

**distance
dialing
coordinating
handbook**

JULY 1971

**american telephone and telegraph company
construction plans department
new york, n.y.**

Printed in U.S.A.

GENERAL DISTANCE DIALING COORDINATING COMMITTEE

American Telephone and Telegraph Company

D. D. Jorgensen (Chairman*)	Construction Plans - Long Range Planning
J. A. Snyder	Service Cost - Bell Independent Relations
F. H. Parkinson	Engineering A - Toll Equipment
C. E. Brooks	- Equipment Planning
C. A. Pfitzinger	- Equipment Maintenance
J. F. Walsh	- Systems Planning (Toll)
A. K. Lorentzen	- Systems Planning (Metro.)
C. L. Thompson	Engineering B - Transmission
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T. N. Clark	Long Lines - Program Planning
L. L. Gaddis	- Systems Planning
W. D. Storz	- Program Implementation

Bell Telephone Laboratories, Incorporated

W. B. Smith	Switching Engineering
-------------	-----------------------

Western Electric Company, Incorporated

R. J. Craig	Program Planning
-------------	------------------

* Mailing Address - 195 Broadway, Room 1439A

F O R E W O R D

This handbook is published by the Construction Plans Department of the American Telephone and Telegraph Company. The last issue of this booklet was August, 1969. It is intended that future issues will be published as required.

Included in this handbook is information concerning future developments in the Distance Dialing program, current Distance Dialing statistics, pertinent historical facts and regional switching plan arrangements.

These data are kept current with information submitted in the Companies' Construction Program Summaries. The General Distance Dialing Committee acknowledges the important contributions made by the Distance Dialing and Transmission Coordinators in keeping the various charts in this handbook up to date.

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GENERAL DISTANCE DIALING COMMITTEE NOTES

1. CURRENT PROGRAM AND REQUIREMENTS

1.01 NO. 4 TYPE CROSSBAR TOLL SWITCHING SYSTEM - ELECTRONIC TRANSLATOR

The Electronic Translator System (ETS) in No. 4 Crossbar replaces the decoders and card translators and uses stored program control to perform the translation and routing functions. The ETS is now the standard method of performing these functions. The decoder card translator and associated circuits are rated A and M only.

Through the end of 1971 it is expected that twenty new 4A offices with ETS will be in service and that fifteen existing 4A offices will have been converted to ETS operation.

Procedures for making standard growth additions to a working ETS office are available. However, Western Electric will not have the ability to decompile/recompile office data until 2Q72.

Engineering information is available in B.S.P.'s 818-005-150 Issue 5, 964-110-100 Issue 3, selected B.S.P.'s in division 818, layer 4, divisions 212 and 254 and in E.L. 26. A new E.L. 815 dated September 16, 1970 supplements the information in E.L. 26 and contains the latest pricing information and a list of standard documentation for the system.

A study of existing 4A Toll Crossbar Switching Systems equipped with ETS indicates this feature has reduced the average marker holding time by approximately 10%. This increased marker capacity should be considered when determining traffic and maintenance marker requirements. New marker capacity tables are being prepared for TFP Dir. D. Sec. 7-C-(8).

Approximations can be made for the reduction of marker holding time in 4A Toll Crossbar offices planning conversion to ETS by using the method of calculation shown in EL 779, dated September 4, 1970.

1.02 NO. 4 TYPE CROSSBAR TOLL SWITCHING SYSTEM - CCIS

Common Channel Interoffice Signaling (CCIS) for 4A/4M Crossbar offices is now under development in the Bell Telephone Laboratories. CCIS will provide for the transmission of address and supervisory signals for a trunk group by means of a dedicated data link between the two offices rather than via the individual speech circuits. The processing of the data will be by means of the same SPC 1A system which is used for the ETS in the offices.

A planning letter GL71-05-163 dated May 5, 1971 provides additional information on CCIS. It is expected that the CCIS feature will be available in 1975.

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1.03 NO. 4 TYPE CROSSBAR TOLL SWITCHING SYSTEM - SMALL CROSSBAR SWITCH

A new small crossbar switch, previously called "miniature crossbar switch", will be introduced for use in the No. 4 Crossbar Incoming and Outgoing Link Frames. The first application of the small crossbar switch is planned to be at San Bernadino, California and will ship 1Q72. Limited production will be available for general use late in 1972. E.L. 1217 giving further details will be available later this year.

1.04 NO. 4 TYPE CROSSBAR TOLL SWITCHING SYSTEM - REDUCED CONTROLLER HOLDING TIME

The simplified sender grouping arrangement presently used in the 4A toll crossbar system provides for a maximum of four controllers to serve a group of 40 senders. Studies indicate that in many offices four controllers provide inadequate capacity to permit optimum utilization of 40 senders during heavy load periods.

Controller holding times can be reduced with relatively minor modification as explained in E.L. 455 dated March 26, 1970.

1.05 STORED PROGRAM CONTROL SYSTEMS - INSTALLATION INTERVAL GUIDELINES

Western Electric has developed installation interval guidelines for various Stored Program Control Systems. These are outlined in GL70-11-026 dated November 10, 1970 and GL71-05-015 dated April 26, 1971.

The intervals contained in the referenced documents are for planning purposes only. Firm intervals must be negotiated with your Western Electric Regional Organization.

1.06 CROSSBAR TANDEM - AUXILIARY RECORDING (REORDER TRAP) FEATURE

An auxiliary recording (reorder trap) feature is under development for crossbar tandem offices equipped with one trouble recorder per marker group. This feature (expected to be ready to order early in 1973) will provide more meaningful and flexible reorder data than that obtained from the current non-standard systems. It will permit a finer breakdown of the trouble categories and will also allow the control of trouble recorder card volumes. The new auxiliary recording circuitry with an associated card punch machine will produce a punched card record of sender reorders, vacant codes, CAMA ANI failures, and operator identified troubles (in TSP offices) in a format suitable for mechanical sorting. The keys, lamps, event counters, plant registers and pen recorder associated with this feature will be consolidated and packaged in a console arrangement which can be placed in any usable space in the maintenance center area.

This development, added to the recording of stuck senders and outgoing trunk identification (RSS/OTI), vacant code trap, and the operator identified trouble tracing (OITT) feature in offices with TSP, will constitute the complete DDD improvement package to identify equipment involved in both

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incoming dialing irregularities and outgoing call failures. An engineering letter announcing this feature will be published in 1972.

2. PROGRESS IN DISTANCE DIALING

2.01 EXTENSION OF OPERATOR DIALING

Operator dialing from overseas operating centers, which began in March, 1963 with the United Kingdom and the Federal Republic of Germany, is now in operation with the following twenty-eight countries:

Argentina	Germany	New Zealand
Australia	Greece	Norway
Belgium	Hong Kong	Philippines
Brazil	Israel	Singapore
Chile	Italy	South Africa
Colombia	Japan	Spain
Costa Rica	Luxembourg	Sweden
Denmark	Malaysia	Switzerland
France	Netherlands	United Kingdom
		Venezuela

Plans also call for converting to operator dialing for the following countries as specified below:

<u>1971</u>	<u>1972</u>	<u>1973</u>
Indonesia	El Salvador	Austria
Lebanon	Finland	Bahrain
Morocco	Guam	Canary Is.
Panama Canal Zone	Guatemala	Curacao
Panama Republic	Guyana	Cyprus
Portugal	Honduras	Ecuador
Thailand	India	Ireland
	Korea	Nicaragua
	Kuwait	Nigeria
	Okinawa	
	Taiwan	

DOMESTIC OVERSEAS OPERATING CENTERS

Rapid growth of overseas calling has necessitated expansion of Overseas Operating Centers. The sixth center, to be located in Denver, Colorado, will open in June, 1972 and will assist the existing Oakland center in handling future growth in Pacific Basin traffic.

Equipment features now available and planned which will reduce the switchboard requirements, will necessitate close coordination to optimize investment.

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Switchboard Positions Available or Planned

	<u>1971</u>	<u>1972</u>	<u>1975</u>
New York	525	569	596
White Plains	96	96	96
Oakland	119	119	119
Jacksonville	152	152	152
Pittsburgh	254	346	346
Denver	-	120	200
Springfield, Mass.	-	-	300
TOTAL	1,146	1,402	1,809

2.02 MASS CALLING NPA CODE 900

NPA code 900 has been temporarily assigned to provide service for inter-NPA mass calling customers while protecting normal telephone services. At toll offices below Sectional Center level the 900 code is assigned to two last choice trunks to the home switching center. These trunks remain available for selection by normal traffic routing to that office. Overflow attempts are routed directly to "no circuit announcement".

At Regional, Sectional and key Primary Centers the 900 code routes to four spare drops equipped with a patching arrangement which will permit connection to the specific trunk group required by the mass calling situation. Assignment of the 900 code for mass calling application is coordinated by Operations - Traffic. Trunking and routing arrangements are handled by the Network Control Center.

Dedicated NNX codes, utilizing similar limited trunk-access arrangements, have been set up in metropolitan areas to provide for mass calling within the local areas.

TSPS No. 1 assignment recommendations for the 900 NPA were covered in GL69-09-051, dated September 9, 1969. 100A TSP Coin Raters should arrange the 900 NPA for manual rating.

2.03 INTERNATIONAL COMMUNICATIONS

Overseas telephone conversations increased 30 percent in 1970 to 26,900,000 messages. Improved facilities, convenience of calling, and lower rates have led to increased usage. The Long Range Plan will permit customer dialing of all calls, i.e., station, person, credit card, etc.

- A. Introduction of International Direct Distance Dialing (IDDD)
 IDDD was implemented from three No. 5XB LAMA offices in New York City on March 15, 1970. The service has been expanded to six offices with three more No. 5XB and a No. 1 ESS scheduled for service during 1971. The service is limited to station-to-station, sent paid calling to about ten European countries plus Australia and Japan. Several foreign countries now offer their subscribers IDDD capability to the U.S.

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B. Long Range Plan for IDDD

The Long Range Plan provides for IDDD of both station-to-station and person-to-person calls, including special billing calls, principally from No. 1 ESS offices in large metropolitan areas. This will be included in the SP-CTX6 generic program which is planned to be available in 1973. Full IDDD will utilize the capabilities of TSPS No. 1. The TSPS features required are expected to be available in late 1974.

C. International Originating Toll Center Operation (IOTC)

IOTC permits outward operators to dial an access code to reach selected overseas operating centers, secure overseas circuits and then complete calls to foreign countries. Generally, outward operators will offer assistance and handle calls to any country for any customer having the capability of dialing that particular country.

IOTC can be employed from any type of cord switchboard which is equipped for MF-KP operation with 2-phase outputting capability. Cord boards of the No. 3 series and many No. 1 installations have this capability.

It is planned during 1972 to introduce IOTC to the United Kingdom from those metropolitan areas which originate large volumes of overseas traffic. It is further planned to introduce IDDD to other destinations as required to absorb the overseas growth which might otherwise require building of overseas operating centers. An IOTC trial to Germany and France from four offices in the Pacific Company is progressing satisfactorily.

D. Customer Dialing to Mexico and Interchangeable Codes

It is planned to initiate DDD to Mexico City on November 7, 1971. Seventy thousand telephone numbers used in Mexico City begin with the numeral 1, which will appear as the fifth digit of a 10 digit sequence. In addition, provision for using interchangeable NPA and central office codes to defer NPA code exhaust requires the network to be conditioned for 0 or 1 in the 5th or E digit of a 10 digit call. This had been planned for application October 1, 1972 but has now been deferred until January, 1973 when the New York 212 NPA is expected to require the assignment of NPA type codes as central office codes. In order to condition our network for the required dialing procedures to Mexico City and to preclude the possibility of fraudulent calls when the network will accommodate 0 or 1

GENERAL DISTANCE DIALING COMMITTEE NOTES

in the E digit position, the following arrangements are required:

1. Provide 3-digit operator Leave Word numbers at principal cities.
2. Provide the necessary equipment arrangements to accommodate interchangeable area and central offices codes in all toll machines performing a Principal City function.
3. After items 1 and 2 have been completed, unblock the E digit at offices where customer dialed calls are recorded (LAMA, CAMA, SAMA, TSPS). This unblocking can be restricted to those offices from which customer dialing to Mexico City is to be initiated.

E. Reference Letters

<u>Subject</u>	<u>Number</u>	<u>Date</u>
Improvements in International Telephone Service	GL69-07-029	7/9/69
International Originating Toll Center Operation	GL71-01-079	1/7/71
International DDD	GL 71-03-056	3/10/71
Numbering Plan Arrangements to Permit Customer Dialing to Mexico City	GL69-11-053	11/14/69
Nationwide Numbering Plan - Introduction of NO/IX Central Office Codes	GL70-04-210 (E.L. 442)	4/28/70
Numbering Plan Arrangements - E Digit Unblocking	GL69-08-061	8/25/69

2.04 TOLL SECTOR TANDEM CONCEPT FOR METROPOLITAN AREAS

The addition of switching systems in large Metropolitan Areas to care for the high rate of toll growth has developed a need for a routing discipline known as the Toll Sector Tandem concept. This concept encompasses standard hierarchical routing arrangements and certain new features which make possible efficient loading of the new as well as the existing switching systems.

The Metropolitan Toll Sector Tandem Concept recognizes that:

- A. The Metropolitan Area may be divided into pieces of geography (or traffic load) called sectors.
- B. Each sector is served by a toll switching system.

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- C. The end offices in each geographical (or traffic load) sector home, for incoming dialed traffic, only on the toll switching system serving that sector.
- D. High usage trunking is developed to and from the world at each toll switching system serving that sector.
- E. One toll switching system in the Metropolitan Area is of higher rank and is the home CSP for lower ranking Sector Tandems in conformity with the standard hierarchical routing pattern.
- F. The highest ranking switching system within the Metropolitan Area is known as the "Principal Sector Tandem".
- G. Inward operator assistance for the Metropolitan Area is handled at or via the "Principal Sector Tandem".
- H. Each Sector Tandem is assigned a rank such as Class 1, 2, 3 or 4 in accordance with its highest switching function in the routing hierarchical discipline according to the Switching Plan for Distance Dialing (SPDD).
- I. Each Sector Tandem is designated with a suffix "C", indicating Center, or "P", indicating Point, depending on whether it does or does not handle incoming operator assistance traffic.

A Metropolitan Area which is toll sectored ordinarily will consist of a single toll center area. It may, however, comprise a multi-toll center area.

E.L. 461, issued April 23, 1970, contains more detailed information on the Toll Sector Tandem Concept.

3. OTHER

3.01 NAMING OF NEW TOLL MACHINES

In conjunction with the Common Language program and to simplify and clarify the naming of new toll switching machines, a joint Traffic and Engineering letter was issued on March 29, 1967 describing the criteria to be used in naming new toll offices. The number of such offices started each year is increasing and the amount of discussion involved in a few recent cases indicates that the criteria for naming should be re-stated.

Simply, a new toll switching machine should bear the name of the city in which it is located. If it is not the first machine in the city it should bear the city name and the next highest number above those already assigned. The confusion engendered in the recent cases has come about through the desire to use the name of a county, a toll center, or a geographic description (such as South suburban) rather than a city. While such names might be meaningful locally, their use violates the desire for

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uniformity which is an important Systemwide consideration. No case has yet occurred where the local situation has warranted any such deviation from System standards.

The common language location identification for new toll machines should be named according to BSP 795-100-100:

Characters	1-4	Town
	5-6	State
	7-8	Building
	9-11	Traffic Unit

3.02 PROVISION OF TWX SERVICE BY WESTERN UNION

As of April 1, 1971 TWX service in the continental United States is being provided by Western Union. The Bell System will continue to switch TWX traffic for Western Union. They will gradually develop their own switching capability and it is their intent to switch all TWX traffic eventually. They will also utilize as much of their own facilities as possible for trunks and access lines in the TWX network.

The first step in Western Union's switching concept is Telex Computer Communication System (TCCS). Access to the TCCS computer in Middletown, Virginia will be provided by access lines terminating on selected Bell System primary TWX switchers. During 1971, lines to the offices in New York, Atlanta, Chicago and Oakland will be provided at Western Union. Lines to six other offices will be provided later.

The TCCS switcher is a "store and forward" message switcher that will provide message transfer between TWX and Telex services. It will also handle multi-address calls, including TWX to TWX, thus mechanizing conference calls where the only transmission of text is by the calling party. Western Union's long range plans include a more advanced switcher to provide conversational or "real time" operation.

On April 1, 1971 all facilities in the TWX network were leased by Western Union from the Bell System Operating Companies. Upkeep of certain Western Union owned equipment in Bell System central offices, as well as switching capability in the 154 switchers in the TWX-SP network, is provided to Western Union under the "TWX Operating Agreement". Maintenance of the network is also provided, including Data Service Bureau testing and analysis work.

Station testing, installation and maintenance, sales/marketing contracts and traffic engineering are now provided by Western Union. Operator assistance operation was taken over by Western Union at some locations on April 1st. Bell continues to operate the other locations. Divided responsibility for TWX service will require greater coordination than in the past.

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3.03 PICTUREPHONE[®] SERVICE

PICTUREPHONE exchange service began in Pittsburgh on July 1, 1970 and is now also offered in Chicago and Washington, D.C.

PICTUREPHONE service is being patterned after telephone service. As such, calling procedures, local and toll networks, and hierarchy for PICTUREPHONE service will ultimately follow, very closely, the equivalent of telephone service (switching offices in the PICTUREPHONE network will not necessarily be of the same type or location as the corresponding offices in the DDD hierarchy.)

Modified No. 5 Crossbar central offices will be used to provide PICTUREPHONE analog switching initially. Although PICTUREPHONE analog switching capabilities are being developed for No. 1 ESS, a firm schedule for this service introduction is not available. There are no plans to modify Panel, No. 1 Crossbar, SXS, Crossbar Tandem or the 4A Toll Switching System for PICTUREPHONE service.

Intercity PICTUREPHONE service will be offered on a limited basis as early as 1973. Until full digital tandem switching is available, direct trunk groups between cities will be utilized. It is planned to provide PICTUREPHONE switching capability in the No. 4 ESS Toll Switching system.

PICTUREPHONE transmission facilities will be both analog and digital. Analog transmission in the local exchange network will utilize cable pairs and appropriately spaced analog cable equalizers. Digital transmission is being keyed to the 6.3 Mb/s digital transmission rate (at least initially) and as such will permit long haul transmission over T2 cable carrier, L4 and L5 carrier and TD-2 radio systems.

3.04 TSPS IMPACT ON NETWORK PROBLEMS

The introduction of TSPS to replace cord switchboards with its fast and simple method for operators to report call failure data to the DDD Bureaus has resulted in the TSPS operators reporting 8 to 10 times more call failures than cordboard operators. This volume and the speed in which the reports are received provide an opportunity to pattern trouble reports and find network problems much faster.

To assist the DDD Bureaus in handling the volume of reports, a system computer has been established to receive the call failure data from certain TSPS locations, accumulate them to form a single data base, process, pattern, and distribute them to DDD Bureaus and Area Network Service Centers.

The DDD Bureaus will receive patterned printouts of originating and terminating troubles in their area. The long Lines Area Network Service Centers will receive patterned printouts of call failure data on the intertoll network.

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3.05 NO. 1 ESS COMBINED LOCAL AND TOLL APPLICATION

The No. 1 ESS is being equipped to operate as a Class 4 toll point (4P) and toll center (4C) 2-wire tandem switching system. CAMA ANI/ONI enabling 4P operation, will be available with the CC and SP CTX-6 programs scheduled for release to Western Electric in September, 1972. The first in-service office application is planned for mid 1973. Operator signals to and from the toll network enabling 4C operation are presently scheduled for the CC and SP CTX-7 programs which are planned for release to Western Electric in late 1973. The first in-service application would be approximately one year later. Succeeding applications for both programs will follow the standard procedure for release of new issues of generic programs. E.L. 1151, issued May 7, 1971, gives further details on this combined local and toll application.

3.06 NO. 4 ESS - PLANNING INFORMATION

E.L. 430, dated March 23, 1970, contained preliminary planning information on a new toll electronic switching system, designated No. 4 ESS, being developed for both toll and tandem application. The system will incorporate the 1A Processor and a time division network capable of handling an engineered load of 350,000 busy hour attempts or 1,000,000 busy hour CCS (whichever is limiting).

The first installation is scheduled for service at Chicago 7 in the 2Q75. E.L. 1224 with the latest available development information will be issued in June, 1971. Long range plans requiring No. 4 ESS in the early years of introduction should provide alternate relief plans since allocations may limit the availability of No. 4 ESS in this period.

3.07 1970 SWITCHING NETWORK SURVEY (1970 SNS)

Comprehensive information relative to the switching entities making up the direct distance dialing network has been acquired through the 1970 Switched Network Survey. The Survey is described in GL70-04-057 (Contents of the 1970 Switched Network Survey) dated April 8, 1970. The Survey includes information regarding type, location, name, rank, homing, trunk quantities, etc., of each entity. In addition to a view as of January 1970, the survey includes forward looking information for the years 1976, 1981, 1986, and 1991.

The 1970 SNS combines local and toll information and is stored in a data bank for ready retrieval through time shared computer. Retrieval methods are discussed in GL71-05-100 (Use of Time Shared Computer for Accessing Information Contained in 1970 Switched Network Survey) issued in May, 1971.

3.08 SWITCHING SYSTEM COORDINATION

Efforts are underway to develop a system standard which will outline the committee structure and responsibilities of each group involved in implementing a major switching project. Long Lines has issued

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BSP 002-400-910LL which covers this subject and lists the time intervals for circuit activity which should be of assistance in planning toll projects.

3.09 AT&T DDD Service Improvement Committee

An interdepartmental Service Improvement Committee has been formed at AT&T to analyze and react to network service problems and to assist Associated Companies in improvement activities. Members of this committee are:

Traffic Operations Manager - Dial Services	H. E. White 212 393-3592
Plant Operations Manager - Switching Network Services	H. M. Jenks 212 393-8245
Engineering Manager - Equipment Maintenance	R. H. Groom 201 877-5703
Manager - Comptrollers Operation Toll	W. R. Slate 212 393-2832
Bell-Independent Relations Manager- Staff	C. F. Roth 212 393-3933

Chart 1

DISTANCE DIALING STATISTICS
APRIL, 1971 CONSTRUCTION PROGRAM VIEW

DISTANCE DIALING STATISTICS APRIL, 1971 CONSTRUCTION PROGRAM VIEW						
LONG DISTANCE MESSAGES-BELL OPERATED (During Year-Millions)	1970		1971		1972	
Operating Companies	5322.9		5868.1		6481.2	
Long Lines	1865.0		2070.0		2343.0	
Total Bell System	7263.5		8022.0		8919.5	
Total Bell Companies	7672.5		8465.3		9404.5	
	Bell System	Bell Cos.	Bell System	Bell Cos.	Bell System	Bell Cos.
% Dialed by Customers (DDD)	66.4	66.8	68.7	69.0	70.5	70.8
% Dialed by Operators (DDD)	31.6	31.2	27.9	27.4	24.4	23.8
% Customer Dialed Operator Serviced	2.0	2.0	3.4	3.6	5.1	5.4

LOCAL CENTRAL OFFICE BUILDINGS (End of Year)

Total	8364	9528	8401	9579	8452	9635
% Equipped for DDD	80.0	78.9	85.5	84.3	90.3	88.6

Toll Offices (End of Year)	Bell Cos.	Non Bell	Bell Cos.	Non Bell	Bell Cos.	Non Bell
Control Switching Points	254	39	260	39	309	40
Toll Centers	1128	520	1107	518	1088	513
Total	1382	559	1367	557	1397	553
Total Toll Positions	68441		71633		73510	
No. TSP and TSPS Positions	4814		8648		12296	

TELEPHONES (End of Year)							
Main Tels. & Equivalent Main Tels. (Millions)	Bell Cos.	Non Bell	Bell Cos.	Non Bell	Bell Cos.	Non Bell	
Total	63.0		65.3		68.1		
Equipped for Outward DDD	Operator Identified	11.5		11.2		10.2	
	Automatically Identified - ANI	28.2		29.7		31.5	
	" " - AMA	20.2		22.2		25.0	
	Total (Operator plus Automatically Identified)	59.9	10.4	63.1	11.2	66.7	12.1
	Served by TSP or Equiv.	9.9		15.4		21.8	
% of Total M.T. & Equiv. M.T.	94.1		95.7		95.9		
With ANC Numbering	58.8	12.4	61.7	13.1	64.9	13.7	

"Bell Companies" includes Bell System and Southern New England, Cincinnati Bell and the Bell Canada Companies. "Non-Bell Companies" includes Independent Companies in the Continental United States plus other Non-Bell Companies in Alaska, Hawaii and the territory of the Trans-Canada Telephone system. Reference for terms used - Construction Program Notes.

Chart 2

SUGGESTED NATIONWIDE CUTOVER DATES FOR DISTANCE DIALING ACTIVITIES REQUIRING NATIONWIDE CHANGES

Month	1971	1972	1973	1974	1975
January	10*-17	9*-16	7 -21	6 -20	5 -19
February	7 -28*	6 -27	4 -25*	3 -24*	2 -23*
March	7 -21	5 -19	4 -18	3 -17-31#	2 -16
April	4 -18	9*-16	1 -15	21	6 -20
May	2 -16	7 -21	6 -20	5 -19	4 -18
June	6 -27*	4 -25*	3 -24*	2 -23*	1 -22*
July	11*-18	2 -16	1 -15	7 -21	13*-20
August	1 -15-29#	6 -20	5 -19	4 -18	3 -17
September	19	10*-17	9*-16	8*-15	7 -21
October	3 -17	1 -15	14*-28*	6 -20	5 -19
November	7 -21	5 -19	4 -18	3 -17	2 -16
December	5 -19	3 -17	2 -16	1 -15	7 -21

NOTE:

The dates suggested are the first and third Sundays of each month except where they fall on or immediately adjacent to holidays.

* Deferred one week
Advanced one week

SUGGESTED CUTOVER HOUR	
Time Zone	Sunday
	Nationwide Time
Atlantic	3:01 a.m.
Eastern	2:01 a.m.
Central	1:01 a.m.
Mountain	12:01 a.m.
Pacific	11:01 p.m. (Sat.)

Chart 3

PRINCIPAL NEW FACILITIES AND FEATURES FOR DISTANCE DIALING Available or Planned for Shipment in the Next Three Years			
Item	Information To Field	Design Info. BTL to WECO	Probable Initial Shipment (Note 1)
<u>Traffic Service Position System No. 1</u>			
Additional Information on Office Additions	E.L. 709 (GL70-07-176)	-	-
Recommendation for Remoting Positions and Extending Distance to 80 Miles (T-1 Carrier)	E.L. 759 (GL70-08-110)	-	-
Availability of Generic Program Issues 2D and 3	E.L. 947 (GL70-12-001)	Issued	2Q'71
Generic Issue 2D and Real Time Capacity	(GL71-01-193)	-	-
<u>Other Facilities</u>			
Nationwide Numbering Plan and Dialing Procedures	E.L. 372 (GL70-01-192)		
Numbering Plan Arrangements - E-Digit Unblocking	(GL69-08-061) (GL69-11-099) (GL71-02-054)	Issued ϕ	4Q'69 ϕ
No. 1 ESS 2-Wire - Elimination of E-Digit Blocking on Customer Dialed 10-Digit Calls	E.L. 718 (GL70-08-048)	Issued	2Q'71
Nationwide Numbering Plan and Dialing Procedures- Introduction of NO/LX Central Office Codes	E.L. 442 (GL70-04-210)	Issued ϕ	4Q'69 ϕ
Equipment Modification for New Numbering Plan: No. 4-Type Toll Crossbar System	P.E.M. 9899	Issued	4Q'69
No. 1 Crossbar	E.M. 1513 (GL69-09-101)	Issued	2Q'71
Crossbar Tandem	E.L. 57	Issued	2Q'71
No. 5 Crossbar	E.L. 449 (GL70-03-187)	Issued	2Q'70 ϕ
No. 4 Crossbar and Crossbar Tandem - Routing Audit	(GL70-08-036)	-	-
Automatic Transmission Measuring System (ATMS) and Associated Automatic Trunk Testing Facilities: Additional Planning Information	E.L. 465 P.L. 2398 (GL70-04-008)	Issued ϕ	4Q'66 ϕ
Centralized Tape and Card Administration	E.L. 807 P.L. 2431 (GL70-09-149)	-	-
Step-by-Step Offices - Remote Office Test Line (ROTL) for Operational and Transmission Tests on Outgoing Trunks	E.L. 1183 (GL71-04-015)	Issued	4Q'70
Common Systems - Multifrequency Signaling Receiving Circuit (Change to reduce malfunctions caused by operator keypulsing irregularities)	E.L. 800 (GL70-10-096)	Issued	3Q'71
Small Toll Center Modernization (TSPS-Remote Trunk Arrangement and TSP Applique)	E.L. 869 (GL70-10-090)	3Q'73 (Note 2)	1Q'75 (Note 2)
Modification of 104-Type Transmission Test Line Equipment to Improve Reliability	E.L. 1085 (GL71-02-027)	Issued	3Q'71
Stored Program Control Systems - Operational Trouble Reports	E.L. 1140 P.L. 2482 (GL71-03-217)	-	-
Identification Codes for Recorded Announcements	(GL71-04-014)		
Panel, No.1 and No.5 Crossbar and Crossbar Tandem Systems - Augmented Dynamic Overload Controls for Large Metropolitan Areas (Panel arrangements being re-examined, possible conflict with interchangeable area and office codes)	E.L. 1088	Issued	1Q'72

Chart 3

PRINCIPAL NEW FACILITIES AND FEATURES FOR DISTANCE DIALING Available or Planned for Shipment in the Next Three Years			
Item	Information To Field	Design Info. BTL to WECO	Probable Initial Shipment (Note 1)
<u>No. 4-Type Toll Crossbar System</u>			
Controllers - Modification to Reduce Holding Time	E.L. 455 (GL70-03-209)	Issued	1Q'71
Improved Pulse Generator for Incoming DP and MF Senders SD-68221-01 and SD-68222-01	E.L. 689 (GL70-07-045)	Issued	1Q'71
Improvement of Sender Integrity Check Feature	E.L. 727 (GL70-07-235)	Issued	1Q'71
Marker Capacity with ETS	E.L. 779 (GL70-09-023)	-	-
Electronic Translator System (ETS)	E.L. 815 (GL70-09-071)	Issued	3Q'67
Extension of Guard Timing for MF-SF Operation over Satellite Circuits	E.L. 1080 (GL71-02-053)	Issued	4Q'71
Non-CAMA Dial Pulse Register - Reduced Call Processing Time	E.L. 1081 (GL71-03-224)	Issued	4Q'71
Manual Test Frame (MTF) for Toll Connecting Trunks	-	Issued	4Q'71
<u>No. 5 Crossbar Systems</u>			
Signaling Integrity Check on E&M Intertoll Trunks to Step-by-Step Offices (Wire-spring senders only. Under investigation for flat-spring senders)	E.M. 1445	Issued	1Q'70
Stuck Sender Trunk Identification Using Trouble Recorder Card	E.M. 1812 (GL70-01-100)	Issued	2Q'71
Improved Channel Testing from Master Test Frame	E.L. 392 (GL70-06-215)	Issued	3Q'71
Trunk Maintenance Improvement Items	E.L. 537 (GL70-05-013)	Issued	3Q'71
Increase the Number of Trunk Numbers (4,000)	E.L. 1069 (GL71-03-117)	Issued	2Q'71
TSPS No.1 Arrangement for International Direct Distance Dialing (IDDD)	E.L. 1158 (GL71-04-045)	Issued	2Q'72
<u>Crossbar Tandem Offices</u>			
Improvements in Incoming Trunk Test (ITT) Circuit SD-25161-01	E.M. 1794 (GL70-01-027)	Issued	3Q'70
Ring Type Marker Modifications to Facilitate Cross-Connection Changes	-	Issued	4Q'71
Automatically Directed Outgoing Trunk Test Frame (ADOT)	-	2Q'72	2Q'73
Improved Trouble Recorder Recording and Trouble Analysis Feature (Reorder Trap)	-	4Q'72	2Q'73 ϕ
ϕ - Except for certain frames which will be furnished some months later.			
Note 1 - The date indicated for Probable Initial Shipment is a current view. It should not be viewed either as the earliest date desired by the Companies or a commitment by the WECO. Certain dates are based on intervals for similar developments, and are in advance of detail information. Certain new facilities not covered by an engineering letter are shown for planning purposes only and not for ordering.			
Note 2 - TSPS-Remote Trunk Arrangements only.			

Chart 4

NEW CONTROL SWITCHING POINTS
AND OTHER 4A AND XBT OFFICES
1972-76
(APRIL, 1971 CONSTRUCTION PROGRAM VIEW)

Co.	Location	Switching Class	Type Switching Eqpt.	Frames	Dates		CAMA	ANI	Machine* Responsibility			
					Ship	Service			T	E	A	M
					N.E.	Providence, R.I.			3	4A	403	3-71
	Lewiston, Me.	4	XBT	185	10-71	6-72	X		C	C	C	C
	Cambridge, Mass.	3	4A	1,600	2-72	11-73			C	C	C	C
	Portland, Me.	3	4A	450	4-72	6-73			C	C	C	C
	Lawrence, Mass.	3	4A	1,200	6-72	2-74			C	C	C	C
	Framingham, Mass.	3	4A	1,000	1-73	8-74			C	C	C	C
	Brockton, Mass.	3	4A	1,000	3-74	6-75			C	C	C	C
	Worcester, Mass.	3	4A	1,000	8-74	10-75			L	L	L	L
	New Bedford, Mass.	3	4A	1,000	2-75	4-76			C	C	C	C
	Salem, Mass.	3	4A	1,000	6-75	9-76			C	C	C	C
N.Y.	<u>Manhattan</u>											
	New York 6	3	4A	1,107	1-71	6-72	X		L	L	L	L
	New York 10	3	4A	1,230	8-71	2-73	X		L	L	L	L
	Midtown Area	4	4A	1,200	1Q-73	2Q-74	X		C	C	C	C
	New York 11	3	4A	1,600	1-73	6-74	X		L	L	L	L
	New York 12	3	4A	1,100	6-73	9-74	X		L	L	L	L
	New York 13	3	4A	1,100	3-74	9-75	X		L	L	L	L
	Midtown Area	4	4A	1,100	2Q-74	3Q-75	X		C	C	C	C
	Downtown Area	4	4A	1,100	2Q-75	2Q-76	X		C	C	C	C
	<u>Mid-State</u>											
	White Plains 4	3	4A	954	6-71	12-72	X		C	C	C	C
	Bronx	4	4A	1,100	2Q-74	2Q-75	X		C	C	C	C
	<u>Brooklyn-Queens</u>											
	Williamsburg	4	4A	1,100	6-73	9-74	X		C	C	C	C
	New York 12	3	4A	1,100	6-73	9-74	X		L	L	L	L
	<u>Nassau-Suffolk</u>											
	Garden City	3	4A	900	5-72	8-73	X		C	C	C	C
	Nassau	3	4A	1,100	2Q-74	2Q-75	X		C	C	C	C
	<u>Upstate</u>											
	Binghamton	3	XBT	197	12-71	7-72	X		C	C	C	C
	Glens Falls	3	4A	150	6-74	3-75	X	X	C	C	C	C
	Elmira	3	4A	150	1975	1976	X	X	C	C	C	C
N.J.	Newark 7	3	4A	680	4-72	7-73			C	C	C	C
	Cedar Knolls	3	4A	900	1-73	6-74			L	L	L	L
	Rochelle Park 2	3	4A	900	2-74	6-75			L	L	L	L
	Trenton	3	4A	500	1Q-74	6-75			C	C	C	C
	Rutherford	4	4A	1,200	1-75	6-76			C	C	C	C
PA	Fort Washington	3	4A	815	1-71	6-72			C	C	C	C
	Philadelphia 3	3	4A	1,235	4Q-72	6-74			L	L	L	L
	Wilmington	3	4A	536	3-74	6-75			C	C	C	C
	Wayne 2	3	4A	1,600	9-73	5-75			L	L	L	L
	Pittsburg 3	3	4A	1,000	1-75	5-76			L	L	L	L
C.& P.	Columbia Pike, Va.	3	4A	656	2-72	9-70			C	C	C	C
	Norfolk 3, Va.	3	4A	809	11-70	5-72			C	C	C	C
	Upton, D.C.	5	XBT	300	2-72	9-72			C	C	C	C
	Baltimore 8, Md.	4	XBT	110	6-73	11-73			C	C	C	C
	Baltimore 9, Md.	3	4A	567	12-72	1-74			C	C	C	C
	Washington 5, D.C.	3	4A	1,200	10-73	2-75			C	C	C	C
	Roanoke, Va.	3	4A	400	11-73	5-75			C	C	C	C

Chart 4

NEW CONTROL SWITCHING POINTS
AND OTHER 4A AND XBT OFFICES
1972-76
(APRIL, 1971 CONSTRUCTION PROGRAM VIEW)

Co.	Location	Switching Class	Type Switching Eqpt.	Frames	Dates		CAMA	ANI	Machine* Responsibility			
					Ship	Service			T	E	A	M
SO.	Florence, S.C.	4	4A	359	1-71	4-72	X	X	C	C	C	C
	Ojus 1, Fla.	4	4A	1,032	7-71	11-72	X	X	L	L	L	L
	Atlanta 3, Ga.	3	4A	828	7-71	1-73	X	X	L	L	L	L
	Pensacola, Fla.	4	4A	332	1-72	4-73			C	C	C	C
	Gainesville, Fla.	3	4A	400	5-73	7-74	X	X	C	C	C	C
	West Palm Beach, Fla.	3	4A	600	6-73	9-74			C	C	C	C
	Jacksonville, Fla.	2	4A	400	1-74	3-75	X	X	C	C	C	C
	Gastonia, N.C.	3	4A	686	4Q-73	1Q-75	X	X	C	C	C	C
	Augusta, Ga.	4	4A	460	12-73	4-75	X		C	C	C	C
	Winston-Salem, N.C.	3	4A	500	1Q-74	2Q-75	X	X	C	C	C	C
	Greenville, S.C.	3	4A	550	2-74	6-75	X	X	C	C	C	C
	Macon 2, Ga.	2	4A	444	2-74	6-75	X		C	C	C	C
	Ojus 2, Fla.	3	4A		9-74	7-75			L	L	L	L
	Atlanta 4, Ga.	4	4A		7-74	1-76			L	L	L	L
	Panama City, Fla.	3	4A	300	3-75	3-76			C	C	C	C
	Savannah, Ga.	4	4A	400	2-75	6-76			C	C	C	C
	Daytona Beach, Fla.	4	4A	350	6-75	8-76			C	C	C	C
SO. CN.	Shreveport, Ia.	3	4A	728	1-73	4-74	X		C	C	C	C
	Decatur, Ala.	3	4A	314	1-73	4-74	X		C	C	C	C
	Gulfport, Miss.	4	4A	200	4Q-74	1Q-76	X		C	C	C	C
	Montgomery, Ala.	3	4A	325	2Q-75	2Q-76			C	C	C	C
	Greenwood, Miss.	3	4A	200	2Q-75	3Q-76	X		C	C	C	C
OHIO	Cleveland 2	3	4A	567	7-71	8-72			L	L	L	L
	Akron 2	3	4A	360	7-72	11-73			C	C	C	C
	Youngstown 2	3	4A	238	10-73	2-75			C	C	C	C
	Columbus 2	3	4A	375	2Q-75	2Q-76			C	C	C	C
	Cincinnati 2	3	4A	600	1-74	4-75			L	L	L	L
MICH.	Pontiac	3	4A	1,064	1-71	6-72	X		C	C	C	C
	Detroit 2	3	4A	1,056	9-72	11-73	X		-	-	-	-
	Traverse City	3	XBT	165	8-72	6-73	X		C	C	C	C
	Kalamazoo 2	3	4A	525	1-73	6-74			C	C	C	C
	Saginaw 2	3	4A	450	8-73	12-74			C	C	C	C
	Lansing 2	3	4A	450	1Q-74	2Q-75			C	C	C	C
	Flint 2	3	4A	450	1Q-75	2Q-76			C	C	C	C
IND.	Anderson	3	4A	700	4Q-74	1Q-76	X	X	C	C	C	C
WISC.	Waukesha	3	4A	551	1-72	5-73			L	L	L	L
	Madison 2	3	4A	550	1-73	4-74			L	L	L	L
ILL.	Oak Brook	4	4A	910	5-71	8-72			I	L	L	L
	Champaign	3	4A	273	5-71	8-72	X	X	C	C	C	C
	Alton	4	XBT	225	3-72	12-72	X	X	C	C	C	C
	Peoria	3	4A	493	4-72	7-73	X	X	C	C	C	C
	Rock Island	4	XBT	365	1-73	9-73	X	X	C	C	C	C
	Rockford	3	XBT	200	2-73	7-74	X	X	C	C	C	C
	Collinsville	2	4A	600	3-74	5-75	X	X	C	C	C	C
	Kankakee	4	XBT	200	6-74	2-75	X	X	C	C	C	C
	Joliet	4	XBT	200	7-75	4-76	X	X	C	C	C	C
	Northbrook 2	4	4A	1120	1-73	4-74			L	L	L	L
Chicago 7	HVT	4ESS		1Q-73	7-75	X		L	L	L	L	
N.W.	Minneapolis-St. Paul 3	4	4A	690	4Q-73	2Q-75	X	X	L	C	L	C
	Fargo, N.D.	2	4A	700	1-74	6-75	X		-	-	-	-
	Davenport, Ia.	3	4A		1974	1975			-	-	-	-
	Omaha 2	3	4A	400	1-75	4-76			L	L	L	L
	Des Moines 2	3	4A	400	3-75	6-76			L	L	L	L
	Grand Forks, N.D.	3	XBT	200	1-73	12-73	X		C	C	C	C

NEW CONTROL SWITCHING POINTS
AND OTHER 4A AND XBT OFFICES
1972-76
(APRIL, 1971 CONSTRUCTION PROGRAM VIEW)

Co.	Location	Switching Class	Type Switching Eqpt.	Frames	Dates		CAMA	ANI	Machine* Responsibility			
					Ship	Service			T	E	A	M
S.W.	Mission Toll, Kan.	3	4A	611	1-71	4-72	X		-	-	-	-
	Longview, Tex.	3	4A	472	8-71	2-73	X	X	C	C	C	C
	Corpus Christi, Tex.	3	4A	611	4-72	6-73	X	X	C	C	C	C
	Wichita Falls, Kan.	3	XBT	200	1Q-73	4Q-73	X	X	C	C	C	C
	Austin, Tex.	3	4A	800	1-73	3-74	X	X	C	C	C	C
	Houston 3, Tex.	3	4A	1,230	7-73	11-74	X	X	-	-	-	-
	Lawton, Okla.	3	4A	112	2-74	5-75			C	C	C	C
	Kansas City 2, Mo.	3	4A	700	1Q-74	2Q-75			-	-	-	-
	Amarillo, Tex.	2	4A	950	5-74	7-75	X	X	C	C	C	C
	Waco, Tex.	3	4A	487	2-75	3-76	X	X	C	C	C	C
	Oklahoma City 2, Okla.	3	4A	300	2-75	5-76	X	X	-	-	-	-
	Midland, Tex.	3	4A	541	10-75	6-76	X	X	C	C	C	C
	Lubbock, Tex.	3	4A	850	5-75	8-76	X	X	C	C	C	C
	St. Louis 3	3	4A	640	10-74	1-76			L	L	L	L
MTN.	Cheyenne, Wyo.	2	4A	319	4-71	5-72	X	X	C	C	C	C
	Denver 3, Colo.	1	4A	704	2-71	6-72			L	L	L	L
	Tucson 2, Ariz.	3	4A	500	2-73	3-74	X	X	C	C	C	C
	Boise 2, Ida.	3	4A	600	1-74	4-75	X	X	C	C	C	C
	Greeley, Colo.	4	4A	500	1974	1975	X	X	C	C	C	C
	Peoria, Colo.	4	4A	1,000	1974	1976	X	X	C	C	C	C
	Provo, Utah	3	4A	515	1-75	5-76	X	X	C	C	C	C
	Mesa, Ariz.	4	4A	400	6-75	10-76	X	X	C	C	C	C
	Denver 4	3	4A	750	1-73	4-74			L	L	L	L
	Phoenix 3	4	4A	500	7-75	10-76	X		L	L	L	L
PNB	Seattle 2, Wash.	3	4A	588	7-72	11-73	X	X	C	C	C	C
	Portland 2, Ore.	3	4A	323	9-72	3-74			C	C	C	C
	Eugene, Ore.	3	4A	375	1-74	5-75			C	C	C	C
PAC.	Redding	3	XBT	188	5-71	2-72	X		C	C	C	C
	Fresno	3	4A	360	4-71	6-72	X	X	C	C	C	C
	Chico	3	XBT	158	4-72	11-72	X	X	C	C	C	C
	Hayward	3	4A	638	12-71	3-73	X	X	C	C	C	C
	Compton	3	4A	1,339	1-72	5-73			C	C	C	C
	Reno	2	4A	414	2-72	5-73			C	C	C	C
	Oakland 5	3	4A	1,187	12-71	6-73	X	X	C	C	C	C
	Anaheim	3	4A	476	1-73	4-74			C	C	C	C
	Sacramento	3	4A	400	2-73	4-74	X		C	C	C	C
	San Francisco (Folsom)	4	4A	734	1-73	4-74	X		C	C	C	C
	Stockton	2	4A	308	2-73	4-74			C	C	C	C
	Sherman Oaks 3	3	4A	1,094	12-72	6-74			C	C	C	C
	Santa Clara	5	4A	549	12-73	2-75			C	C	C	C
	Concord	4	4A	533	1-74	4-75	X		C	C	C	C
	Compton (31T)	4	4A	782	1-74	4-75			C	C	C	C
	Santa Rosa	3	4A	350	2-74	4-75			C	C	C	C
	San Mateo	4	4A	350	12-74	2-76			C	C	C	C
San Rafael	4	4A	433	1-75	2-76	X		C	C	C	C	
S.N.E.	Hartford 3	3	4A	1,100	5-72	10-73	X	X	-	-	-	-
	Bridgeport 2	3	4A		3-73	8-74	X	X	-	-	-	-
CAN.	Toronto 3	4	4A			11-72	X		-	-	-	-
	Ottawa 2	3	4A			4-73			-	-	-	-
	Montreal 3	4	4A			10-74	X		-	-	-	-
	Thunder Bay	3	SP1			1-75			-	-	-	-
	London 2	3	4A			3-75			-	-	-	-

Dates - The above ship and service dates are those indicated by the Companies in the April, 1971 Construction Program View. These in no way imply a firm schedule as ship and complete dates must be negotiated with the WECC in the usual manner.

* Machine Responsibility - T = Traffic Engineering C = Associated Company
E = Equipment Engineering L = Long Lines
A = Machine Administration
M = Machine Maintenance

NO. 4-TYPE TOLL CROSSBAR OFFICES IN SERVICE - END OF 1971

Location	Type/ Class	Service Date		CAMA	Machine* Responsibility				Location	Type/ Class	Service Date		CAMA	Machine* Responsibility			
		Office	ETS		T	E	A	M			Office	ETS		T	E	A	M
NEW ENGLAND								SOUTH CENTRAL									
Boston 2	4M/2	11-49		X	L	L	L	C	Birmingham	4A/2	8-57	2Q-76	X	C	C	L	C
Boston 9	4A/2	4-70	4-70	X	L	L	L	L	Jackson	4A/2	6-59	1-73	X	L	L	L	C
Springfield	4A/2	5-63			L	C	L	C	Knoxville	4A/3	2-61		X	C	C	C	C
									Louisville	4A/2	11-57	4-72	X	L	L	L	C
									Memphis	4A/2	10-56	4-72	X	L	L	L	C
									Nashville	4A/2	10-56	5-73	X	C	C	L	C
NEW YORK									New Orleans φ	4A/3	3-53	6-74		C	C	C	C
Albany 2 φ	4A/2	4-50	10-73		C	C	C	C	Baton Rouge	4A/4	8-71	8-71	X	C	C	C	C
Buffalo	4A/3	5-56	1-73	X	C	C	C	C	Paintsville	4A/3	6-71	6-71	X	C	C	C	C
New York 4	4M/2	11-48			L	L	L	L									
New York 7	4A/2	9-63			L	L	L	L									
Suffolk	4A/2	6-70	6-70		L	L	L	L	OHIO								
Syracuse	4A/3	5-54		X	C	C	C	C	Dayton	4A/3	11-63	1Q-75	X	C	C	C	C
White Plains 2	4A/1	11-54	10-70		L	L	L	L	Cleveland 1	4M/2	6-49	6-72	X	L	L	L	L
									Columbus	4A/3	10-56	11-71		C	C	C	C
									Toledo	4A/3	8-61	3-73	X	C	C	C	C
NEW JERSEY																	
Camden 2	4A/2	10-69			L	L	L	L	MICHIGAN								
Newark 2	4A/2	8-53			L	L	L	L	Detroit	4A/2	10-53	12-70		L	L	L	L
New Brunswick	4A/3	8-70	8-70		C	C	C	C	Grand Rapids 1	4A/2	4-69	4-69		L	L	C	C
Rochelle Park	4A/3	11-66	5-74		C	C	C	C	Plymouth	4A/3	7-69	7-69	X	C	C	C	C
PENNSYLVANIA									INDIANA								
Harrisburg	4A/2	12-55	1974	X	C	C	C	C	Bloomington	4A/4	8-70	8-70		C	C	C	C
Philadelphia	4M/2	8-43			L	C	L	C	Indianapolis φ	4A/2	5-50	3-73	X	L	L	C	L
Pittsburgh 1 φ	4A/1	7-51	9-70		L	L	L	C	South Bend 1	4A/2	4-70	4-70		L	L	L	L
Pittsburgh 2	4A/3	11-70	11-70		L	L	L	L									
Seranton	4A/3	5-53		X	C	C	C	C									
Wayne	4A/1	5-57	6-71		L	L	L	L	WISCONSIN								
									Eau Claire	4A/2	5-70	5-70		C	C	C	C
CHES. & POT.									Milwaukee 1	4A/2	5-55			L	L	L	L
Baltimore 2 φ	4A/2	8-50			C	C	C	C									
Charleston	4A/2	3-61		X	C	C	C	C									
Richmond	4A/2	6-54	5-72	X	C	C	C	C	ILLINOIS								
Washington 1 φ	4A/3	9-50			C	C	C	C	Chicago 2	4M/2	12-48		X	L	L	L	L
Washington 3	4A/2	3-67	8-71		C	C	C	C	Chicago 3	4A/2	9-54			L	L	L	L
									Chicago 6	4A/3	6-71	6-71		L	L	L	L
									Norway	4A/1	12-62			L	L	L	L
SOUTHERN									Springfield	4A/2	9-60	8-74		L	L	L	L
Atlanta 1 φ	4A/2	10-51	7-74		C	C	C	C									
Charlotte	4A/2	11-54	2Q-72	X	C	C	C	C									
Columbia	4A/2	4-59		X	C	C	C	C									
Greensboro	4A/3	8-60	3Q-73	X	C	C	C	C	NORTHWESTERN								
Jacksonville	4A/2	12-55	6-73	X	C	C	C	C	Des Moines	4A/2	6-57	1-70	X	L	L	L	C
Miami 2	4A/3	11-57			C	C	C	C	Minneapolis φ	4A/2	2-51	6-71	X	L	C	L	C
Orlando	4A/2	11-62	11-73	X	C	C	C	C	Omaha φ	4A/2	2-52	1-71	X	L	L	L	C
Rockdale	4A/1	6-60	6-70		L	L	L	L	Minneapolis 2	4A/3	11-71	11-71		L	C	L	C
Columbus	4A/4	11-71	11-71		C	C	C	C									
Raleigh	4A/4	8-71	8-71	X	C	C	C	C									

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NO. 4-TYPE TOLL CROSSBAR OFFICES IN SERVICE - END OF 1971

Location	Type/ Class	Service Date		CAMA	Machine* Responsibility				Location	Type/ Class	Service Date		CAMA	Machine* Responsibility			
		Office	ETS		T	E	A	M			Office	ETS		T	E	A	M
SOUTHWESTERN									PACIFIC (Cont.)								
Dallas 1 ø	4A/1	11-51	6-71	X	L	L	L	C	San Bernardino	4A/1	10-57	3-74		C	C	C	C
Dallas 2	4A/2	7-71	7-71	X	L	L	L	C	San Diego 1	4A/2	3-67	3-74		C	C	C	C
Fort Worth	4A/2	7-60	10-72	X	C	C	C	C	San Francisco 1	4A/3	6-69	12-71	X	C	C	C	C
Houston 1 ø	4A/2	7-52	11-72	X	C	C	C	C	San Jose 1	4A/2	6-58	4-73		C	C	C	C
Houston 2	4A/3	6-71	6-71	X	C	C	C	C	Sherman Oaks 2	4A/3	4-71	4-71		C	C	C	C
Kansas City ø	4A/2	11-50	10-72	X	C	C	C	C									
Little Rock	4A/3	5-54	4-74	X	C	C	C	C	SO. NEW ENGLAND								
Oklahoma City	4A/2	2-54	6-73	X	C	C	C	C	New Haven 4	4A/2	5-68	5-71		L	L	L	L
San Antonio	4A/2	8-55	10-72	X	C	C	C	C									
St. Louis 1	4A/1	4-55	7-72		L	L	L	C	CIN. & SUB.								
St. Louis 2	4A/3	5-70	5-70	X	L	L	L	C	Cincinnati ø	4A/2	9-52	4-72	X	L	L	L	L
Tulsa	4A/3	4-57	4-73	X	C	C	C	C									
Wichita	4A/3	10-57	8-74	X	C	C	C	C	CANADA								
									Montreal	4A/1	5-56	10-74	X	C	C	C	C
MOUNTAIN									Toronto	4A/2	6-55		X	C	C	C	C
Albuquerque	4A/2	4-60	4-72	X	L	L	L	L									
Colorado Springs	4A/3	6-71	6-71		C	C	C	C	NON-BELL								
Denver 1	4A/1	11-54	12-70	X	L	L	L	L	Clearwater, Fla.	4A/4							
Phoenix 1	4A/2	12-66	3Q-73		L	L	L	L	Ft. Wayne, Ind.	4A/4							
Pueblo	4A/3	8-69	8-69		C	C	C	C	Halifax, N.S.	4A/3	4-71						
Salt Lake City	4A/2	3-58	5-73	X	L	L	L	C	Saskatchewan	4A/3			X				
									St. Petersburg, Fla.	4A/4							
PACIFIC NW									Tampa, Fla.	4A/3	8-69						
Portland 1	4A/2	11-55	11-75	X	C	C	C	C	Vancouver, B.C.	4A/2	4-71						
Seattle	4A/2	1-59	1-72		C	C	C	C	Winnipeg, Man.	4A/2			X				
Spokane	4A/3	4-62		X	C	C	C	C									
PACIFIC																	
Anaheim	4A/2	12-64	4-72	X	C	C	C	C									
Los Angeles 2	4A/2	5-54	1-72		C	C	C	C									
Los Angeles 3	4A/3	3-62	9-69		C	C	C	C									
Oakland 3	4A/2	10-49	2-71		C	C	C	C									
Redwood City	4A/3	2-70	2-70		C	C	C	C									
Sacramento	4A/1	6-53			C	C	C	C									

ø Originally installed as A4A

* Machine Responsibility - T = Traffic Engineering C = Associated Company
 E = Equipment Engineering L = Long Lines
 A = Machine Administration
 M = Machine Maintenance

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Chart 6

CROSSBAR TANDEM IN SERVICE - END OF 1971

Location	Service Date	Switching Class		CAMA	ANI	6-Digit Trans-lation	Location	Service Date	Switching Class		CAMA	ANI	6-Digit Trans-lation
		L-Loc T-Toll	Class						L-Loc T-Toll	Class			
NEW ENGLAND													
Bangor, Me.	10-69	L	4	X			- BROOKLYN						
Boston (Dorchester)	1-64	L	4	X	X	X	Albemarle Rd. 1 (*)	2-59	T	3	X	X	X
(Harrison)	6-65	L	4	X	X	X	Albemarle Rd. 2 (*)	11-66	T	3	X	X	X
(Metro)	6-49	L	4				Brooklyn (*)	9-48	T	4			
(Malden)	12-67	L	4			X	Bushwick 1 (#)	9-63	T	4			X
(Newton)	6-55	L	4				Bushwick 2 (#)	3-67	T	4			X
Brockton, Mass.	6-63	T	4	X		X	Kings 1 (*)	8-64	T	4			X
Fall River, Mass.	5-64	T	3	X	X	X	Kings 2 (*)	11-68	T	4			X
Framingham, Mass.	1-65	T	4	X	X	X							
Lawrence, Mass.	11-60	T	3	X	X	X							
Manchester, N.H.	6-63	T	3	X	X	X							
Portland, Me.	4-62	T	3	X	X	X							
Providence 1 (*), R.I.	9-56	T	3	X	X	X							
Providence 3 (*), R.I.	3-49	L	4										
White River Jct., Vt.	11-61	T	3	X		X							
Worcester, Mass.	11-59	T	4	X	X	X							
NEW YORK													
- Upstate													
Albany 1	12-61	T	3	X	X	X							
Binghamton 1	6-59	T	3	X	X	X							
Buffalo Erie	10-48	T	4										
Buffalo Frontier	11-61	T	4										
Rochester 1 (Non-Bell)	3-58	T	4	X		X							
Rochester 2 (Non-Bell)	4-69	T	4	X	X	X							
Utica	10-63	T	4	X	X	X							
- MANHATTAN													
Amsterdam 1 (#)	8-48	L	5										
Amsterdam 2 (#)	11-59	T	4			X							
Midtown 1 (#)	9-62	T	4			X							
Midtown 2 (#)	9-64	T	4			X							
Borough 3 (*)	10-52	T	3										
Borough 4 (*)	4-55	T	3										
City (#)	9-46	L	5										
Gotham 8 (#)	6-48	T	4										
Gotham 9 (#)	6-50	T	4										
Interzone (#)	10-41	L	5										
Chelsea 1 (*)	8-69	T	4			X							
Chelsea 2 (*)	8-69	T	4			X							
Connecticut	7-52	T	4										
Lexington	6-68	T	4			X							
Tenth Ave. 1 (#)	12-63	T	4			X							
Tenth Ave. 2 (#)	8-65	T	3	X	X	X							
Tenth Ave. 3 (#)	10-67	T	3	X	X	X							
Vesey 1 (*)	10-49	L	5			X							
Vesey 2 (*)	9-50	T	4			X							
Vesey 3 (*)	9-54	L	5			X							
West St. 4 (*)	9-59	T	3	X	X	X							
West St. 5 (*)	10-63	T	3	X	X	X							
York 1 (#)	11-47	L	5										
York 2 (#)	10-51	L	5										
E-97th St.	7-71	T	4										
- BRONX													
bronx 1 (*)	2-60	T	3	X	X	X							
Bronx 2 (*)	7-64	T	3	X	X	X							
Tremont 1 (*)	7-63	T	4			X							
Tremont 2 (*)	11-65	T	4			X							
- WESTCHESTER													
Mt. Kisco	3-58	T	3	X	X	X							
Mt. Vernon 1 (#)	10-49	T	4										
Mt. Vernon 2 (#)	12-68	L	5			X							
White Plains 1	3-50	T	4										
- MID HUDSON													
Nyack	5-59	T	3	X	X	X							
Monticello	3-65	T	4	X	X	X							
Poughkeepsie	11-65	T	3	X	X	X							
- STATEN ISLAND													
							- STATEN ISLAND	1-67	T	4			X
- NASSAU													
							Hempstead 1 (*)	7-50	T	4			X
							Hempstead 2 (*)	6-57	T	4			X
							Hempstead 3 (*)	8-66	T	3	X	X	X
							Hempstead 4 (*)	8-66	T	3			X
- SUFFOLK													
							Deer Park 1	11-65	T	3			X
							Deer Park-2	7-71	T	3			
NEW JERSEY													
							Asbury Park	2-66	T	4			X
							Atlantic City	4-61	T	3	X	X	X
							Camden	3-53	T	3	X	X	X
							Hackensack	6-53	T	4	X	X	X
							Jersey City (Bergen)	1-55	T	4		X	X
							Morristown	1-55	T	3	X	X	X
							Newark (Essex 1) #	11-57	T	4			
							(Essex 2) #	3-61	T	4	X	X	X
							(Jersey 1) *	10-47	T	4			
							(Jersey 2) *	11-52	T	4		X	X
							(Tandem) *	7-65	T	4	X	X	X
							New Brunswick	6-57	T	4	X	X	X
							Paterson	7-50	T	4	X	X	X
							Trenton	3-57	T	3	X	X	X
PENNSYLVANIA													
							Allentown	10-61	T	4	X	X	X
							Altoona	11-57	T	3	X	X	X
							Greensburg	8-59	T	4	X	X	X
							Lancaster	5-62	T	4	X	X	X
							Phila. (East A) #	3-53	T	3	X	X	X
							(East B) #	6-60	T	3	X	X	X
							(North A) *	8-55	T	3	X	X	X
							(North B) *	10-64	T	3	X	X	X
							(West)	8-55	T	3	X	X	X
							Pitts. (Tandem A) #	4-55	T	4	X	X	X
							(Tandem B) #	8-57	T	4	X	X	X
							Reading	11-59	T	4	X	X	X
							Tullytown	3-59	T	3	X	X	X
							Wilkes-Barre	11-62	T	4	X	X	X
							Williamsport	5-61	T	3	X	X	X
							Wilmington, Del.	3-59	T	3	X	X	X

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CROSSBAR TANDEM IN SERVICE - END OF 1971

Location	Service Date	Switching Class		CAMA	ANI	6-Digit Trans-lation	Location	Service Date	Switching Class		CAMA	ANI	6-Digit Trans-lation
		L-Loc T-Toll	Class						L-Loc T-Toll	Class			
CHES. & POT. Arlington, Va. (Local)	9-51	T	4			X	INDIANA	10-58	T	3	X	X	X
(Toll)	3-66	T	3			X	Evansville	10-70	L	4			X
Baltimore 3	10-48	T	4	X	X	X	Indianapolis	8-56	T	3	X	X	X
Baltimore 6	11-62	T	4			X	South Bend 2						
Baltimore 7	12-67	T	4			X							
Clarksburg, W.Va.	10-64	T	3	X	X	X	WISCONSIN						
Hyattsville, Md.	10-51	T	4			X	Appleton	5-62	T	3	X	X	X
Norfolk, Va.	10-61	T	3	X	X	X	Madison	5-63	T	2	X	X	X
Roanoke, Va.	5-57	T	3	X	X	X	Milwaukee 2	11-48	T	3	X	X	X
Silver Spring (Local)	9-51	T	4			X	(Fairway Dr.)	11-65	L	5			
(Toll)	5-64	T	3	X	X	X	Racine	5-65	T	3	X	X	X
Wash., D.C. (Dupont)	11-64	L	5			X							
(Uptown)	1-49	T	4	X	X	X	ILLINOIS						
(Mt. Pleasant)	10-66	L	5			X	Centralia	7-61	T	2	X	X	
							Champaign	5-59	T	3	X	X	
SOUTHERN							Chicago (Belle Plaine 1)	8-54	T	4			
Asheville, N.C.	6-66	T	3	X		X	(Belle Plaine 2)	12-61	L	5			
Atlanta, Ga.	10-60	T	4	X	X	X	(Congress)	9-62	L	5			
Atlanta-Decatur, Ga.	9-64	L	5			X	(Franklin 1)	7-55	L	5			
Charleston, S.C.	4-66	T	4	X	X	X	(Franklin 2)	5-59	L	5			
Ft. Lauderdale, Fla.	12-64	T	4	X	X	X	(Kedzie 1)	10-58	L	4			
Greenville, S.C.	8-60	T	3	X	X	X	(Kedzie 2)	7-69	L	4			
Macon, Ga.	8-67	T	3	X	X	X	(Stewart 1)	11-52	T	4			
Miami, Fla.	9-59	T	4	X	X	X	(Stewart 2)	10-66	T	4			
West Palm Beach, Fla.	11-66	T	4	X		X	(Wabash 1)	9-46	L	5			
							(Wabash 2)	5-61	T	4			
							(Morton Grove)	9-67	L	5			
							Chicago 5	7-69	T	3	X		
SOUTH CENTRAL							Decatur	12-68	T	4	X		
Chattanooga, Tenn.	9-57	T	3	X		X	Peoria	9-61	T	4	X		
Lafayette, La.	11-60	T	3	X	X	X	Rockford	12-61	T	3	X	X	X
Mobile, Ala.	5-65	T	3	X	X	X							
Montgomery, Ala.	7-62	T	3	X	X	X	NORTHWESTERN						
New Orleans, La.	12-62	T	4	X	X	X	Bismarck, N.D.	4-70	T	3	X		X
Paducah, Ky.	5-60	T	3	X	X	X	Cedar Rapids, Ia.	12-66	T	4	X	X	X
Shreveport, La.	9-61	T	3	X	X	X	Davenport, Ia.	10-58	T	3	X	X	X
							Fargo, N.D.	4-59	T	2	X	X	X
							Grand Island, Neb.	5-70	T	3	X		X
OHIO							Omaha, Neb.	2-69	L	5			
Akron	11-57	T	3	X	X	X	Rapid City, S.D.	3-70	T	4	X	X	X
Canton	6-60	T	3	X		X	St. Paul, Minn.	8-57	T	4	X	X	X
Clev. (Clearwater 1)	1-59	T	4	X	X	X	Sioux City, Ia.	6-60	T	3	X	X	X
(Clearwater 2)	7-69	L	4			X	Sioux Falls, S.D.	11-58	T	3	X	X	X
(Garfield)	2-55	T	4	X	X	X	Waterloo, Ia.	6-61	T	3	X	X	X
(Henderson 1)	4-48	L	5			X							
(Henderson 2)	9-66	L	5			X	SOUTHWESTERN						
Columbus	7-58	T	4	X		X	Abilene, Tex.	4-69	T	3	X		X
Youngstown	8-56	T	3	X	X	X	Amarillo, Tex.	8-55	T	2	X	X	X
							Austin, Tex.	7-66	T	3	X	X	X
MICHIGAN							Beaumont, Tex.	5-66	T	3	X	X	X
Detroit (Bell)*	5-48	L	5			X	Ft. Smith, Ark.	11-66	T	4	X	X	X
(Cadillac)*	7-48	T	4	X	X	X	Harlingen, Tex.	8-71	T	3	X	X	
(Trinity)	10-41	L	5			X	Joplin, Mo.	6-62	T	3	X		X
(University)	6-59	T	4			X	Kansas City, Mo.	9-49	L	5			X
(Woodward)*	12-53	T	4	X	X	X	Lubbock, Tex.	7-57	T	3	X		
Flint	6-57	T	4	X	X	X	St. Louis 1, Mo.	8-49	L	5			
Grand Rapids 2	4-57	T	4	X	X	X	St. Louis 2, Mo.	4-61	T	4	X	X	
Jackson	7-67	T	3	X	X	X	(Chestnut)	9-66	T	4	X	X	X
Kalamazoo	11-65	T	3	X	X	X	Selins, Kan.	9-56	T	3	X		X
Lansing	8-64	T	4	X	X	X	Springfield, Mo.	12-64	T	4	X	X	
Pontiac	4-58	T	4	X	X	X	Sikeston, Mo.	11-68	T	3	X		
Saginaw	6-61	T	3	X	X	X	St. Joseph, Mo.	6-70	T	4	X	X	
							Sweetwater, Tex.	3-57	T	2			X
							Waco, Tex.	12-67	T	3	X		

Chart 6

CROSSBAR TANDEMS IN SERVICE - END OF 1971

Location	Service Date	Switching Class		CAMA	ANI	6-Digit Trans-lation	Location	Service Date	Switching Class		CAMA	ANI	6-Digit Trans-lation
		L-Loc T-Toll	Class						L-Loc T-Toll	Class			
MOUNTAIN							PACIFIC (Cont.)						
Billings, Mont.	11-61	T	2	X	X	X	San Francisco (Onon O)	8-54	T	4			X
Boise, Idaho	12-62	T	3	X	X	X	→ (Bush O)*	12-41	T	4			X
Denver, Colo.	4-60	T	4	X	X	X	(Bush 1)*	5-49	T	4	X	X	X
El Paso, Tex.	8-62	T	4	X	X	X	San Francisco 5, Cal.	5-65	T	3	X	X	X
Phoenix 2, Ariz.	12-56	T	4	X	X	X	San Francisco 6, Cal.	8-59	T	3	X	X	X
Tucson, Ariz.	11-61	T	3	X	X	X	San Jose 2, Cal.	12-51	T	3	X	X	X
Grand Jct., Colo.	3-68	T	3	X		X	San Rafael, Cal.	8-62	T	3	X		X
							Santa Rosa, Cal.	6-57	T	3	X		X
							Sherman Oaks 1, Cal.	12-58	T	3			X
PACIFIC NW							Stockton, Cal.	8-57	T	2	1-73		X
Eugene, Ore.	6-65	T	4	X	X	X							
Seattle (East), Wash.	9-54	L	5				SO. NEW ENGLAND						
(Emerson)	10-58	L	5				Bridgeport, Conn.	3-59	T	4	X	X	X
(Mutual)	4-48	T	4				Hartford 1, Conn.	6-56	T	4	X	X	X
Tacoma, Wash.	5-64	T	3	X	X	X	Hartford 2, Conn.	8-65	T	4	X	X	X
Yakima, Wash.	8-58	T	3	X	X	X	Meriden, Conn.	10-58	T	4	X	X	X
							New Haven 2, Conn.	4-57	T	4	X	X	X
PACIFIC							New London, Conn.	5-62	T	4	X	X	X
Alhambra, Cal.	9-57	L	5				Norwalk, Conn.	12-70	T	4	X	X	X
Anaheim, Cal.	6-57	T	4	X	X	X	Stamford, Conn.	9-56	T	4	X	X	X
Bakersfield, Cal.	4-58	T	3	X	X	X	Waterbury, Conn.	11-57	T	4	X	X	X
Compton, Cal.	12-58	T	3										
Concord, Cal.	7-67	T	3	X	X	X	CINCINNATI						
El Monte, Cal. 2160	3-40	T	3			X	Cincinnati	10-49	T	4	X	X	X
Eureka, Cal.	1-59	T	4	X		X	(St. Bernard)	5-63	L	5			X
Fresno, Cal.	10-56	T	3	X	X	X							
Hollywood 3T#, Cal.	1-50	L	5				CANADA						
Hollywood 4T#, Cal.	10-68	L	5				Barrie	5-64	T	4	X	X	X
Los Angeles 5T, Cal.	1-48	L	5				Hamilton	2-61	T	4	X	X	X
Los Angeles 6T, Cal.	8-55	L	5				Kitchener	9-64	T	4	X	X	X
Los Angeles 17T*, Cal.	11-49	L	5				London	8-60	T	3	X	X	X
Los Angeles 18T*, Cal.	5-67	L	5				Montreal	3-60	T	4	X	X	X
Modesto, Cal.	6-62	T	3	X		X	Ottawa	5-63	T	3	X	X	X
Oakland (Franklin O)#	4-54	T	4	X	X	X	Quebec	9-63	T	2	X	X	X
Oakland 1#, Cal.	1-42	L	5				Sherbrooke	3-66	T	3	X		X
Oakland 4, Cal.	5-63	T	3	X	X	X	Sudbury	12-64	T	3	X		X
Oceanside, Cal.	5-63	T	4	X	X	X	Toronto	8-58	T	4	X	X	X
Palo Alto, Cal.	7-60	T	4	X	X	X	Windsor	5-62	T	4	X	X	X
Redding, Cal.	8-71	T	3	X		X							
Reno, Nev.	1-60	T	3	X	X	X	CANADA (Non-Bell)						
Sacramento 2, Cal.	7-58	T	3	X	X	X	Calgary	4-59	T	2	X	X	X
Salinas, Cal.	4-64	T	3	X	X	X	Regina	11-55	T	1	X		X
San Diego 2, Cal.	4-56	T	3	X	X	X	St. John	5-62	T	2	X		X

LOCATION: If two or more units (marker groups) with different names are located in the same building, these are indicated by alternating symbols (*) or (#) after the names.

SWITCHING CLASSIFICATION: If Toll (or local and toll) traffic is handled, the system is classed here as "Toll."

47 x 85
330-1-1-1

NO. 5 CROSSBAR CSP'S IN SERVICE-END OF 1971
(All Class 3)

Location	Service Date	Type Mkr.*	CAMA	ANI	Location	Service Date	Type Mkr.*	CAMA	ANI
<u>New York</u>					<u>Southwestern</u>				
Plattsburg	1959	W	X		Clinton, Okla.	1959	W		
					Durant, Okla.	1961	W		
<u>Pennsylvania</u>					Enid, Okla.	1955	B		
Warren	1959	W			Greenville, Texas	1955	F		
Warrington	1957	W	X		Lawton, Okla.	1956	B		
Westchester	1956	B	X		Moberly, Mo.	1959	W		
					Parsons, Kan.	1961	W		
<u>Ches. & Pot.</u>					<u>Mountain</u>				
Wheeling, W. Va.	1956	W			Casper, Wyo.	1964	W	X	X
					Great Falls, Mont.	1962	W	X	X
<u>Southern</u>					Helena, Mont.	1955	F	X	
Chipley, Fla.	1956	W	X		Pocatello, Ida.	1958	W	X	X
Laurinburg, N. C.	1957	W	X		Roswell, N.M.	1955	B	X	
Thomasville, Ga.	1956	B							
Waycross, Ga.	1957	W			<u>Pacific N.W.</u>				
					Astoria, Ore.	1957	W	X	X
<u>South Central</u>					Bellingham, Wash.	1958	W		
Danville, Ky.	1960	W	X		Bend, Ore.	1956	B	X	X
Greenwood, Miss.	1958	W	X	X	Medford, Ore.	1962	W	X	X
Humboldt, Tenn.	1957	W	X		Pendleton, Ore.	1957	W	X	X
Jackson, Tenn.			X						
Madisonville, Ky.	1957	W	X	X	<u>Pacific</u>				
Paintsville, Ky.	1957		X		El Centro, Cali.			X	
Tupelo, Miss.	1956	B	X		San Luis Obispo, Cali.	1951	W		
Winchester, Ky.	1958	W	X	X					
					<u>Canada</u>				
<u>Michigan</u>					Chicoutimi, Quebec	1959	W		
Escanaba	1958	W			North Bay, Ont.	1959	W		
<u>Wisconsin</u>					<u>Non Bell</u>				
Oshkosh	1958	W	X		Newcastle, N.B.	1959	W	X	X
Stevens Point	1957	W	X		Rimouski, Quebec			X	
Watertown	1970		X		Saskatoon, Sask.				
					St. Johns, Nfld.	1956	W	X	X
<u>Northwestern</u>									
Mason City, Ia.	1957	W	X	X					
Owatonna, Minn.	1961	W	X						
Sidney, Neb.			X						
St. Cloud, Minn.	1955	B	X						
Virginia, Minn.	1956	F	X	X					
Wadena, Minn.	1958	W	X						
Willmar, Minn.	1954	F	X						
Windom, Minn.	1958	W							

* W - Wire Spring, F - Flat Spring, B - Both wire and flat spring markers

BELL SYSTEM								
STEP-BY-STEP CAMA SYSTEMS IN SERVICE - END OF 1971								
Company	Location	ANI	Company	Location	ANI			
N.E.	Augusta, Me.	X	Ind.	Columbus	X			
	Bennington, Vt.		Ill.	Alton	X			
	Brattleboro, Vt.			Aurora	X			
	Claremont, N. H.			Gary, Ind.	X			
	Concord, N. H.			Joliet	X			
	Fitchburg, Mass.			Kankakee	X			
	Greenfield, Mass.			Peoria	X			
	Littleton, N. H.			Wisc.	Green Bay	X		
	Newburyport, Mass.				Janesville	X		
	Peterborough, N. H.				Marinette	X		
Rockland, Me.	Sheboygan	X						
Rutland, Vt.	Superior	X						
Waterville, Me.								
N.Y.	Glen Falls		N.W.	Duluth, Minn.	X			
Pa.	Bradford	X	S.W.	El Dorado, Ark. Garden City, Kan. Great Bend, Kan. Hays, Kan. Hope, Ark. Hutchinson, Kan. Liberal, Kan. Manhattan, Kan. Midland, Tex. Nacogdoches, Tex. Newport, Ark. Topeka, Kan.	X			
	Easton							
Hazelton								
C&P	Beckley, W. Va.	X				Mtn.	Cedar City, Ut. Cheyenne, Wyo. Globe, Ariz.	X
	Huntington, W. Va.	X						
	Lynchburg, Va.	X						
	Martinsburg, W. Va.	X						
	Newport News, Va.	X						
	Parkersburg, W. Va.	X						
Stauton, Va.	X							
So.	Delray Beach, Fla.		Pac.	Ventura, Cal.	X			
	Daytona Beach, Fla.							
	Gainesville, Fla.							
	Panama City, Fla.							
	Pensacola, Fla.							
Savannah, Ga.								
Ohio	Middletown	X						
	Painesville	X						
	Springfield	X						
	Steubenville	X						
	Xenia	X						
	Zanesville	X						

STEP-BY-STEP CSP'S IN SERVICE - END OF 1971
(All Class 3)

Company	Location	Init. Serv.	CAMA	ANI	Company	Location	Init. Serv.	CAMA	ANI
Wisc.	Janesville	'49	X			Gander <i>NF</i>			
SW	Longview, Tex.	'53				Kamloops <i>BC</i>	'61	X	
Mtn.	Cheyenne, Wyo.	'31	X	X		Nanaimo <i>BC</i>	'60	X	X
PNW	Klamath Falls, Ore.	'40				Nelson <i>BC</i>	'62		
	Roseburg, Ore.	'51				New Westminster <i>BC</i>	'56	X	
Canada (Non Bell)	Abbotsford <i>BC</i>	'53	X			Prince George <i>BC</i>	'58		
	Campbell River <i>BC</i>	'55	X			Terrace <i>BC</i>	'68	X	
	Cranbrook <i>BC</i>	'55			Canada	Thunder Bay	'54	X	
	(cont'd.)					<i>Bell - locals which home on this are under Bay</i>			

70

19

100
200
300
400

Chart 9

TRAFFIC SERVICE POSITIONS SYSTEM NO. 1
THROUGH 1976

Location	Ship Date	Service Date	Location	Ship Date	Service Date
NEW ENGLAND			SOUTHERN		
Framingham	12-68	6-70	Miami 2	1-68	9-69
Franklin Street	9-70	4-72	Jacksonville	11-69	12-70
Lawrence	10-72	6-74	Charleston	12-69	4-71
Providence Green	1-73	6-74	Rockdale	11-69	4-71
Brockton	1Q-74	4Q-75	Raleigh	1Q-70	3Q-71
Kendall Square	2Q-74	4Q-75	Charlotte	2Q-70	3Q-71
NEW YORK			Ft. Lauderdale	8-70	11-71
Albany	7-69	1-71	Orlando	8-70	10-72
Dix Hills	1-70	5-71	Pensacola	1-72	4-73
Varick St.	10-70	2-72	Atlanta	1-72	7-73
New York 6	8-71	3-73	Ojus 1	6-72	8-73
White Plains 4	11-71	5-73	Columbia	12-72	1-74
New York 11	8-72	11-73	Greensboro	3Q-72	1Q-74
Garden City	10-72	4-74	Gainsville	5-73	7-74
Williamsburg	6-73	11-74	West Palm Beach	4-73	9-74
Syracuse	10-73	4-75	Gastonia	4Q-73	1Q-75
Poughkeepsie	1-74	4-75	Greenville	5-74	6-75
Buffalo	10-73	6-75	Macon	2-74	6-75
Binghamton	1-74	6-75	Augusta	2-74	6-75
New York 13	1-74	6-75	Winston-Salem	1Q-74	2Q-75
New York 14	1-75	2-76	Florence	1-75	2-76
NEW JERSEY			Savannah	2-75	6-76
Morristown	1966	1-69	Columbus	2-75	6-76
Rochelle Park	3-69	6-70	Daytona Beach	7-75	8-76
New Brunswick	3-70	6-71	Athens	5-75	9-76
Camden	11-70	3-72	Asheville	4Q-75	1Q-77
Newark	3-73	4-74	SOUTH CENTRAL		
PENNSYLVANIA			Memphis ø	5-69	7-70
Philadelphia	4-69	10-70	New Orleans	3-69	10-70
Pittsburgh	4-70	11-71	Nashville	1-70	4-71
Wilmington	6-70	10-71	Jackson	4-70	5-72
Fort Washington	3-73	8-74	Chattanooga	3-71	5-72
Harrisburg	1Q-74	2Q-75	Birmingham	2-71	6-72
Dover	1974	1975	Louisville ø	12-71	4-73
CHES. & POT			Knoxville	3-73	5-74
Washington	5-68	5-70	Montgomery	4-73	6-74
Norfolk-Bute	6-70	5-72	Mobile	4-74	6-75
Richland-Grace	2-72	10-73	Baton Rouge	5-74	8-75
Baltimore	9-72	10-74	Gulfport	2-74	1-76
Columbia Pike	6-73	1-75	Shreveport	9-75	10-76
Roanoke	1-74	5-75	Hattiesburg	4-74	2-76
			Decatur	4-76	6-77

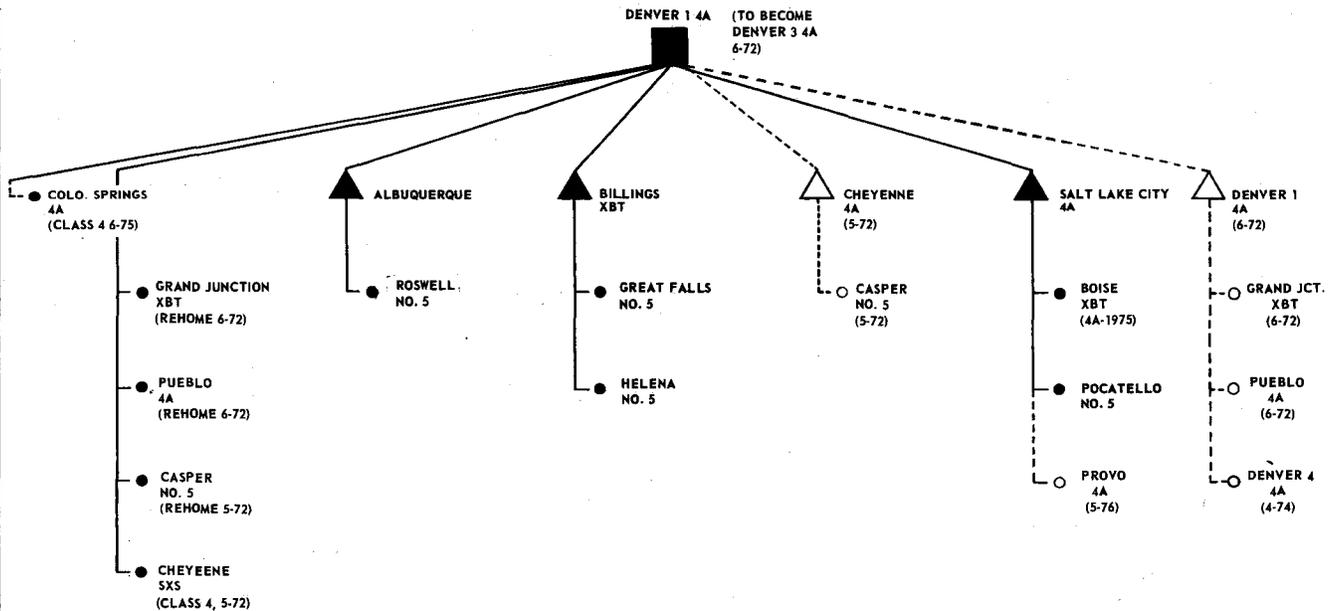
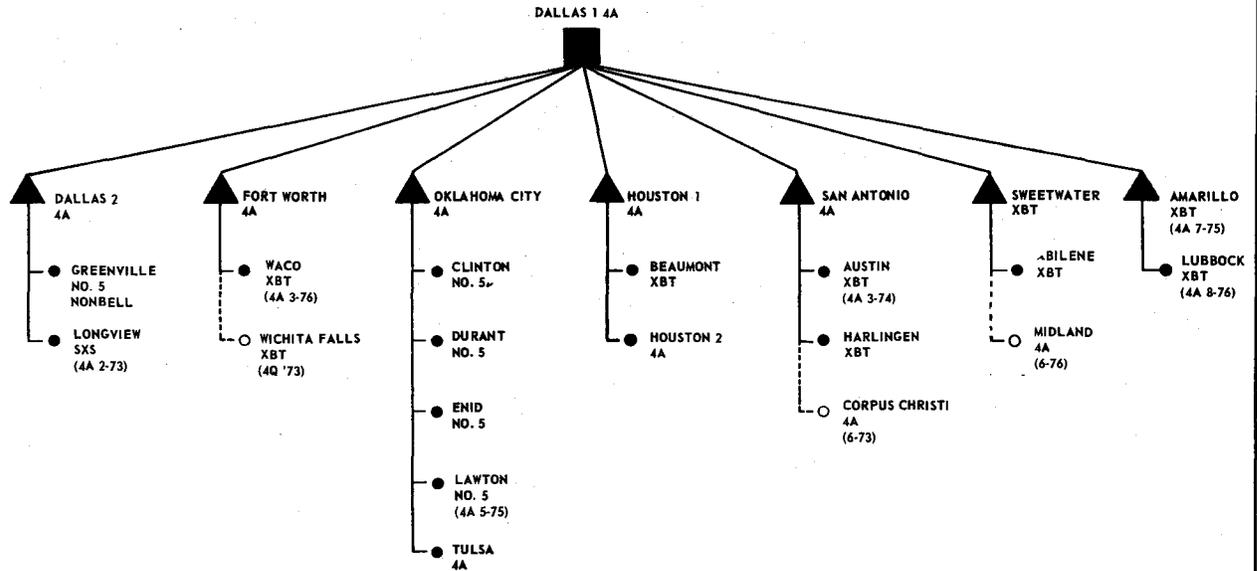
Chart 9

TRAFFIC SERVICE POSITIONS SYSTEM NO. 1					
THROUGH 1976					
Location	Ship Date	Service Date	Location	Ship Date	Service Date
OHIO			SOUTHWESTERN (Cont.)		
Cleveland	9-69	1-71	St. Louis	12-69	6-71
Columbus	10-69	6-71	Oklahoma City	12-69	9-71
Dayton	9-70	4-72	Longview	5-71	4-73
Youngstown	1-71	4-72	Wichita Falls	8-72	11-73
Akron	7-72	11-73	Tulsa	3Q-72	4Q-73
Canton	2-73	2-74	Austin	3-73	4-74
Toledo	1-73	2Q-74	Mission	2-73	6-74
MICHIGAN			Little Rock	1-73	6-74
Plymouth	12-69	5-71	Lawton	1Q-74	3Q-75
Kalamazoo	1Q-74	2Q-75	Corpus Christi	4-73	9-74
Pontiac	6-74	8-75	Midland	11-75	2-77
Saginaw	1Q-75	2Q-76	Amarillo	12-75	3-77
INDIANA			MOUNTAIN		
Bloomington	5-69	8-70	Denver	2-70	4-71
Indianapolis	7-72	9-73	Colorado Springs	12-70	5-72
South Bend	7-72	9-73	Phoenix	4-73	8-74
Anderson	4Q-74	1Q-76	Salt Lake City	12-73	8-75
WISCONSIN			Tucson	2Q-74	3Q-75
Waukesha	2-72	5-73	Boise	1Q-75	4Q-75
Madison	6-73	9-74	Peoria	8-74	3-76
Milwaukee	2-75	5-76	Cheyenne	3Q-75	2Q-76
ILLINOIS			PACIFIC NORTHWEST		
Canal	4-70	10-71	Portland	12-69	5-71
Wabash	4-72	9-73	Seattle	5-70	9-71
Oakbrook	9-72	2-74	Tacoma	7-75	9-76
Northbrook	1-74	4-75	PACIFIC		
Chicago 3	4-75	6-76	San Francisco	7-70	1-72
Norway	2Q-75	3Q-76	Redwood City	11-70	3-72
NORTHWESTERN			Los Angeles	12-70	4-72
Minneapolis	2Q-70	3Q-71	Oakland-Franklin	11-70	5-72
Sioux Falls	7-70	8-71	Anaheim	3-71	5-72
St. Paul	1Q-71	2Q-72	San Diego	3-72	5-73
Omaha	12-73	5-75	Reno	1-73	5-74
Rochester	3Q-74	3Q-75	Gardena	1-74	4-75
Davenport	1975	1976	Hayward	1-74	4-75
Bemidji	3Q-75	3Q-76	San Jose	1-75	3-76
SOUTHWESTERN			SO. NEW ENGLAND		
Houston	3-68	3-70	Bridgeport	9-69	1-71
Dallas	10-68	4-70	Norwalk	1-70	5-71
Fort Worth	7-69	1-71	New Haven	3-71	7-72
Kansas City	10-69	5-71	Hartford	2-73	8-74
San Antonio	2-70	5-71	CINCINNATI		
∅ Long Lines Engineered			Cincinnati	6-69	11-70

Note: The above Ship and Service dates are those indicated by the Companies in the April 1971 Construction Program View. These dates in no way imply a firm schedule as Ship and Complete dates must be negotiated with the WECo in the usual manner.

CONTROL SWITCHING POINTS AND THEIR HOMING ARRANGEMENTS

(Present & Future Arrangements through 1976)



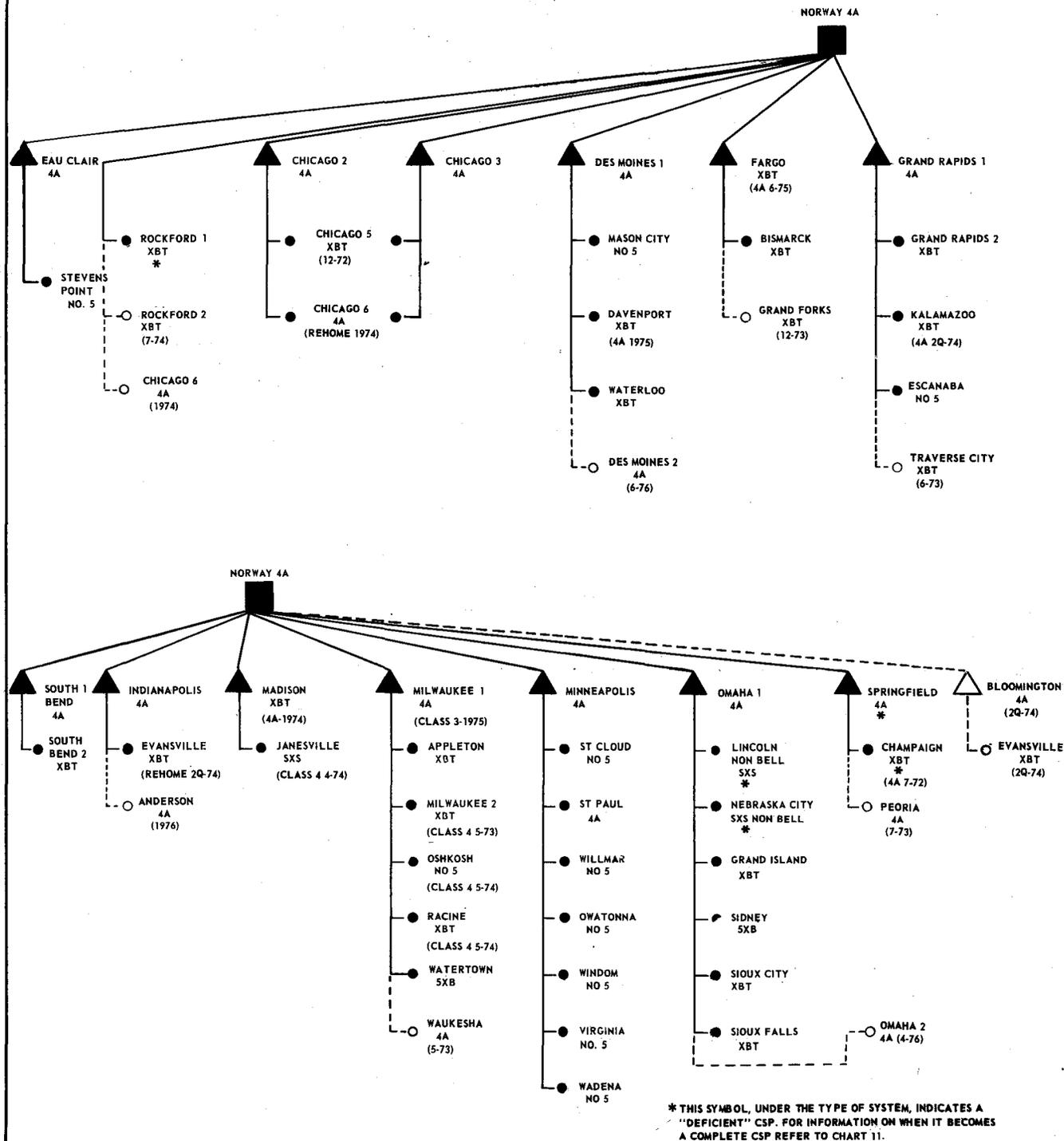
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EXISTING	CSP	FUTURE
■ REGIONAL CENTER (CLASS 1)	□	□
▲ SECTIONAL " (" 2)	○	△
● PRIMARY " (" 3)		○
PLANNED DATE IS SHOWN IN ()		

	FINAL GROUP
IN SERVICE 1-1-71	_____
PLANNED BY END OF 1976	- - - - -

CONTROL SWITCHING POINTS AND THEIR HOMING ARRANGEMENTS

(Present & Future Arrangements through 1976)



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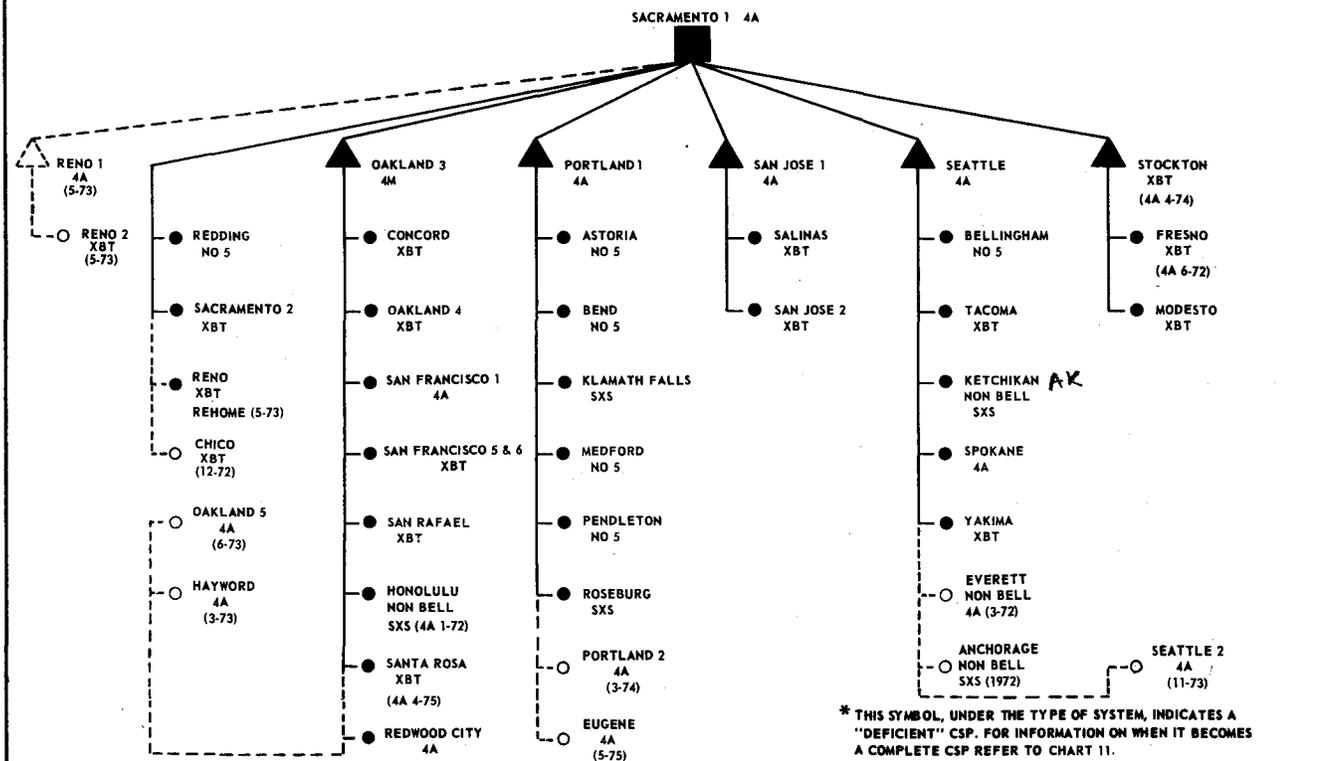
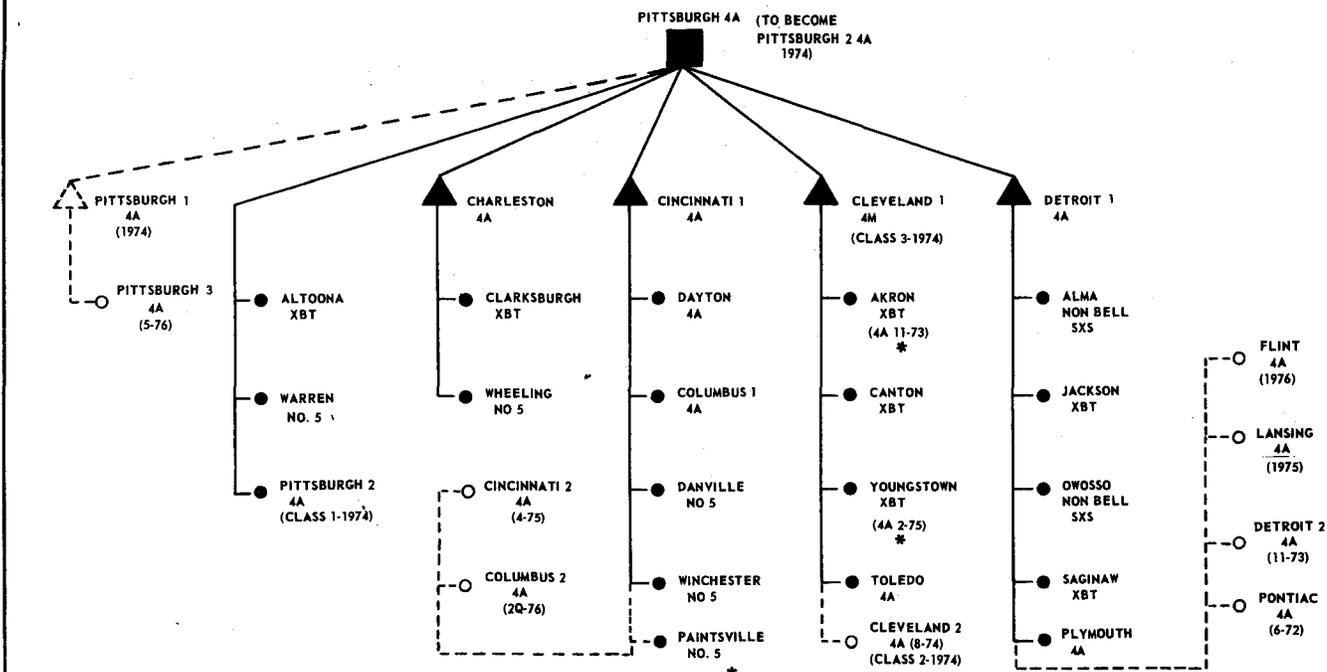
EXISTING	CSP	FUTURE
■	REGIONAL CENTER (CLASS 1)	□
▲	SECTIONAL " (" 2)	△
●	PRIMARY " (" 3)	○
	PLANNED DATE IS SHOWN IN ()	

IN SERVICE 1-1-71 _____
 PLANNED BY END OF 1976 _____

FINAL GROUP

CONTROL SWITCHING POINTS AND THEIR HOMING ARRANGEMENTS

(Present & Future Arrangements through 1976)



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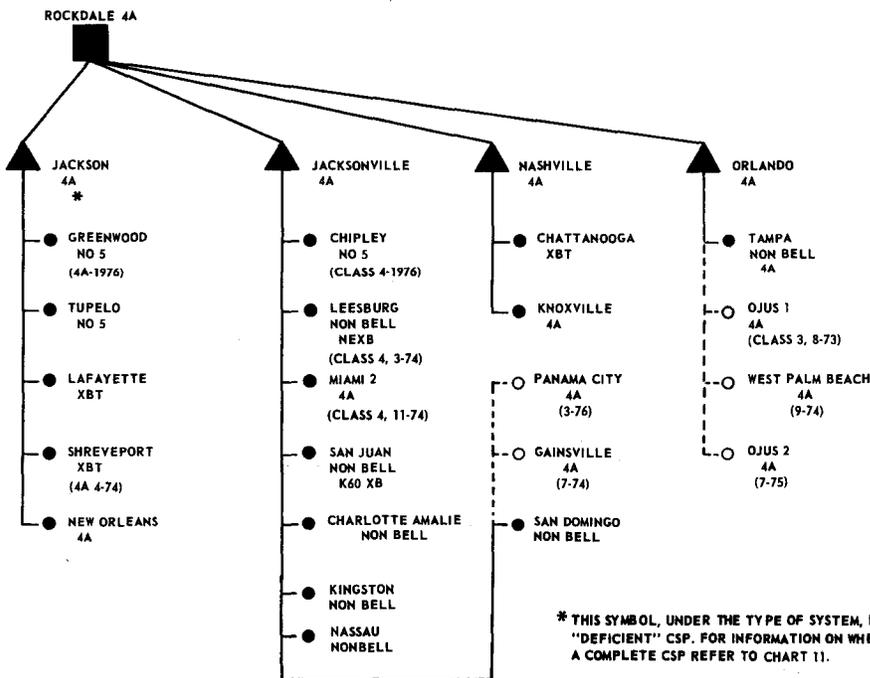
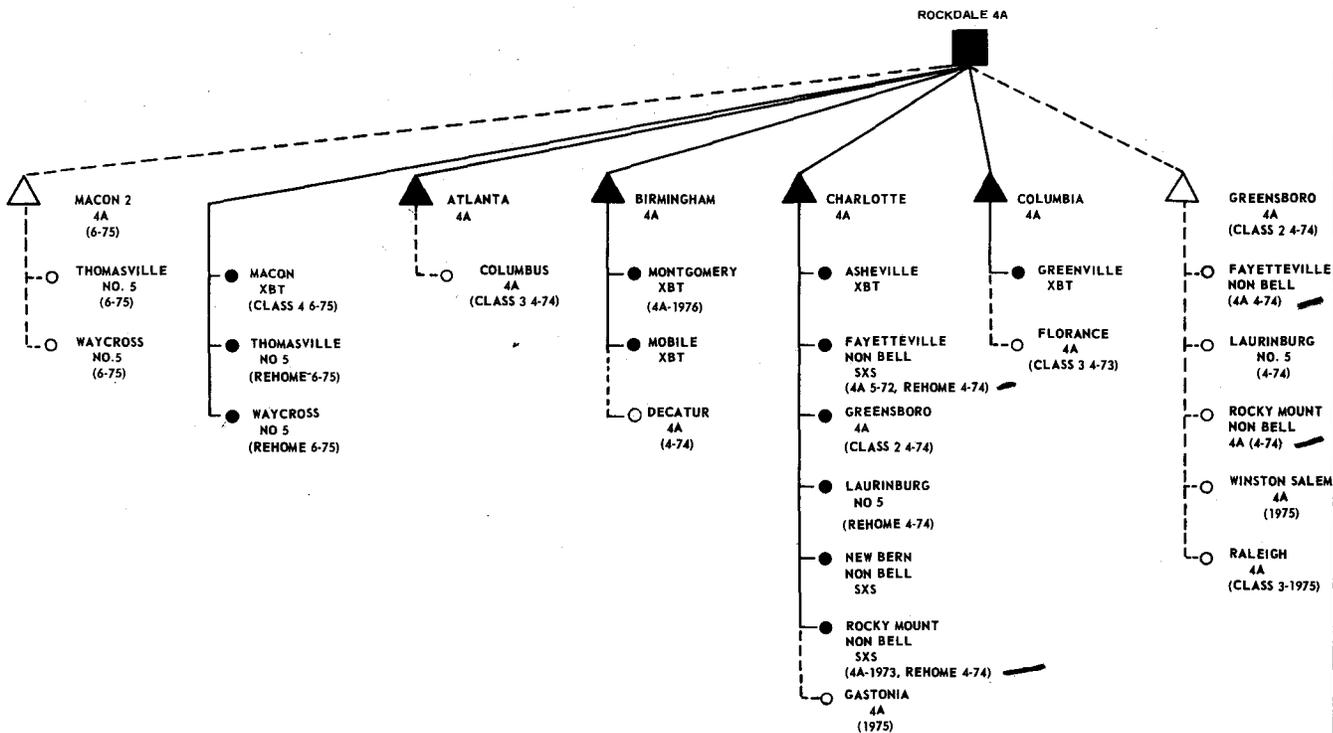
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EXISTING	CSP	FUTURE
■ REGIONAL CENTER (CLASS 1)	□	□
▲ SECTIONAL " (" 2)	▲	▲
● PRIMARY " (" 3)	●	○
PLANNED DATE IS SHOWN IN ()		

IN SERVICE 1-1-71 _____
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CONTROL SWITCHING POINTS AND THEIR HOMING ARRANGEMENTS

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CSP

EXISTING		FUTURE
■	REGIONAL CENTER (CLASS 1)	□
▲	SECTIONAL " (" 2)	△
●	PRIMARY " (" 3)	○
	PLANNED DATE IS SHOWN IN ()	

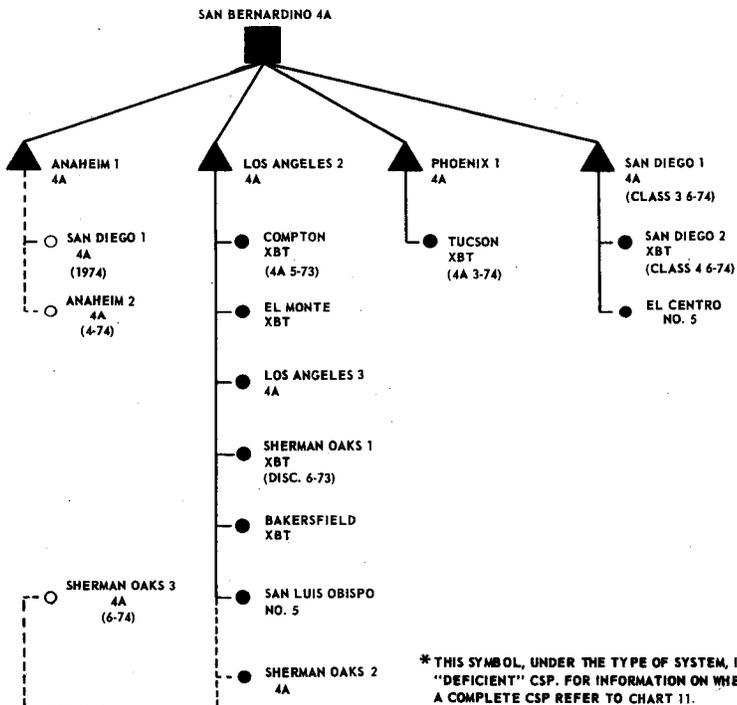
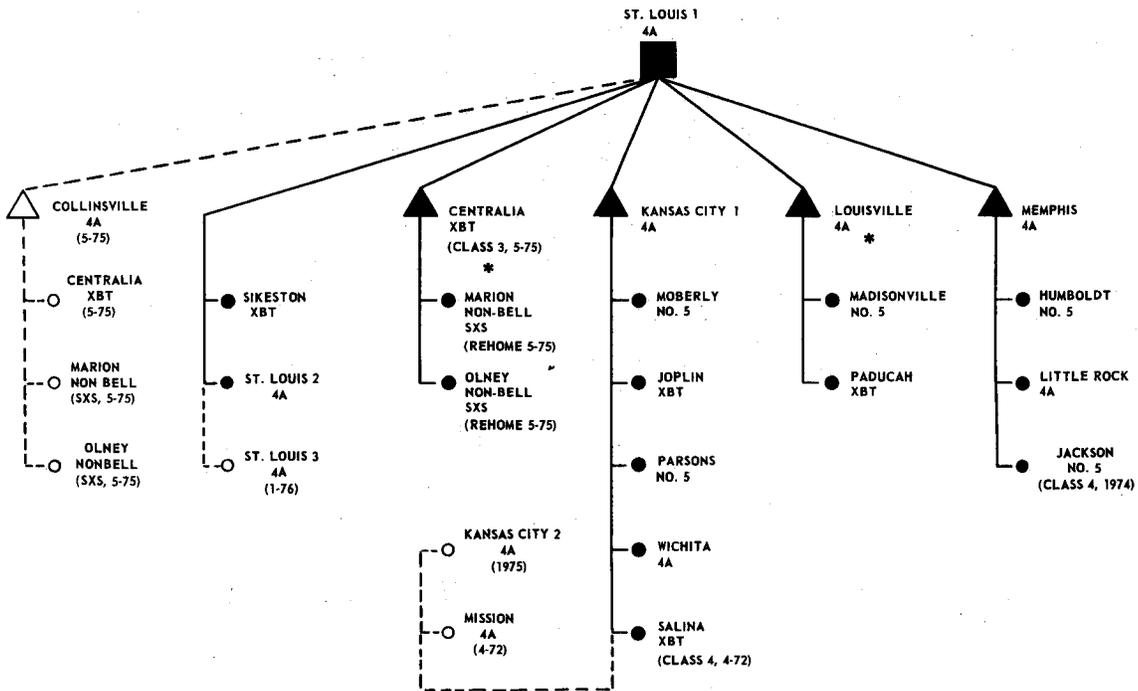
FINAL GROUP

IN SERVICE 1-1-71 _____

PLANNED BY END OF 1976 - - - - -

CONTROL SWITCHING POINTS AND THEIR HOMING ARRANGEMENTS

(Present & Future Arrangements through 1976)



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EXISTING	CSP	FUTURE
■	REGIONAL CENTER (CLASS 1)	□
▲	SECTIONAL " (" 2)	△
●	PRIMARY " (" 3)	○
PLANNED DATE IS SHOWN IN ()		

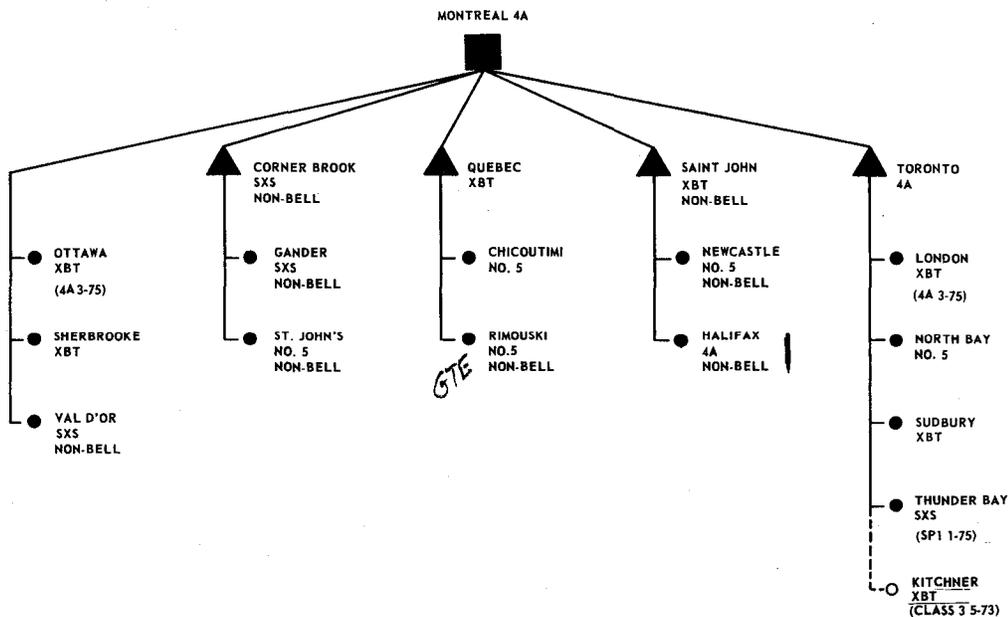
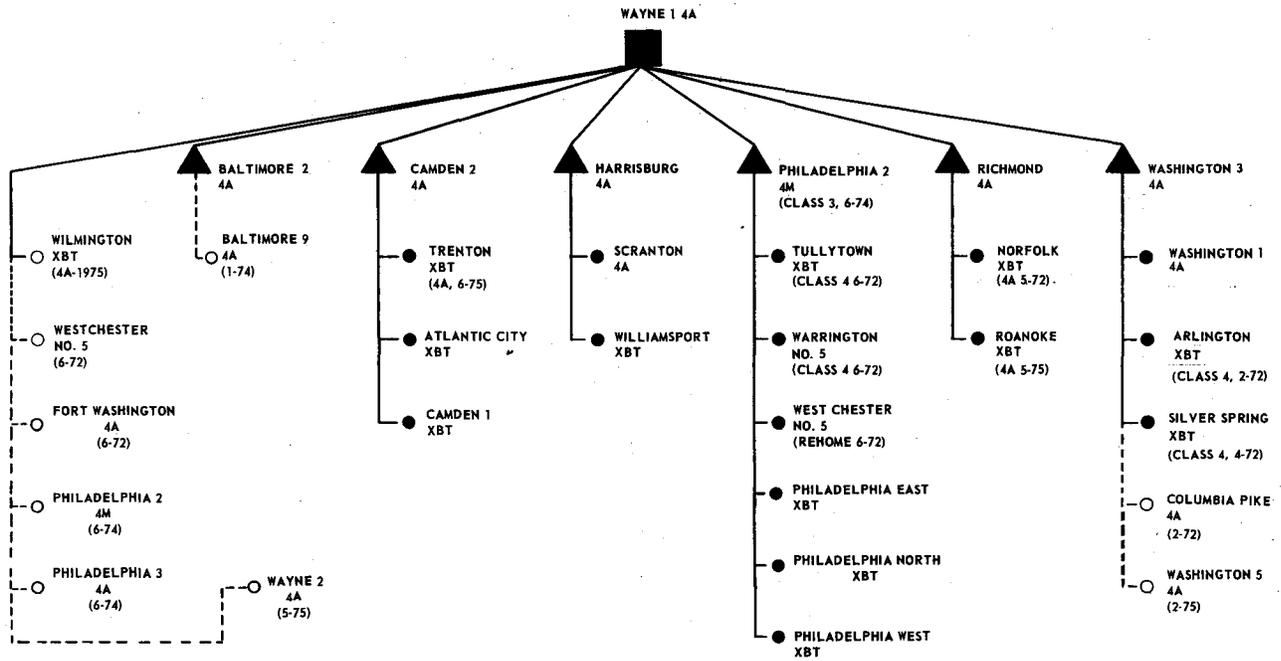
FINAL GROUP

IN SERVICE 1-1-71 _____

PLANNED BY END OF 1976 - - - - -

CONTROL SWITCHING POINTS AND THEIR HOMING ARRANGEMENTS

(Present & Future Arrangements through 1976)



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EXISTING	CSP	FUTURE
■	REGIONAL CENTER (CLASS 1)	□
▲	SECTIONAL " (" 2)	△
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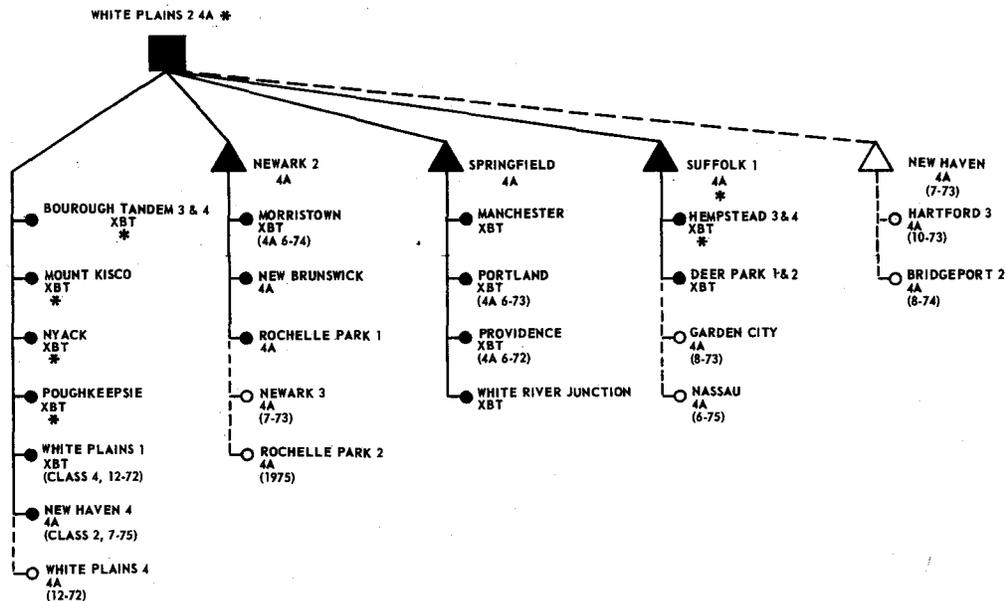
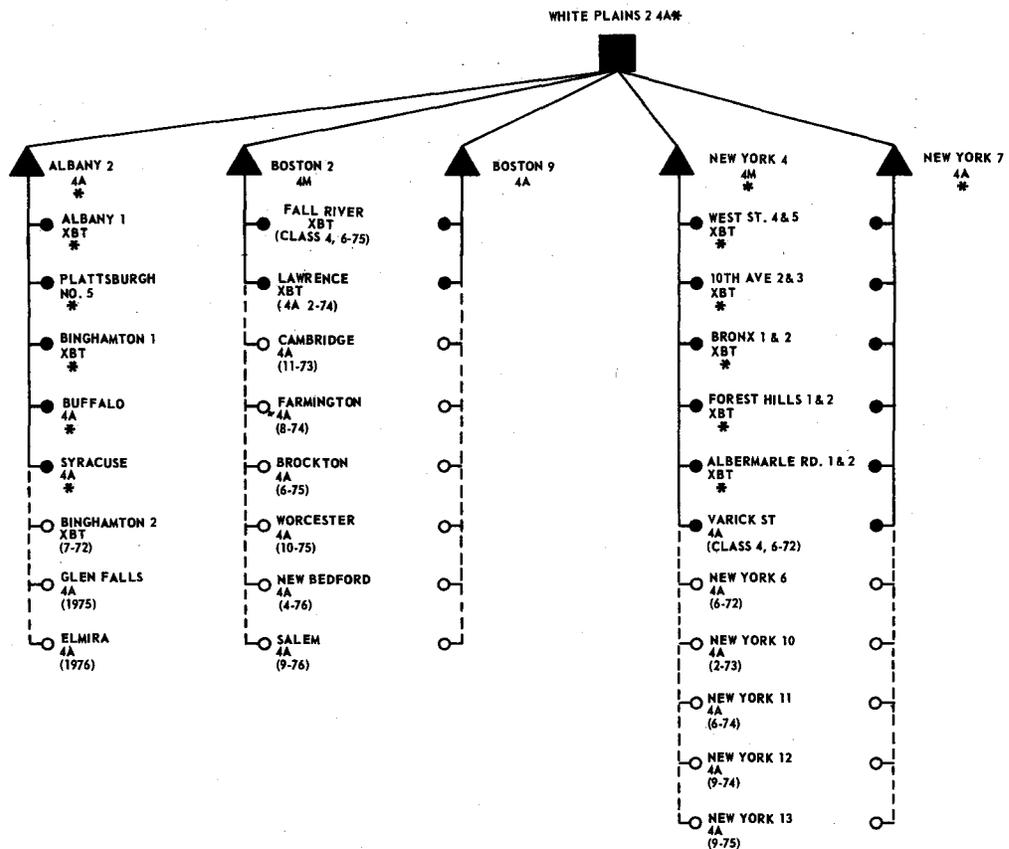
FINAL GROUP

IN SERVICE 1-1-71 _____

PLANNED BY END OF 1976 _____

CONTROL SWITCHING POINTS AND THEIR HOMING ARRANGEMENTS

(Present & Future Arrangements through 1976)



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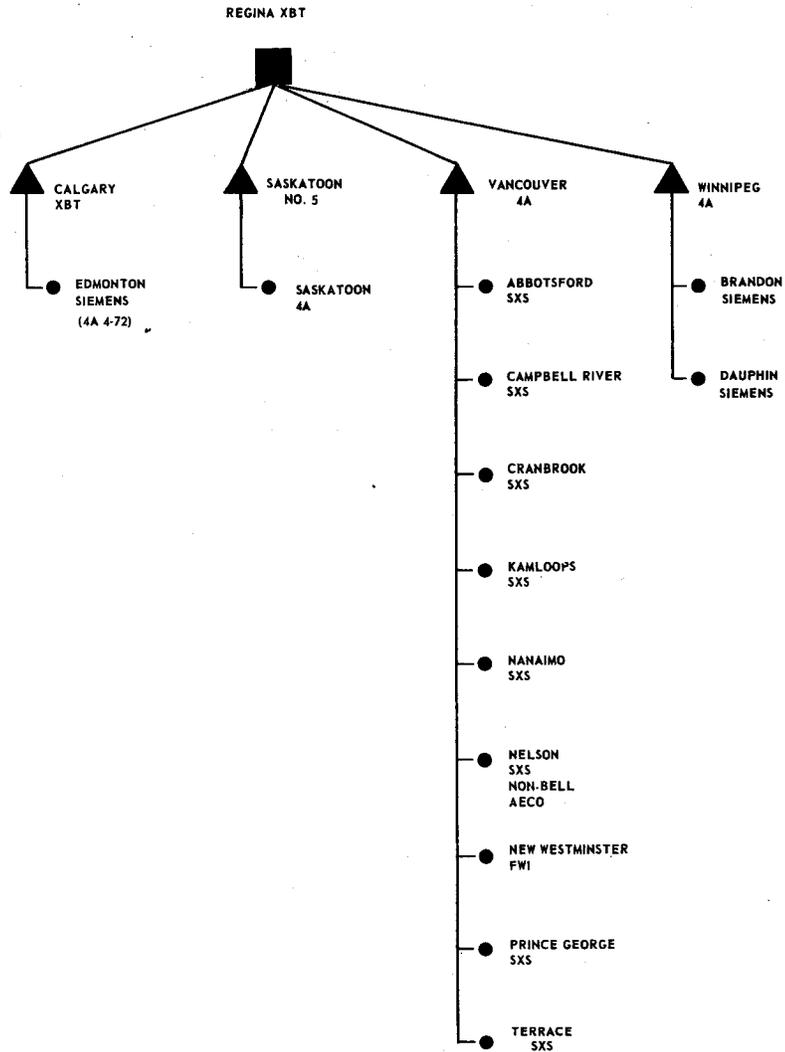
EXISTING	CSP	FUTURE
■ REGIONAL CENTER (CLASS 1)	□	□
▲ SECTIONAL " (" 2)	●	△
● PRIMARY " (" 3)	○	○
PLANNED DATE IS SHOWN IN ()		

IN SERVICE 1-1-71 _____ FINAL GROUP

PLANNED BY END OF 1976 _____

CONTROL SWITCHING POINTS AND THEIR HOMING ARRANGEMENTS

(Present & Future Arrangements through 1976)



NOTE: ALL LOCATIONS ARE NON-BELL

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EXISTING	CSP	FUTURE
■	REGIONAL CENTER (CLASS 1)	□
▲	SECTIONAL " (" 2)	△
●	PRIMARY " (" 3)	○
PLANNED DATE IS SHOWN IN ()		

IN SERVICE 1-1-71 _____ FINAL GROUP
 PLANNED BY END OF 1976 _____

DEFICIENT CSP'S
TYPES OF DEFICIENCIES AND DATES THEY WILL BE CORRECTED

Location	Deficiency	Type Switching Equipment	Completion Date	Location	Type of Deficiency	Switching Equipment	Completion Date
NEW ENGLAND - None				SOUTH CENTRAL			
NEW YORK				Jackson, Miss.	CD		4Q72
Upstate				Louisville, Ky.	ABCD	4A	12-71
Albany 2	A*	4A	NP	Paintsville, Ky.	ABCD	5xB	12-71
Albany 1	AC*	XBT	NP	OHIO			
Binghamton	A*	XBT	NP	Akron #2	A*	XBT	NP
Buffalo	A*	4A	1972	Youngstown #2	A*	XBT	NP
Plattsburgh	A*	5XB	NP	MICHIGAN - None			
Syracuse	A*	4A	NP	INDIANA - None			
Manhattan				WISCONSIN - None			
Borough 3 & 4	ACD	XBT	1972	ILLINOIS			
New York 4 ϕ	AC	4M	1972	Centralia	CD*	XBT	NP
New York 7 ϕ	A	4A	1972	Champaign	CD*	XBT	NP
Tenth Ave 2 & 3	AD	XBT	1972	Peoria	CD*	XBT	NP
West St. 4	A	XBT	1972	Rockford	CD*	XBT	NP
Mid-State				Springfield	CD*	4A	NP
Bronx 1	A	XBT	1971	NORTHWESTERN			
Westchester				Lincoln (Non-Bell)	ABCD	SxS	NP
Mt. Kisco	ACD	XBT	1972	Nebraska City (Non-Bell)	ABCD	SxS	NP
Nyack	ACD	XBT	1970	SOUTHWESTERN - None			
Poughkeepsie	A*	XBT	NP	MOUNTAIN STATES - None			
White Plains 2	A	4A	1972	PACIFIC NORTHWEST - None			
Brooklyn-Queens				PACIFIC - None			
Albermarle Rd. 1	A	XBT	1975	SOUTHERN NEW ENGLAND - None			
Albermarle Rd. 2	AD	XBT	1972	CINCINNATI & SURBAN - None			
Forest Hills 1	A	XBT	1975	CANADA - None			
Forest Hills 2	AD	XBT	1972				
Nassau-Suffolk							
Hempstead 3	ACD	XBT	1972				
Hempstead 4	ACD	XBT	1972				
Suffolk 1	A	4A	1972				
NEW JERSEY - None							
PENNSYLVANIA - None							
CHES. & POT. - None							
SOUTHERN - None							

TYPES OF DEFICIENCIES

- A. Intertoll trunks not operating at VNL.
- B. Toll connecting trunks not operating at VNL + 2.5
- * Connecting Co. deficiency
- C. Terminal balance objectives not met by actual test.
- D. Through balance objective not met by actual test.
- ϕ Long Lines Engineered.

NUMBERING PLAN AREA PRINCIPAL CITIES

Area Code	Location	Principal City	Area Code	Location	Principal City
201	New Jersey	Newark	601	Mississippi	*Jackson
202	Dist. of Col.	Washington 1	602	Arizona	Phoenix 1
203	Connecticut	New Haven 4	603	New Hampshire	Manchester
204	Manitoba		604	British Columbia	Vanconver
205	Alabama	Birmingham	605	South Dakota	Sioux Falls
206	Washington	*Seattle	606	Kentucky	Cincinnati
207	Maine	Portland	607	New York	Binghamton
208	Idaho	*Salt Lake City, Utah	608	Wisconsin	Madison
209	California	Stockton	609	New Jersey	Camden 2
212	New York	New York 4 & 7	612	Minnesota	*Minneapolis
213	California	Los Angeles 2	613	Ontario	Ottawa
214	Texas	Dallas	614	Ohio	Columbus
215	Pennsylvania	Philadelphia	615	Tennessee	Nashville
216	Ohio	Cleveland	616	Michigan	*Grand Rapids 1
217	Illinois	Springfield	617	Massachusetts	Boston 2 & 9
218	Minnesota	*Minneapolis	618	Illinois	Centralia
219	Indiana	South Bend 1	701	North Dakota	Fargo
301	Maryland	Baltimore	702	Nevada	Reno
302	Delaware	Wilmington	703	Virginia	Richmond
303	Colorado	*Denver 1	704	North Carolina	*Charlotte
304	West Virginia	Charleston	705	Ontario	Toronto
305	Florida	*Rockdale, Georgia	707	California	Santa Rosa
306	Saskatchewan	Regina	709	Newfoundland	*Montreal, Quebec
307	Wyoming	*Denver 1, Colorado	712	Iowa	*Omaha, Nebraska
308	Nebraska	*Omaha	713	Texas	Houston 1
309	Illinois	Peoria	714	California	*San Bernardino
312	Illinois	Chicago 2 & 3	715	Wisconsin	Eau Clair
313	Michigan	*Detroit	716	New York	Buffalo
314	Missouri	St. Louis 1	717	Pennsylvania	Harrisburg
315	New York	Syracuse	801	Utah	*Salt Lake City
316	Kansas	Wichita	802	Vermont	White River Jct.
317	Indiana	Indianapolis	803	South Carolina	Columbia
318	Louisiana	*Jackson, Mississippi	805	California	Los Angeles 2
319	Iowa	*Des Moines	806	Texas	Amarillo
401	Rhode Island	Providence	807	Ontario	Toronto
402	Nebraska	*Omaha	808	Hawaii	*Oakland 3, California
403	Alberta	Calgary	809	Virgin Island	*Jacksonville, Florida
404	Georgia	Atlanta		Puerto Rico	
405	Oklahoma	Oklahoma City	812	Indiana	Indianapolis
406	Montana	Billings	813	Florida	Orlando
408	California	San Jose 1	814	Pennsylvania	*Pittsburgh 1
412	Pennsylvania	*Pittsburgh 1	815	Illinois	Norway
413	Massachusetts	Springfield	816	Missouri	*Kansas City
414	Wisconsin	Milwaukee 1	817	Texas	Fort Worth
415	California	Oakland 3	819	Quebec	*Montreal
416	Ontario	Toronto	901	Tennessee	Memphis
417	Missouri	Joplin	902	Nova Scotia and Prince Edward Island	Halifax
418	Quebec	Quebec			
419	Ohio	Toledo			
501	Arkansas	Little Rock	903	Mexico	*San Bernardino, Calif.
502	Kentucky	Louisville	904	Florida	*Jacksonville
503	Oregon	Portland	906	Michigan	*Grand Rapids 1
504	Louisiana	New Orleans	907	Alaska	*Seattle, Washington
505	New Mexico	Albuquerque	912	Georgia	*Rockdale
506	New Brunswick	St. John	913	Kansas	*Kansas City, Missouri
507	Minnesota	*Minneapolis	914	New York	White Plains 2
509	Washington	*Seattle	915	Texas	Sweetwater
512	Texas	San Antonio	916	California	Sacramento 1
513	Ohio	Cincinnati	918	Oklahoma	Tulsa
514	Quebec	*Montreal	919	North Carolina	*Charlotte
515	Iowa	*Des Moines			
516	New York	Suffolk			
517	Michigan	*Detroit			
518	New York	Albany 2			
519	Ontario	London			

* Principal city for more than one NPA.

TRANSMISSION COORDINATORS - TOLL CIRCUIT LAYOUT

Co.	Area	Name	Co.	Area	Name
N.E.	Staff	W.H. Thomas	Ill.	Staff	J.H. Enenback
	Mass.	J.L. Gaudette		Chicago-Sub.	C.R. Annis
	No. States	A.S. Johnson		State-Sub.	G.H. Robertson
	" "	L.E. Gray			
	Rhode Island	L.J. Berard	N.W.	Staff	G.H. Sanders
N.Y.	Staff	H.H. Richter		Iowa	D.L. Heidt
	"	J.J. Algeo		Minnesota	H.O. Arneson
	Downstate	R.F. Vogl		Nebraska	G.H. Cook
	"	C.H. King	North Dakota	G.H. Sanders	
	Upstate	E. Rabaglia	South Dakota	K.W. Holmgren	
	"	E.V. Howell	S.W.	Staff	M.R. Skinner
	Mid-State	W.M. Reilly		Arkansas	W.B. Hale
	Manhattan	W.T. Clune		Kansas	C.E. Hutsell
	Bklyn - Queens	B.E. Brown		Mo.-Ill.	W.L. Straughn
	Nass - Suff	P. Louzan	Oklahoma	E.L. Hassler	
N.J.	-	P.M. Broshek	Dallas	J.C. Griffin	
Pa.	Staff	C.H. Horn	Houston	V. Roberts	
	Philadelphia	} D.G. Zuck	San Antonio	C.W. Williams	
	Eastern		L.A. Moretz	Kansas City	H.R. Mendenhall
	Central	K.H. Smithman	Mtn.	-	W.L. Davis
	Western		PBN	Staff	W.F. French
C.& P.	Washington	C.F. Small	Wash.-Idaho	C.L. Wakelee	
	Maryland	F. Wehrenberg	Oregon	R. Eddas	
	Virginia	V. Bodin	Pac.	No. Counties	P.H. Ackroyd
	West Virginia	J.H. Thomas		L.A. North	R.D. Allen
So.	Staff	L.T. Robertson		L.A. Central	H.G. Howe
	Florida	W. Sheffield		So. Counties	J.S. North
	Georgia	H.A. Flemister	Central Counties	D.R. King	
	North Carolina	F.M. Hayes	Nevada	W.L. Manca	
	South Carolina	T.O. McKeown Jr.	Bay Area	M.D. Capitolo	
So. Cen.	Staff	I.N. Howell Jr.	L.L	Central	R.F. Podlasek
	Kentucky	J.R. Bell		Eastern	C.L. Zirkle
	Louisiana	J.R. Wilson		Headquarters	J.E. Teifer
	Mississippi	V.B. Brooks		Midwestern	C.A. White
	Tennessee	W.M. Haynes, Jr.		NE - States	T. Johannessen
	Alabama	J.E. Spencer		- City	N.D. Given
Ohio	Northeastern	J.J. Greytalk	Southern	C.L. Cleveland	
	Southwestern	A. Fiscarelli	Western	W.R. McCall	
Mich.	-	D.O. Slater	S.N.E.	-	J.H. Ferdinandus
Ind.	-	F.W. Goetsch Jr.	C.& S.	-	C.D. Clark
Wis.	-	R.P. Drews	Can.	-	J.S. Hodkinson

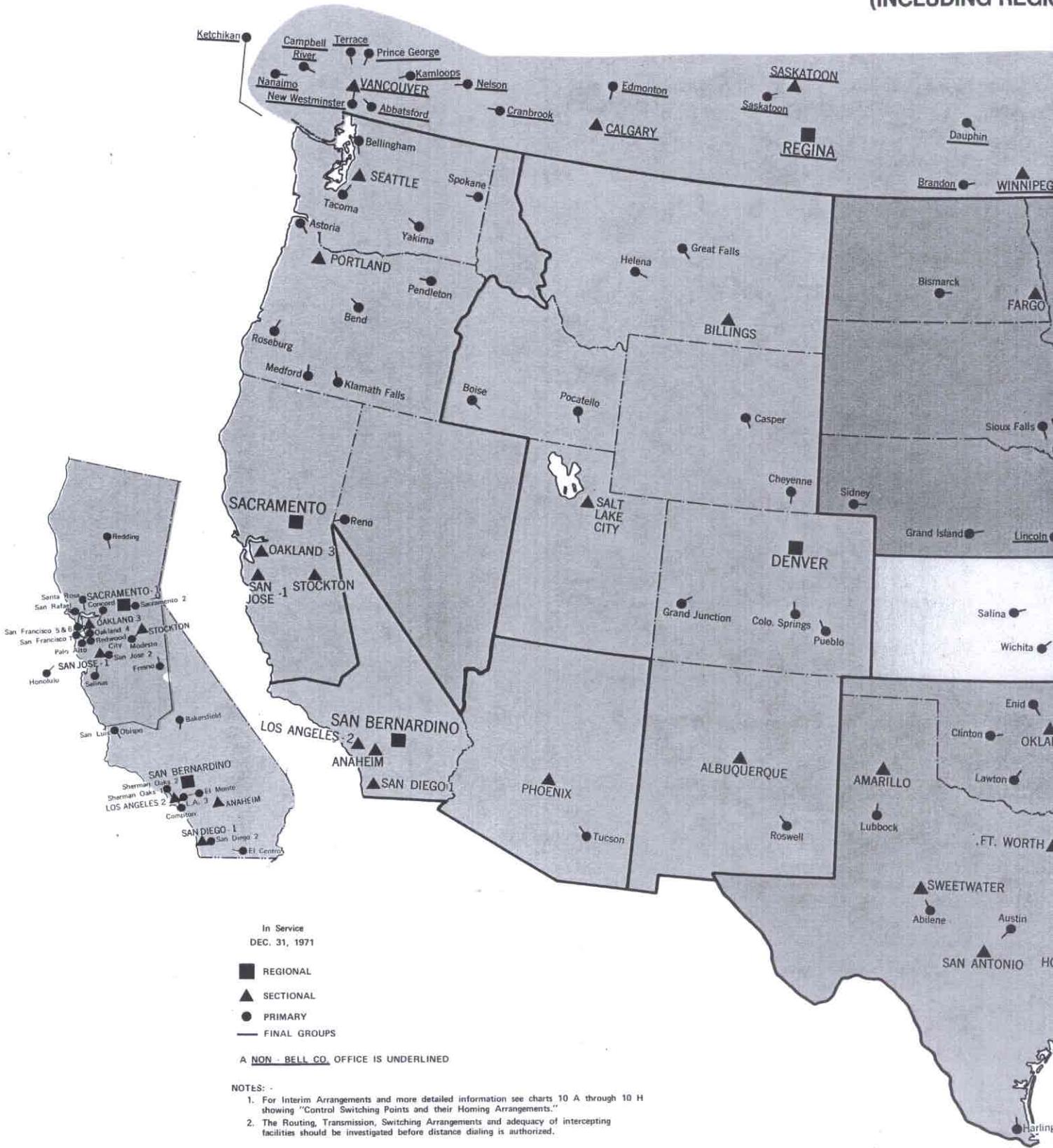
DISTANCE DIALING
OPERATING STAFF AND AREA COORDINATORS

Co.	Area	Location	Coordinator	Co.	Area	Location	Coordinator		
N.E.	Staff	Boston	B.W. Mullins	N.W.	Staff	Omaha	L.W. Blumer		
	Mass.	Framingham	W.L. Jewell		Minnesota	Minneapolis	E.O. Bernard		
	No. States	Manchester	W.T. Leavitt		Iowa	Des Moines	N.E. Bohner		
	Rhode Island	Providence	J.I. Macomber		Nebraska	Omaha	C.J. Raffensperger		
N.Y.	Staff	New York	A.B. Bortz	So. Dakota	Sioux Falls	H.M. Scott			
	Upstate	Albany	F.G. Gebhardt		No. Dakota	Fargo	D.H. Isaacson		
	Downstate	New York	J.M. Gold	S.W.	Staff	St. Louis	C.H. Strandberg		
N.J.	Staff	Newark	R.L. McColm		Arkansas	Little Rock	R.M. Bradley		
	Pa.	Staff	Philadelphia		E.M. Lewis	Kansas	Topeka	J.E. Ayers	
Philadelphia		Philadelphia	J.B. Berstler		Kansas City	Kansas City	W.M. Schmit		
Eastern		Philadelphia	H.A. Fischer		St. Louis	St. Louis	F.F. Stieffermann		
Central		Harrisburg	A.H. Peters		Oklahoma	Oklahoma City	F.W. Kamp		
Western		Pittsburgh	M.S. Fountain, Jr.		Dallas	Dallas	K.D. McBee		
C.& P.	Staff	Washington	M.E. Ricketts		Houston	Houston	V.P. Bearden		
	Washington	Washington	C.F. Duvall		San Antonio	San Antonio	J.L. Zumwalt		
	Maryland	Baltimore	H.M. Prager		Mtn.	Staff	Denver	F.E. Marick	
	Virginia	Richmond	C.W. Robertson			PNB	Staff	Seattle	G.D. Frampton
	W. Virginia	Charleston	T.N. Brasselle			Wash.-Idaho	Seattle	R.P. Kersten	
So.	Staff	Atlanta	R.A. White	Oregon	Portland	P.V. Perletti			
	Florida	Jacksonville	R.K. Snelling	Pac.	Staff	San Francisco	S.H. Steere		
	Georgia	Atlanta	R.W. Gunnin		N. Counties	Sacramento	T.T. Andersen		
	No. Carolina	Charlotte	G.K. Robinson		L.A. North	Los Angeles	K.A. Polson		
	So. Carolina	Columbia	W.A. Humphries		L.A. Central	Los Angeles	S.T. Angleton		
So. Cn.	Staff	Birmingham	H.D. Adamson		S. Counties	San Diego	L.M. Kendrick		
	Alabama	Birmingham	J.M. Staplef	Cn. Counties	San Jose	E.D. Jackson			
	Kentucky	Louisville	A.P. Crump	Nevada	Reno	H.W. Proctor			
	Louisiana	New Orleans	J.E. Foltz	Bay	San Francisco	R.M. Ihnat			
	Mississippi	Jackson	G.L. Robertson	L.L.	Staff	New York	W.D. Storz		
	Tennessee	Nashville	V.E. Matthews		NE-States	White Plains	J.C. Litchfield		
Ohio	Northeast	Cleveland	F.K. Lindhorst		NE-City	White Plains	J.E. Hoffman		
	Southwest	Columbus	T.G. Andrian		Central	Chicago	R.G. Rowley, Jr.		
Mich.	Staff	Detroit	J.A. McGill		Southern	Atlanta	J.F. Cummings		
	Ind.	-	Indianapolis		L.R. Carr	Midwestern	Kansas City	H.M. Townsend	
Wisc.		-	Milwaukee		Eastern	Washington, DC	J. Potterveld		
Ill.	Staff	Chicago	E.C. Alexander		Western	San Francisco	F.J. Curran		
	Chicago	Chicago	M.L. Peterson		S.N.E.	-	New Haven	H.J. Beaudin	
	State	Springfield	R.B. Fitts		C.& S.	-	Cincinnati	R.E. Sigmon	
	Suburban	Chicago	B.C. Mason	Can.	CCR	Ottawa	G.H. Carson		
					Trans-Can.	Ottawa	L.H.W. de Launay		

Note: In some cases, companies are using the title of Switching System Coordinator.

DISTANCE DIALING

(INCLUDING REGIONAL)



In Service
DEC. 31, 1971

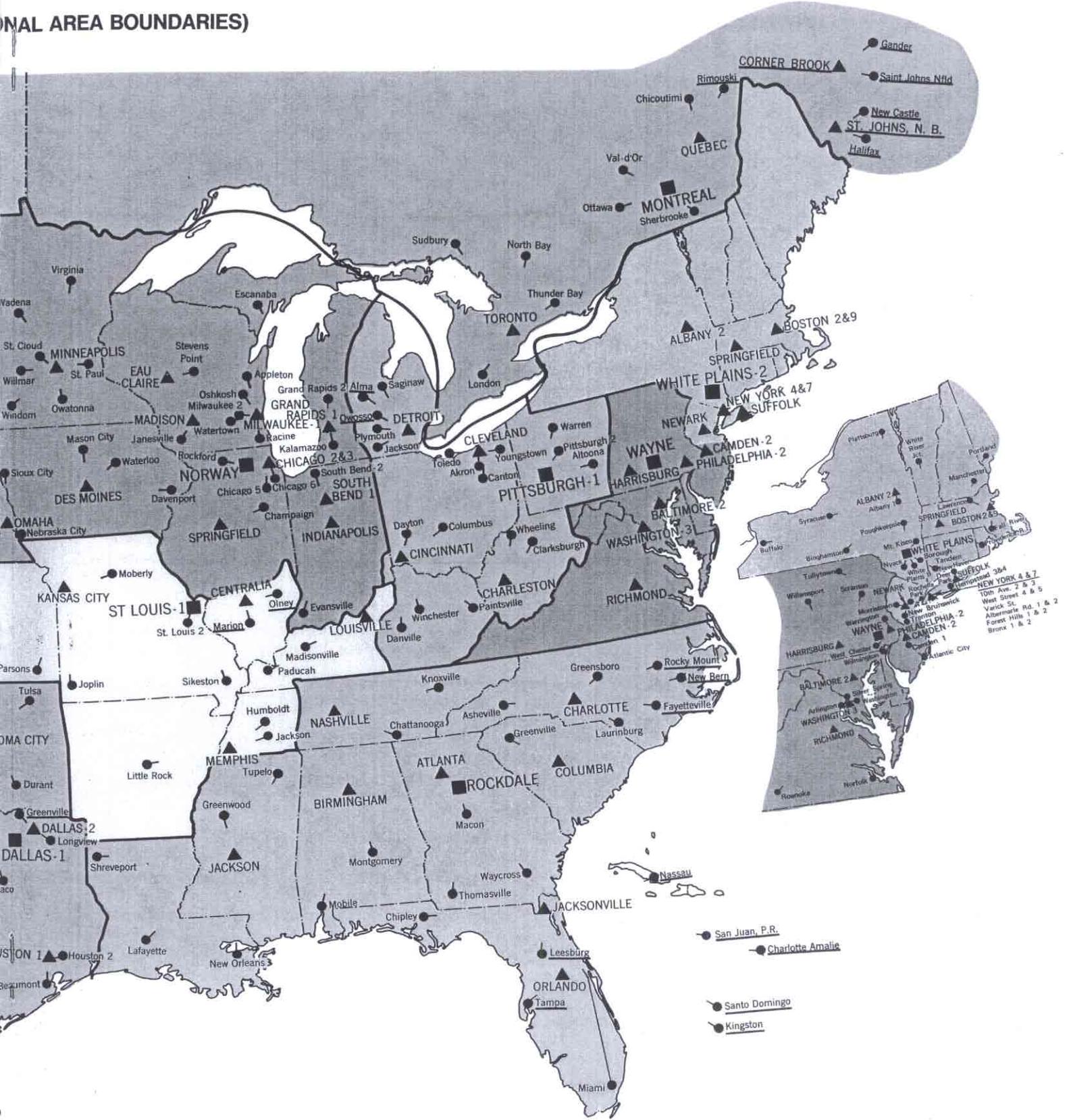
REGIONAL
 SECTIONAL
 PRIMARY
 FINAL GROUPS

A NON-BELL CO. OFFICE IS UNDERLINED

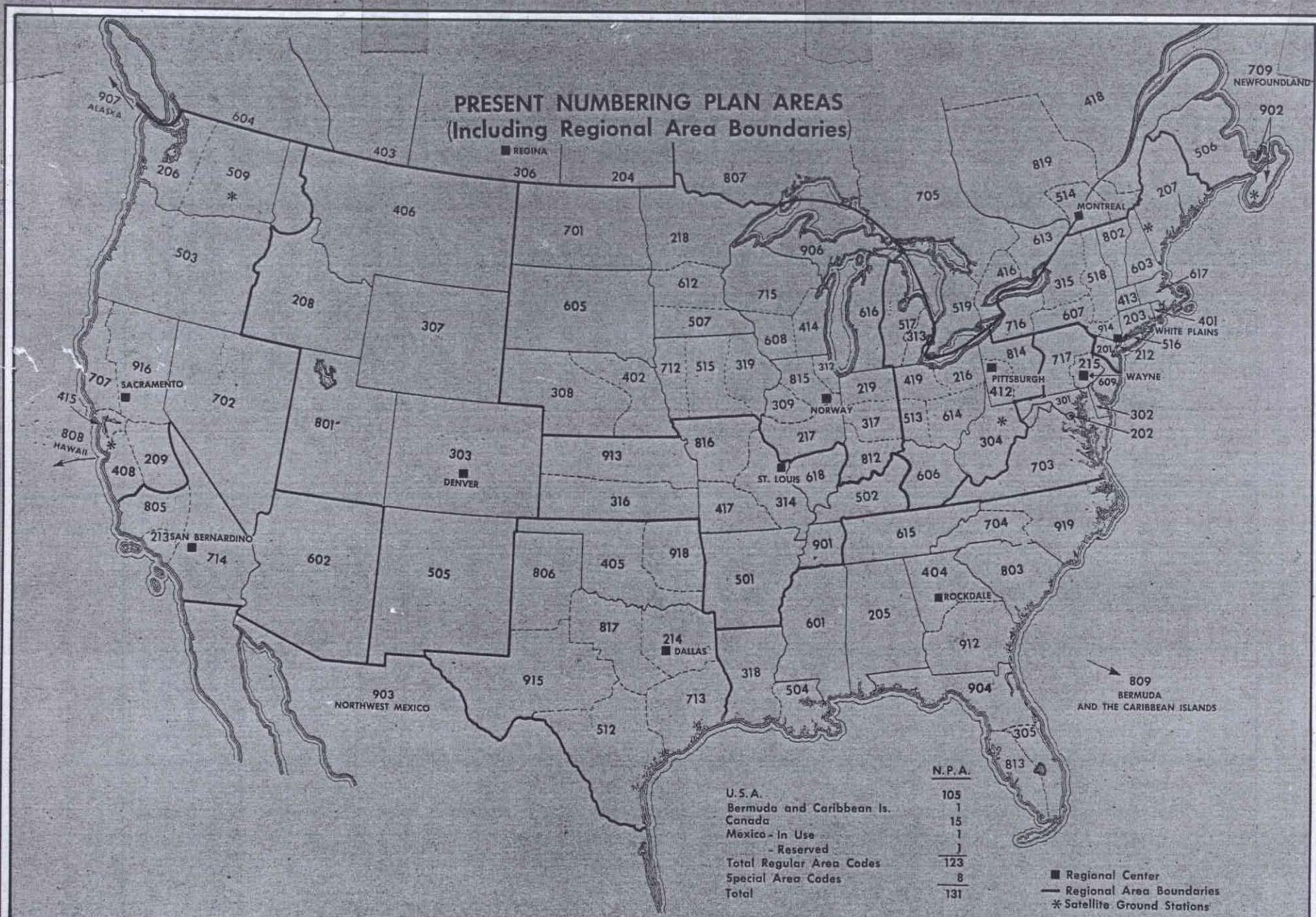
- NOTES:
1. For Interim Arrangements and more detailed information see charts 10 A through 10 H showing "Control Switching Points and their Homing Arrangements."
 2. The Routing, Transmission, Switching Arrangements and adequacy of intercepting facilities should be investigated before distance dialing is authorized.

NETWORK - END OF 1971

(INTERNAL AREA BOUNDARIES)



PRESENT NUMBERING PLAN AREAS (Including Regional Area Boundaries)



	N.P.A.
U.S.A.	105
Bermuda and Caribbean Is.	1
Canada	15
Mexico - In Use	1
- Reserved	1
Total Regular Area Codes	123
Special Area Codes	8
Total	131

■ Regional Center
 — Regional Area Boundaries
 * Satellite Ground Stations

