESCRIPTION</u>
<i>b.</i>	<i>Totalizer Register For IRPC Register (IRTC)</i> One register provided per IR group per associated MC.	NA, NM	IRTC scores once for every 100 registrations of the IRPC register.
<i>c.</i>	<i>Frequency Shift Pulsing IR Peg Count (FSIR PC)</i> One register provided per IRMC per FSP-IR group.	NA, NM	FSIR PC register scores over the PCI lead to record the number of FSP-IR seizures on service calls.
<i>d.</i>	<i>Totalizer Register for FSIR PC Register (FSIR TC)</i> One register provided per marker group.	NA, NM	FSIR TC register scores once for every 100 registrations of the FSIR PC register.
<i>e.</i>	<i>FSP-IR First Trial Failures (R1F)</i> One register provided per pulse lengthening circuit.	NA, NM	R1F register scores over the 4 lead when a FSP IR encounters trouble on first trial service calls.
<i>f.</i>	<i>FSP-IR Second Trial Failures (R2F)</i> One register provided per marker group.	NA, NM	R2F register scores over the 2F lead when trouble is encountered on second trial service calls.
<i>g.</i>	<i>Incoming Reorder Requests (RO)</i> One register provided per marker group.	NA, NM	RO register scores over the RO lead when the CM or COM encounters a reorder request from an IR on service calls.
<b>(4) Senders</b>			
<i>a.</i>	<i>Sender Time-out or Trunk Guard Failures (SS)</i> One register provided per sender group.	NA, NM	SS register scores over the SS0 to 11 leads when a sender fails to complete its functions within its allotted operating time or detects a trunk guard test failure on service calls.
<i>b.</i>	<i>Outgoing Sender Group Peg Count (OSG)</i> One register provided per marker per sender group.	NA, NM	OSG register scores over the OG 00 to 11 leads when a marker selects a sender associated with a particular sender group on service calls.
<i>c.</i>	<i>Totalizer Register for OSG Register (OSG TC)</i> One register provided per sender group.	NA, NM	OSG TC register operates once for every 100 registrations of OSG register.
<i>d.</i>	<i>Automatic Intercept Service Sender Peg Count (AI)</i> One register provided per AIS sender group.	NA, NM, NDE	AI register scores over the AI lead when an AIS sender without line link pulsing (LLP) is seized on service calls. (A and M only).

<u>ITEM NO.</u>	<u>REGISTER DESIGNATION</u>	<u>USER</u>	<u>DESCRIPTION</u>
<i>e.</i>	<i>AIS Sender Time-outs (AIS)</i> One register provided per AIS sender group.	NA, NM, NDE	AIS register scores over the SS lead when an AIS sender without LLP times-out. (A and M only).
<i>f.</i>	<i>International Direct Distance Dialing Sender Time-Outs (IDTO)</i> One register provided per MF sender group originating IDDD-LAMA calls.	NA, NM	IDTO register scores over the IDTO lead when the IDDD sender times-out when an overflow condition to the gateway office is encountered following first stage outpulsing.
<i>g.</i>	<i>CAMA Sender Time-Outs (NPA)</i> One register provided per marker group.	NA, NM	NPA register scores over the NPA lead when a CAMA sender times-out before a position has been seized on a service call.
<i>b.</i>	<i>Frequency Shift Pulsing Sender First Trial Failures (S1TF)</i> One register provided per marker group.	NA, NM	S1TF register scores over the 1TF lead when a FSP sender encounters trouble on first trial service calls.
<i>i.</i>	<i>FSP Sender Second Trial Failures (S2TF)</i> One register provided per marker group.	NA, NM	S2TF register scores over the 2TF lead when a FSP sender encounters trouble on second trial service calls.
<b>(5) Automatic Call Distributing Markers</b>			
<i>a.</i>	<i>ACD Marker Peg Count (CDPC)</i> One register provided per ACD marker.	NA, NM	CDPC register scores over the DTPC lead when the ACD marker is seized on service and test calls.
<i>b.</i>	<i>Totalizer Register For CDPC Register (CDPCT)</i> One register provided per ACD marker group.	NA, NM	CDPCT register scores once for every 100 registrations of the CDPC register.
<i>c.</i>	<i>ACD Marker First Trial Failures (CDTR)</i> One register provided per ACD marker.	NA, NM	CDTR register scores over the TR lead when an ACD marker encounters first trial service call failures after a marker calls in the trouble recorder before regular disconnect. Does not operate on test calls or when the ACD marker is made busy.
<i>d.</i>	<i>ACD Marker Second Trial Failures (CDST)</i> One register provided per ACD marker group.	NA, NM	CDST register scores over the MST lead when an ACD marker encounters second trial service call failures after a marker calls in the trouble recorder before regular disconnect. Does not operate on test calls or when the ACD marker is made busy.

<u>ITEM NO.</u>	<u>REGISTER DESIGNATION</u>	<u>USER</u>	<u>DESCRIPTION</u>
<b>(6) Pretranslators</b>			
<i>a.</i>	<i>Pretranslator First Trial Failures (PTR)</i> One register provided per pretranslator.	NA, NM, NDE	PTR register scores over the TR lead when the pretranslator encounters a first trial service call failure.
<i>b.</i>	<i>Pretranslator Second Trial Failures (PST)</i> One register provided per marker group.	NA, NM, NDE	PST register scores over the PST lead when the pretranslator encounters trouble on a second trial service call failure.
<i>c.</i>	<i>IDDD Pretranslator First Trial Failures (IPTR)</i> One register provided per IDDD pretranslator.	NA, NM	IPTR register scores over the TR lead when the pretranslator encounters trouble on first trial service call failures when a trouble record is requested before disconnect.
<i>d.</i>	<i>IDDD Pretranslator Second Trial Failures (IPST)</i> One register provided per marker group.	NA, NM	IPST register scores over the PST lead when a pretranslator encounters trouble on second trial service call failures when a trouble record is requested before disconnect.
<i>e.</i>	<i>IR Pretranslator First Trial Failures (IRPTR)</i> One register provided per IR pretranslator.	NA, NM	IRPTR register scores over the TR lead on first trial service call failures when a trouble record is requested before disconnect.
<i>f.</i>	<i>IR Pretranslator Second Trial Failures (IRPST)</i> One register provided per marker group.	NA, NM	IRPST register scores over the PST lead on second trial service call failures when a trouble record is requested before disconnect.
<b>(7)</b>	<b>Incoming Register Link Release Failures (LR)</b> One register provided per marker group.	NA, NM	LR register scores over the LRF lead when trouble develops in the IRL. A trouble record is requested on first or second trial service calls.
<b>(8) Master Timing Frame</b>			
<i>a.</i>	<i>Master Timing Circuit Failures (MTTR(O) or (E))</i> Two registers provided per marker group.	NA, NM	MTTR(O-Odd) or MTTR(E-Even) register scores over the MTTR(O) or (E) leads when time-out failures caused by delay in connecting to an AMA recorder or difficulty in completing end-of-tape perforations while connected to an AMA recorder (except on a recorder test call with no recorder waiting for the <i>odd</i> master timing circuit).

<u>ITEM NO.</u>	<u>REGISTER DESIGNATION</u>	<u>USER</u>	<u>DESCRIPTION</u>
(9)	<b>Trouble Recorder</b> <i>Trouble Recorder Peg Count (TRE)</i> One register provided per marker group.	NM	TRE register scores over the TRE lead when a trouble record card is perforated (except during a trouble recorder test). Does not score when trouble recorder is made busy.
<b>B. AUTOMATIC MESSAGE ACCOUNTING EQUIPMENT</b>			
<b>(1) ANI Transverters – Paper and Magnetic Tape</b>			
a.	<i>ANI TV First Trial Failures (ATTR)</i> One register provided per ANI transverter either paper or magnetic tape.	NA, NM	ATTR register scores over the TTR lead on first trial service call failures with a trouble record card requested.
b.	<i>ANI TV Second Trial Failures (ATST)</i> One register provided per marker group either paper or magnetic tape.	NA, NM	ATST register scores over the TST lead on second trial service call failures with a trouble record card requested.
c.	<i>ANI TV Peg Count (TVPC)</i> One register provided per ANI transverter either paper or magnetic tape.	NA, NM	TVPC register scores over the PC lead on all ANI TV seizures on service calls.
d.	<i>Totalizer Register For TVPC Register (TVTC-ANI)</i> One register provided per <i>all</i> ANI-TVs in a marker group either paper or magnetic tape.	NA, NM, NDE	TVTC-ANI register scores once for every 100 registrations of the associated TVTC-ANI registers.
<b>(2) CAMA Transverters – Paper And Magnetic Tape</b>			
a.	<i>CAMA-TV First Trial Failures (CTTR)</i> One register provided per CAMA-TV either paper or magnetic tape.	NA, NM	CTTR register scores over the TTR lead on first trial service call failures with a trouble record card requested before disconnect.
b.	<i>CAMA-TV Second Trial Failures (CTST)</i> One register provided per marker group either paper or magnetic tape.	NA, NM	CTST register scores over the TST Lead on second trial service call failures with a trouble record card requested before disconnect.
c.	<i>CAMA-TV Bulk Billed Call Free (CBBF)</i> One register provided for <i>all</i> CAMA-TV's either paper or magnetic tape.	NA, NM	CBBF register scores over the BBF lead when a bulk billed service call encounters a second trial failure.

<u>ITEM NO.</u>	<u>REGISTER DESIGNATION</u>	<u>USER</u>	<u>DESCRIPTION</u>
<i>d.</i>	<i>CAMA-TV Peg Count (TVPC)</i> One register provided per CAMA transverter either paper or magnetic tape.	NA, NM	TVPC register scores over the PC lead when a CAMA-TV is seized for a service call.
<i>e.</i>	<i>Totalizer Register For CAMA-TVPC Register (TVTC-CAMA)</i> One register provided per all CAMA transverters either paper or magnetic tape.	NA, NM	TVTC-CAMA scores once for every 100 registrations of its associated CAMA-TVPC register.
<i>f.</i>	<i>CAMA Two-Line Entry Calls (2LCPC)</i> One register provided per CAMA transverter either paper or magnetic tape.	NA, NM	2LCPC register scores over the 2L lead on all AMA calls, other than message billing index (MBI) 9 calls, resulting in a 2-line AMA recorder entry.
<i>g.</i>	<i>Totalizer Register For 2LCPC Register (2LCTC)</i> One register per <i>all</i> CAMA-TV's either paper or magnetic tape.	NA, NM	2LCTC register scores once for every 100 registrations of the associated 2LCPC registers.
<i>b.</i>	<i>CAMA Toll Calls Free-Magnetic Tape (CFTC)</i> One register provided for all TVs used for CAMA-MTR.	NA, NM	CFTC register scores over the FTC lead when the transfer and make-busy circuit determines on a second trial service call that the on-line recorder is in trouble.
<i>i.</i>	<i>CAMA Toll Calls-Magnetic Tape (CTC)</i> One register provided per CAMA-TV.	NA, NM	CTC register scores over the TTC lead on all CAMA toll service calls that complete in a MTR office with CAMA-TVs.
<i>j.</i>	<i>Totalizer Register For CTC Register (CTCT)</i> One register provided for all CAMA-TV's arranged for CAMA-MTR.	NA, NM	CTCT register scores once for every 100 registrations of the CTC register.
<b>(3)</b>	<b>Local AMA Transverters – Paper And Magnetic Tape</b>		
<i>a.</i>	<i>LAMA-TV First Trial Failures (TTR)</i> One register provided per LAMA transverter either paper or magnetic tape.	NA, NM	TTR register scores over the TTR lead on first trial service call failures with a trouble record requested before disconnection.

<u>ITEM NO.</u>	<u>REGISTER DESIGNATION</u>	<u>USER</u>	<u>DESCRIPTION</u>
b.	<i>LAMA-TV Second Trial Failures (TST)</i> One register provided per marker group.	NA, NM	TST register scores over the TST lead on second trial service call failures with a trouble record requested before disconnection.
c.	<i>LAMA-TV Peg Count (TVPC)</i> One register provided per LAMA-TV either paper or magnetic tape.	NA, NM	TVPC register scores over the PC lead on every LAMA-TV seizure on service calls.
d.	<i>Totalizer Register For TVPC Registers (TVTC)</i> One register provided per <i>all</i> LAMA-TV's either paper or magnetic tape.	NA, NM	TVTC scores once for every 100 registrations of the associated TVTC register.
e.	<i>LAMA Two-Line Entry Calls (2LLPC)</i> One register provided per LAMA-TV either paper or magnetic tape.	NA, NM	2LLPC register scores over the 2L lead on all AMA calls, other than MBI 9 calls, resulting in a 2-line AMA recorder entry.
f.	<i>Totalizer Register For 2LLPC Registers (2LLTC)</i> One register provided for all LAMA-TV's either paper or magnetic tape operation.	NA, NM, NDE	2LLTC scores once for every 100 registrations of the associated 2LLPC registers.
g.	<i>LAMA-BBF Calls (LBBF)</i> One register provided for all LAMA-TV's either paper or magnetic tape operation.	NA, NM	LBBF register scores over the BBF lead on all AMA calls, other than MBI 9 calls, resulting in a 2-line AMA recorder entry.
h.	<i>LAMA-Free Toll Calls – Magnetic Tape (LFTC)</i> One register provided for <i>all</i> TV's used for LAMA-MTR operation.	NA, NM	LFTC register scores over the FTC lead when the transfer and make-busy circuits determines on a second trial service call that the on-line recorder is in trouble.
i.	<i>LAMA Toll Calls – Magnetic Tape (LTC)</i> One register provided per TV used for LAMA-MTR operation.	NA, NM	LTC register scores over the TTC lead on a toll service call in a MTR office.
j.	<i>Totalizer Register For LTC Register (LTCT)</i> One register provided per <i>all</i> TV's arranged for LAMA-MTR operation.	NA, NM	LTCT register scores once for every 100 registrations of the associated LTC registers.

<u>ITEM NO.</u>	<u>REGISTER DESIGNATION</u>	<u>USER</u>	<u>DESCRIPTION</u>
<b>(4) AMA Recorders – Paper Tape</b>			
a.	<i>AMA Recorder Failures (RTR)</i> One register provided per AMA recorder	NA, NM	RTR register scores over the RTR lead when the AMA recorder is unable to complete its functions within an allotted time interval following a request for a trouble record card.
b.	<i>AMA Recorder Peg Count (REC PC)</i> One register provided per AMA recorder.	NA, NM, NDE	REC PC register scores over the PC lead to record the number of AMA recorder seizures.
c.	<i>Totalizer Register For REC PC Registers (REC-PCT)</i> One register provided per ten AMA recorders and emergency recorder.	NA, NM, NDE	REC PCT scores once every 100 registrations of the associated REC PC register(s).
<b>(5) AMA Recorders – Magnetic Tape</b>			
a.	<i>AMA Recorder A and B (MRTA, MRTB)</i> Two registers provided per marker group arranged for AMA-MTR operation.	NA, NM, NDE	MRTA or MRTB register scores over the MRTA or MRTB leads each time a trouble recorder entry is started by a recorder.
b.	<i>AMA Recorder A or B Peg Count (MRUA, MRUB)</i> Two registers provided per marker group arranged for AMA-MTR operation.	NA, NM, NDE	MRUA or MRUB register scores over the MRUA or MRUB leads each time the AMA recorder A or B is seized for a service call.
c.	<i>Trunk Control Peg Count (REC PC)</i> One register provided per trunk control.	NA, NM, NDE	REC PC register scores over the PC lead when the associated trunk control circuit puts an entry on the magnetic tape.
d.	<i>Totalizer Register For REC PC Register (REC PCT)</i> One register provided per ten trunk control circuits.	NA, NM, NDE	REC PCT register scores once for every 100 registrations of the associated REC PC register(s).
e.	<i>AMA Recorder Transfer (MRXR)</i> One register provided per marker group.	NA, NM	MRXR register scores over the MRXR lead on each transfer or emergency transfer attempt by an AMA recorder.

<u>ITEM NO.</u>	<u>REGISTER DESIGNATION</u>	<u>USER</u>	<u>DESCRIPTION</u>
<b>C. SPECIAL FEATURE REGISTERS</b>			
<b>(1) Central Office Group Alerting</b>			
<i>a. Access Group Controller (AGCA)</i>		NA, NM	AGCA register scores over the ALM lead when an alarm condition exists in the access group controller circuit.
	One register provided per access group controller circuit.		
<i>b. Load Alarms (LA)</i>		NM	LA register scores over the LA lead when a load alarm is received from an alarm sending office.
	One register provided per alarm sending office.		
<i>c. First Trial Failure Alarms On Alarm Receiving Circuit (1TF)</i>		NM	1TF register scores over the 1TF lead when first trial failure alarms are received from alarm sending offices.
	One register provided for alarm sending office.		
<b>(2) Private Branch Exchange – Automatic Identified Outward Dialing – A1 or A2 Station</b>			
<i>a. PBX-AIOD Station Identification Failure (FS)</i>		NA, NM	FS register scores over the FS lead on failures to store or failures to enter station identification (SI) information in memory.
	One register provided per PBX-AIOD A1 or A2 – SI frame.		
<i>b. AMA-Station Identification (NIR)</i>		NA, NM	NIR register scores over the NIR lead for each AMA request for station identification.
	One register provided per PBX-AIOD A1 or A2 SI frame.		
<i>c. Listed Number Billing Failures (NIRF)</i>		NA, NM	NIRF register scores over the NIRF lead on each failure encountered on AMA requests for station identification.
	One register provided per PBX-AIOD A1 or A2 SI frame.		
<i>d. Recording SI Information (PBX)</i>		NA, NM	PBX register scores over the PBX lead for A1 frame and over the PBXG lead for A2 frame on service requests to enter station identification information in memory.
	One register provided per PBX-AIOD A1 or A2 SI frame.		

<u>ITEM NO.</u>	<u>REGISTER DESIGNATION</u>	<u>USER</u>	<u>DESCRIPTION</u>
<i>e.</i>	<i>Transfer Register Link Release Failures (TLR)</i> One register provided per marker group featuring PBX-AIOD.	NA, NM	TLR register scores over the TLR lead when a trouble is encountered in the transfer register link in centrex offices where a separate register is provided to distinguish between transfer register and incoming register link failures. Also operates on a link failure after causing a trouble record request on first and second trial service calls.
<b>(3) Coin Supervisory Link Groups</b>			
<i>a.</i>	<i>Coin Overtime Machine Announcement Failures (OTM)</i> One register provided per coin supervisory link group.	NA, NM	OTM register scores over the OTM lead to record the number of transfers to an operator due to machine announcement failure following overtime deposit check with no-coin-present detected.
<i>b.</i>	<i>Coin Supervisory Time-Outs (CSTR)</i> One register provided per marker group.	NM, NDE	CSTR register scores over the TR lead when a link alarm or time-out alarm condition exists or when a premature trunk release signal is received. A major alarm sounds.
<i>c.</i>	<i>Coin Supervisory Circuit Coin Recycle Attempts (RC)</i> One register provided per coin supervisory link group.	NA, NM	RC register scores over the RC lead to record the number of coin collect or coin return recycle attempts by the coin supervisory circuit due to a stuck coin condition at a coin box station.
<i>d.</i>	<i>Coin Supervisory Circuit Recycle Failures (RCF)</i> One register provided per coin supervisory link group.	NA, NM	RCF register scores over the RCF lead on an unsuccessful attempt of coin recycle and the call is transferred to an operator.
<b>(4) Line Insulation Tests</b>			
<i>a.</i>	<i>Foreign EMF Test Cycles Completed (FEMF-LIT)</i> One register provided per LIT Frame.	NM	FEMF-LIT register scores over the FEMF lead when an L1 test cycle is completed for foreign EMF (B, C, and D ranges) or when an L1 test cycle is completed for a short and ring ground test (A and B rings). Also scores when an L1 test cycle is completed for C range or A, B, and C ranges.
<i>b.</i>	<i>Ranges A and B-LIT (SRG1-LIT)</i> One register provided per LIT frame.	NM	SRG1 register scores over the SRG1 lead when LIT cycle is completed for a short and ring ground test on A and B ranges of LIT frame.

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<i>c.</i>	<i>Range C-LIT (SRG2-LIT)</i> One register provided per LIT frame.	NM	SRG2 register is scored over the SRG2 lead when the LIT frame test cycle is completed for a short and ring ground test on C range.
<i>d.</i>	<i>LIT Test Cycles Completed (TRG-LIT)</i> One register per LIT frame.	NM	TRG register scores over the TRG lead when a LIT test cycle is completed for a tip and ring ground test (A, B, and C ranges).
<b>(5) Automatic Recycle Tests</b>			
<i>a.</i>	<i>Automatic Recycle-Announcements (ATAN)</i> One register provided per marker group.	NM	ATAN register scores over the ANN lead when an announcement is reached on automatic recycle test (ART) that is made from the master test frame (MTF). Also scores the ATTC test complete register.
<i>b.</i>	<i>ART-Busy (ATBY)</i> One register provided per marker group.	NM	ATBY register scores over the BY lead when a busy is reached on AR test that is made from the MTF. Also scores the ATTC register.
<i>c.</i>	<i>ART-Audible Ring (ATRF)</i> One register provided per marker group.	NM	ATRF register scores over the AR lead when a ring trip failure is encountered on AR tests made from the MTF. Also scores the ATTC register.
<i>d.</i>	<i>ART-Reorders (ATRO)</i> One register provided per marker group.	NM	ATRO register scores over the RO lead when a reorder is reached on AR tests made from the MTF. Also scores the ATTC register.
<i>e.</i>	<i>ART-Total Call Record (ATTC)</i> One register provided per marker group.	NM	ATTC register scores over the TC lead for every automatic recycle test that is performed on the MTF.
<b>(6) Coin Zone Circuits</b>			
<i>a.</i>	<i>CZ Circuits-CZ Sender Timed Phase (CZSR)</i> One register provided per MF sender group arranged for Coin Zone Dialing.	NA, NM	CZSR register scores over the CZSR lead when a marker encounters an all senders busy (ASB) condition in MF senders after one or more senders have timed-out while awaiting operator answer.
<b>(7) Automatic Monitor, Register and Sender Test Circuit</b>			
<i>a.</i>	<i>Incoming Calls (IR)</i> One register provided per marker group.	NA, NM	IR register scores over the IR lead on each incoming call monitored by the AMRST.

<u>ITEM NO.</u>	<u>REGISTER DESIGNATION</u>	<u>USER</u>	<u>DESCRIPTION</u>
<i>b.</i>	<i>Incoming Call Failures (IRF)</i> One register provided per marker group.	NA, NM	IRF register scores over the IRF lead on each incoming call failure detected by the AMRST.
<i>c.</i>	<i>Originating Calls (OR)</i> One register provided per marker group.	NA, NM	OR register scores over the OR lead on each originated call monitored by the AMRST.
<i>d.</i>	<i>Originating Call Failures (ORF)</i> One register provided per marker group.	NA, NM	ORF register scores over the ORF lead on each originated call failure monitored by the AMRST.
<i>e.</i>	<i>Outgoing Calls (OS)</i> One register provided per marker group.	NA, NM	OS register scores over the OS lead on each outgoing sender service call monitored by the AMRST.
<i>f.</i>	<i>Outgoing Call Failures (OSF)</i> One register provided per marker group.	NA, NM	OSF register scores over the OSF lead on each outgoing sender service call failure detected by the AMRST.
<i>g.</i>	<i>AIS Sender Failures With LLP (SS-)</i> One register provided per AIS sender group with line link pulsing (LLP).	NA, NM	SS- register scores over the SS- 00 to 11 leads when an AIS sender fails to complete its functions within its allotted operating time after marker release. Also operates on marker trunk guard test failures. These are detected failures by the AMRST.
<i>b.</i>	<i>Transfer Register Peg Count (TRPC)</i> One register provided per transfer register marker connector.	NA, NM	TRPC register scores over the PC 1 lead to record the number of times a transfer register is seized on service calls in Phase I, II, or III centrex offices while being monitored by the AMRST.
<i>i.</i>	<i>Transfer Register Reorder (TRR)</i> One register provided per transfer register group.	NA, NM	TRR register scores over the SR lead when a transfer register fails to perform its functions within the allotted operating time. Also operates in a Phase II centrex office when a transfer register fails to perform within its allotted operating time after line identification has been satisfactorily made. These are detected by the AMRST.
<i>j.</i>	<i>Totalizer Register For TRPC Register (TRTC)</i> One register provided per TR marker connector (TRMC).	NA, NM	TRTC register scores once for every 100 registrations of its associated TRPC registers.

<u>ITEM NO.</u>	<u>REGISTER DESIGNATION</u>	<u>USER</u>	<u>DESCRIPTION</u>
<b>D. TRAFFIC MANAGEMENT SYSTEMS</b>			
(1) <b>Preselected Traffic Service Condition (EXR)</b> One register provided per marker as required.		NA, NM	EXR register scores over the EX lead when a combined or CM detects a preselected traffic service condition.
(2) <b>Traffic Sampling Failures (TSF)</b> One register provided per marker group.		NA, NM	TSF scores over the PC lead when a failure occurs in the traffic sampling circuit.

3. REFERENCES

3.01 This section is based on the following Bell System Practices:

SECTION	ISSUE	TITLE
218-233-000	4	Plant Register Index — No. 5 Crossbar Offices
218-233-501	8	Plant Registers — Part 1
218-233-502	1	Plant Registers — Part 2
218-233-503 + Addendum	1	Plant Registers — Part 3
218-233-504	1	Plant Registers — Part 4
218-233-505	1	Plant Registers — Part 5
218-233-506 + Addendum	1	Plant Registers — Part 6
218-233-507 + Addendum	1	Plant Registers — Part 7
218-233-508 + Addendum	1	Plant Registers — Part 8
218-233-509 + Addendum	1	Plant Registers — Part 9
218-233-510	1	Plant Registers — Part 10
218-233-511	1	Plant Registers — Part 11
218-233-512	1	Plant Registers — Part 12
218-233-513	1	Plant Registers — Part 13
218-233-514 + Addendum	1	Plant Registers — Part 14
218-233-515	1	Plant Registers — Part 15
218-233-516	1	Plant Registers — Part 16
218-233-517 + Addendum	1	Plant Registers — Part 17
218-608-501	2	Plant Register Circuits for ACD
218-608-502	2	Plant Register Circuits for ACD
819-700-151	5	Design Requirements — No. 5 Crossbar System

DRAWINGS	ISSUE	TITLE
SD-25793-01	29B	Plant Register Circuit
CD-26002-01	5B, APPX. 20B	Completing Marker — Plant Register Operation