

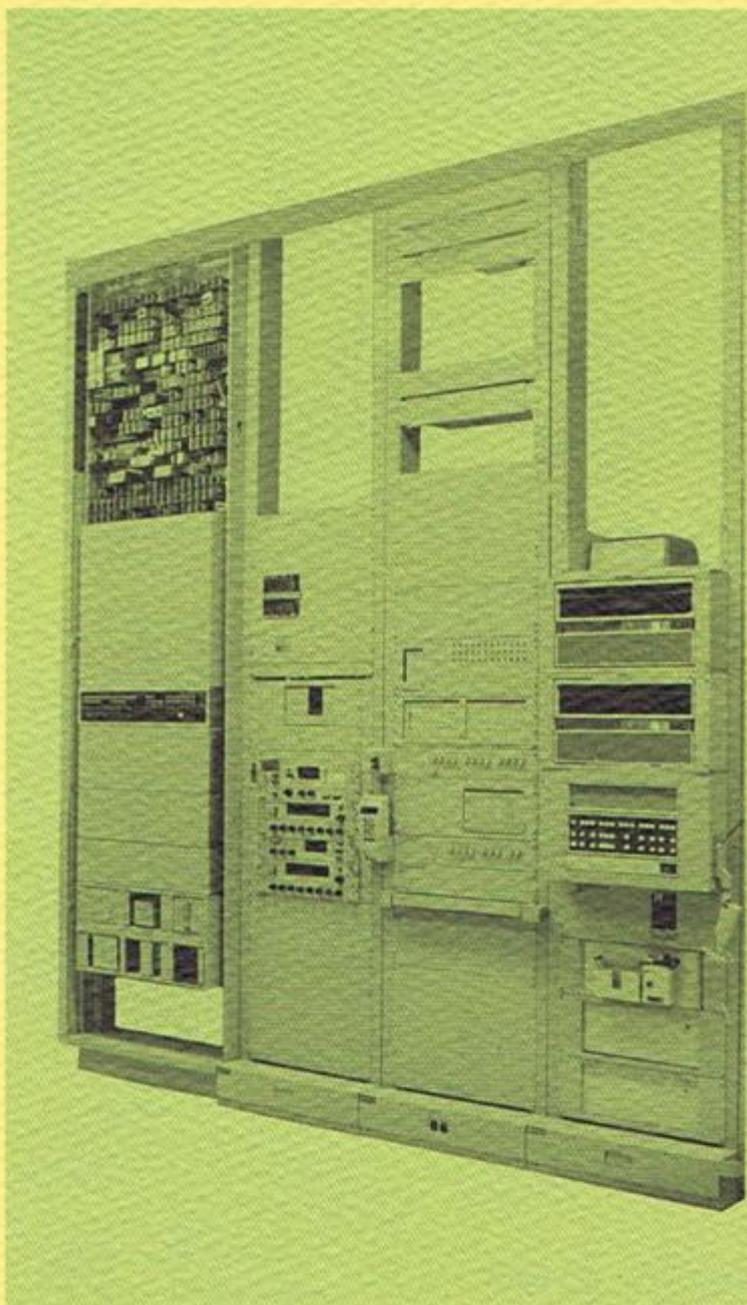
Computerized trunk and facilities maintenance has come of age with

Trunk & Facilities **TFMS** Maintenance System

for your **No. 4 Crossbar Switching Office**

TFMS is a computerized trunk and facilities maintenance system for No. 4 crossbar switching and associated toll transmission offices. It provides automatic trunk performance tests on both intertoll and toll connecting trunks and carrier transmission measuring of radio, cable and multiplex facilities.

You can choose from several configurations. Full capability TFMS arranged to make both trunk and carrier facility measurements. Locally controlled TFMS for trunk measurements only. Remotely controlled TFMS using the outgoing trunk test bay as a ROTL (Remote Office Test Line). You get the exact capability you need—for maximum efficiency, maximum cost savings.



Western Electric



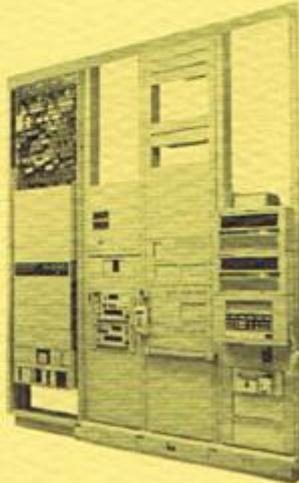
TFMS Trunk and Facilities Maintenance System

THE EQUIPMENT

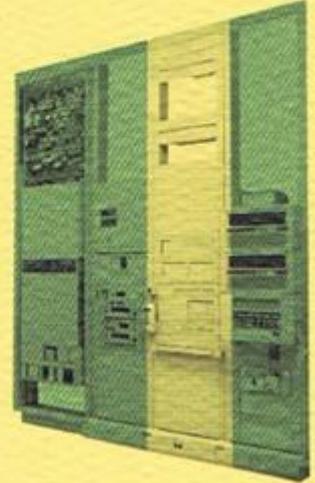
TFMS is comprised of two sub-systems:

1. the Outgoing Trunk Test System (OTTS)
2. the Carrier Transmission Maintenance System (CTMS)

A full capability TFMS arranged to make both trunk and facility measurements consists of a control center, a carrier facility switch access network and the OTTS bay which is intended to replace ADOIT and AOTT frames.

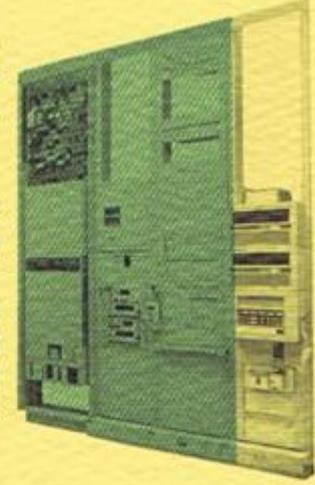


a *Switch Access Control Bay* to extend control from the computer to the switch access network of the carrier office, and

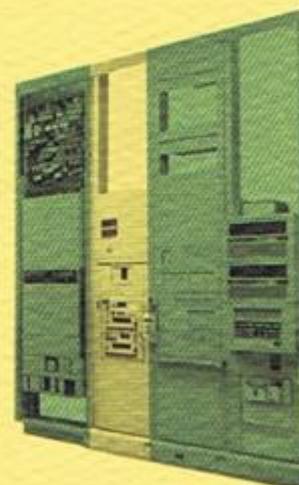


The standard TFMS *control center* is available in a three bay configuration where each bay performs a major function:

a *Maintenance Processor Bay* containing the computer, program and data storage and tape reader equipment.

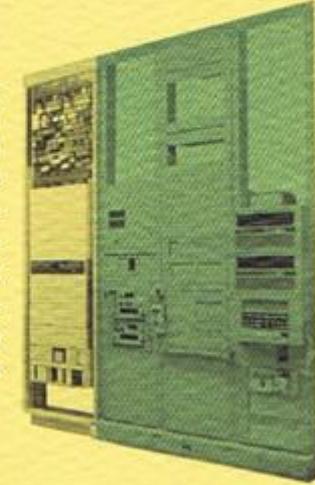


The *Switch Access Network* provides for connections to carrier facilities for measurement. Most units of the switch access network are mounted in spare space in carrier system or LMX equipment bays throughout the building.



a *Measuring Control Bay* equipped with CFMS equipment for carrier frequency measuring,

At the heart of testing operations is *OTTS*, a single bay of equipment normally located in the trunk testing area. The OTTS frame contains test access and sender and preference circuits, an automatic transmission measuring system (ATMS) responder, tone detectors and a sequence controller.



TFMS can help you maintain your No. 4 crossbar trunks and associated toll facilities in many ways:

- pre-service, transmission and operational tests
- scheduling control and flexibility
- trunk trouble sectionalization
- expanded printout to aid troubleshooting
- data base generation, update and data purification routines
- measurement summary and index information.

The scope of OTTS is extensive:

- tests both intertoll and toll connecting trunks
- does everything ADOIT and AOTT can do and faster
- centralizes work functions
- has variable outpulsing capability
- makes operational tests with 103-, synchronous and nonsynchronous test lines
- the OTTS disconnect timing and incoming release tests check for proper disconnect sequence at both near- and far-end office equipment
- transmission tests to 100-, 102-, 104- and 105-type test lines.

THE SOFTWARE

The software is a set of programs and routines that guide the computer in its operation. Diagnostic programs provide tests for the system printer, tape reader, data set interface, the entire CFMS and switch access network as well as in the computer itself. Measurements, analysis, and diagnostic programs are supplied on the system disc cartridge.

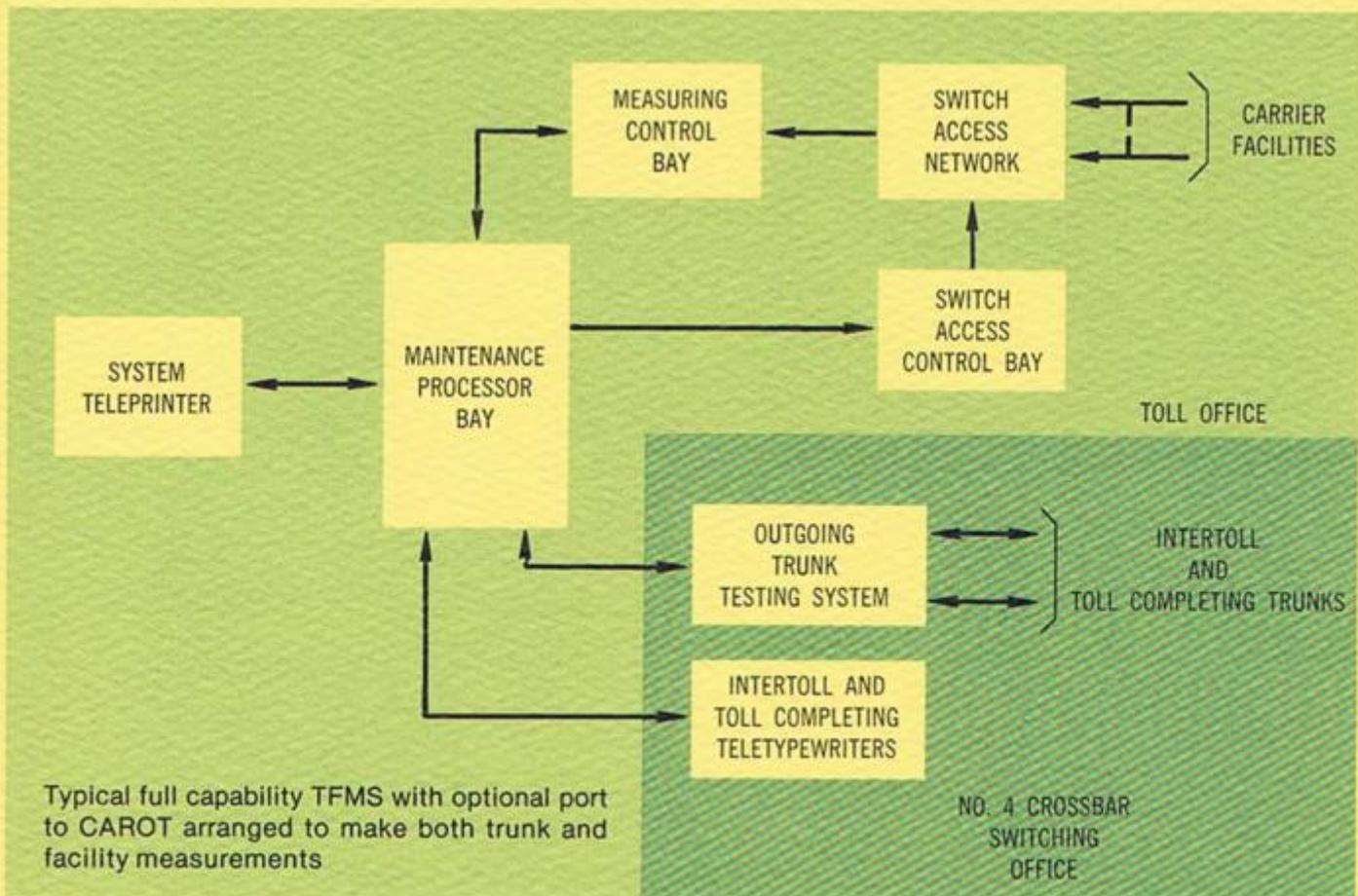
Trunk and facility data are entered and updated in the system by means of data base management programs to support the automatic testing routines.

OPERATION

When OTTS is properly primed with measurement parameters by the computer, it will respond and test the trunks to which it has access. Trunk tests are initiated by calling on one of the trunk measurement programs. Test results are printed on teletypewriter or stored for analysis as required.

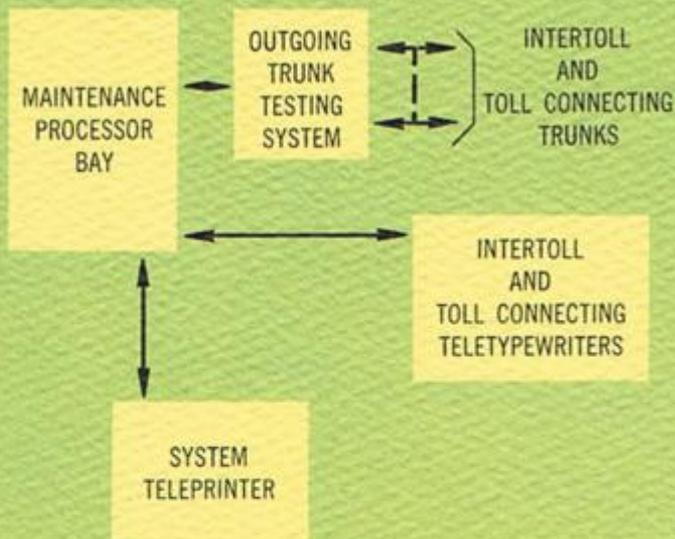
TFMS makes measurements at strategic points in coaxial and radio facilities and in LMX and MMX terminals. It measures transmission levels and noise in 4-KHz bandwidths and scan for the presence of high-level (hot) tones. All carrier measurements are made on an in-service basis. There is no need to remove facilities from service or tie up protection channels.

Trunk and facility measurements are made on schedule under computer control. Routine programs are called on by computer clock control as specified by your test personnel. You can also initiate demand measurements via the system teletypewriter, data set connection or a remote control unit.

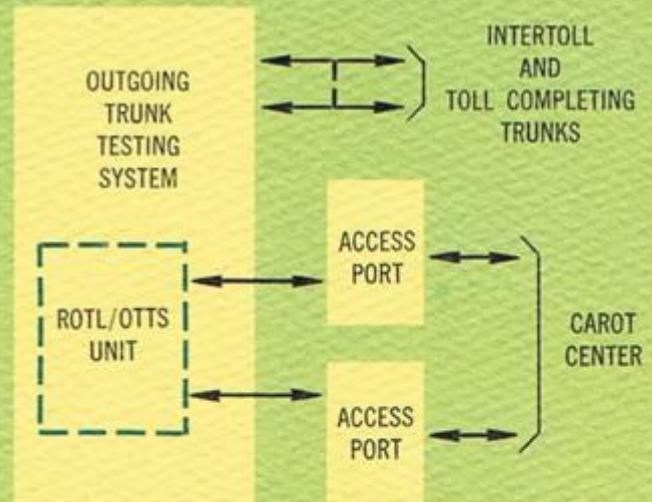


Typical full capability TFMS with optional port to CAROT arranged to make both trunk and facility measurements

NO. 4 CROSSBAR SWITCHING OFFICE



Locally controlled TFMS for trunk measurements only



Trunk measurements where the OTTS system is used as a No. 4 crossbar ROTL for trunk testing from a CAROT center.

SAVINGS

AT&T estimates initial cost savings of approximately \$20,000 to \$60,000 over the existing Western Electric trunk test arrangements depending on office configuration. In addition, reduced maintenance, increased efficiency, and expanded test capabilities make TFMS an attractive investment.

AVAILABILITY

TFMS is available now. Retrofit arrangements will soon be available for existing No. 4 crossbar switching offices.

TFMS is our solution to your No. 4 crossbar trunk and toll carrier facilities maintenance problems. With TFMS you'll save time and money.

You can make operational tests to 103- test lines, synchronous and nonsynchronous test lines to check seizure capability, tests on timing, signaling and supervision, measure idle circuit SF level, make pilot measurements, check noise level of receiving facilities, search mastergroups at transmitting line access or other points for abnormally high channel power, measure 104.08-KHz group pilot distribution buses, and more.

And best of all you can make measurements from remote control units, from system teleprinter or from Dataphone® connection.

You can stop worrying about your office records, too. The system gives you trunk and facility data when you

need them. No need to check through individual drawings. Also, TFMS aids you in correcting records or in adding new information to your existing trunk and facility records.

With this kind of flexibility, performance, savings and Bell Systems maintenance you should consider TFMS in your planning now. You will be keeping up with the future as well as the present.

ACRONYMS:

ADOIT	Automatically Directed Outgoing Intertoll Trunk Test Frame
AOTT	Automatic Outgoing Trunk Test Frame
ATMS	Automatic Transmission Measuring System
CAROT	Centralized Automatic Reporting on Trunks
CFMS	Carrier Frequency Measuring System
CTMS	Carrier Transmission Maintenance System
LMX	L-Type Multiplex
MMX	Mastergroup Multiplex
OTTS	Outgoing Trunk Test System
ROTL	Remote Office Test Line
TFMS	Trunk and Facilities Maintenance System

REFERENCES

- EL 3009—Engineering Letter
- BSP 103-260-100—Description, TFMS
- BSP 103-261-100—Description, OTTS

Product Engineering Control Center—Merrimack Valley
Manufacturing Location—North Carolina

For additional information or technical assistance, contact the Transmission Consultant serving your state or region.