1973

distance dialing coordinating handbook

AT&T

distance dialing coordinating handbook

1973

Vol. 12 Issue 1

*Centerfold

Distance Dialing Coordinating Committee

D.F. Kearney
F.H. Parkinson
W.S. Hinkley
C.A. Pfitzinger
J.F. Walsh
A.K. Lorentzen
W.R. Slate
Miss G. Gaskin
L.A. Ratliff
W.A. Reynolds
G.L. Campbell
G.R. Rosenberger
T.N. Clark
M.W. Stoltze
D.R. Ferrantino
W.B. Smith
R.J. Craig
H.I. Rothrock
Miss I.E. Fink

Mailing Address
195 Broadway
Room 1439A
New York, N.Y.
212- 393-8958

Order Copies From:
Western Electric Co. Inc.
Indiana Publication Center
P.O. Box 26205
Indianapolis, Ind. 47226
(Quantity) Distance Dialing Coordinating Handbook, dated 1973.

FOREWORD

This handbook is intended to provide information about future developments in the Distance Dialing program, current Distance Dialing statistics, pertinent historical facts and regional switching plan arrangements. The data included herein is kept current with information submitted in the Companies' Construction Budget Summaries for the April 1973 View and the Long Lines Routing Plan. The Distance Dialing Committee acknowledges the important contributions made by the Distance Dialing Coordinators in keeping this handbook up to date. This material is prepared for Bell System purposes and is for the use of Bell System employees only. Its distribution is in no sense a publication. Neither the material nor any portion thereof is to be reproduced in any form by others without the written permission of the American Telephone and Telegraph Company.

Construction Plans Department

Chart I

DISTANCE DIALING STATISTICS

APRIL 1973 CONSTRUCTION BUDGET VIEW

LONG DISTANCE MESSAGES-BELL OPERATED (During Year-Millions)	1972 (Actual)	1973	1974
Operating Cos. (Incl. So. N.E. & Cinn.)*	6459.2	7499.3	8215.6
Long Lines	2219.0	2474.0	2766.0
% Dialed by Customers (DDD)*	75.0	77.2	79.0
% Dialed by Operators (DDD)*	21.1	17.2	14.1
% Customer Dialed Operator Serviced (TSPS, TSP)*	3.9	5.6	6.9
% Outward International DDD*	1.5	4.0	8.0

TELEPHONES (End of Year - Millions)	1972 Bell Cos.	1972 Non-Bell	1973 Bell Cos.	1973 Non-Bell	1974 Bell Cos.	1974 Non-Bell
Total Main Tels. & Equiv. Main Tels.	63.3	15.0	66.0	15.8	68.8	16.6
Equipped for DDD	61.7	13.3	64.9	14.5	67.8	15.4
Equipped for IDDD	0.5		3.0		4.7	
Served by TSPS or Equivalent	21.1		26.8		34.0	
With ANC Numbering	57.8	14.8	61.3	15.6	64.4	16.3
Operator Identified	9.2		8.1		6.4	
Automatically Identified - LAMA	23.7		26.5		29.5	
" " - ANI	28.8		30.3		31.9	

TOLL MESSAGE NETWORK TRUNKS (End of Year-Thousands)						
Intertoll-used	676.6		744.6		812.1	
Toll Connecting-used	1222.7		1368.4		1507.2	
End Office Toll-used	45.5		54.0		63.0	
Total-used	1944.7		2166.9		2382.3	

TOLL OFFICE DATA (End of Year)						
Local Central Office Buildings	8642		8672		8709	
Traffic Toll Centers (Toll offices of any rank providing inward operator assistance)	1020	482	987	482	912	475
Toll Centers Equipped With CAMA	621	380	634	377	624	387
Total Toll Positions	67617		65583		63049	
TSPS and TSP Postions (included above)	12364		15844		18563	

"Bell Cos." includes Bell System Operating Companies plus Southern New England and Cincinnati Bell.
"Non-Bell" Companies include Independent Companies in the territory served by the above Bell Companies.
All data excludes Canada.
*This data for Bell Companies.

Chart 2

CUTOVER DATES FOR DISTANCE DIALING
ACTIVITIES REQUIRING NATIONWIDE CHANGES

Month	1974	1975	1976	1977	1978
January	5 -19	4 -18	3 -17	8*-15	7 -21
February	2 -16	1 -15	7 -21	5 -19	4 -18
March	2 -16	1 -15	6 -20	5 -19	4 -18
April	6 -20	5 -19	3 -24*	2 -16 -30#	1 -15
May	4 -18	3 -17	1 -15	21	6 -20
June	1 -22*	7 -21	5 -26*	4 -25*	3 -24*
July	6 -20	5 -19	3 -17	2 -16	1 -15
August	3 -17	2 -16	7 -21	6 -20	5 -19
September	7 -21	6 -20	4 -18	3 -17	2 -16
October	5 -19	4 -18	2 -16	1 -15	7 -21
November	2 -16	1 -15	6 -20	5 -19	4 -18
December	7 -21	6 -20	4 -18	3 -17	2 -16

Note:

These dates are the first and third Saturdays of each month except where they fall on holidays or immediately precede Easter, Mother's Day, or Father's Day.

* Deferred one week
\# Advanced one week

CUTOVER HOUR ø	
Time Zone	Saturday Nationwide Time
Atlantic	3:00 p.m.
Eastern	2:00 p.m.
Central	1:00 p.m.
Mountain	12:00 noon
Pacific	11:00 a.m.
Alaska** & Hawaii	9:00 a.m.

** Anchorage, Fairbanks

ø Changed from previous years - see article and GL 73-03-199 for details.

PRINCIPAL NEW FACILITIES AND FEATURES FOR DISTANCE DIALING
AVAILABLE OR PLANNED FOR SHIPMENT IN THE NEXT THREE YEARS

Subject	Source GL	Design Info BTL to WE Co.	Initial Ship (Note 1)	Application									
				SXS	1/5XB	1ESS	XBT	4XB	4ESS	TSP(S)	CCIS	IDDD	Other
No. 4A/ETS and TSPS No. 1 - Operation on a Common Power Plant	72-01-026 EL 1584	-	-					X		X			
IOTC/IDDD Code Testing Procedure	72-01-130	-	-									X	
Dialing and Delay Annoyance	72-01-166	-	-									X	
TSPS No. 1 - New Features, Generic Issue 4	72-02-120 EL 1689	ISS.	2Q73							X		X	
1ESS - Maintenance of Generic Programs	72-02-162	-	-			X						X	
Blocking DDD Access to Protected Codes	72-02-191	-	-										X
No. 5XB - New CDO Switching System - Service Planning Information	72-03-092	ISS.			X							X	
Switching Systems - Routing Changes	72-04-005	-	-									X	X
LAMA - Modification of Transverters to Furnish ANI on TSP Traffic	72-04-087 EL 1777	ISS.	9-72		X					X			
IOTC - IDDD Routing Information	72-05-116	-	-									X	
4XB - Incoming Overseas Sender Improvements	72-05-098 EL 1658	ISS.	3Q73					X				X	
5XB - Application of Small and Large Switch Trunk Link Frames	72-05-138	-	-		X								
1ESS - Increased Carrier Group Alarm Capacity	72-05-192 EL-1884	-	-			X							
SXS - Intertoll Dialing Circuits Redesign to Replace Flat Spring Relays with Wire Spring	72-05-203 EL 1887	ISS.	1Q74	X									
1ESS - Increased Call Handling Capacity in the CTX-6 Program	72-05-207	-	-			X							
KS 20805 Transmission and Voice Measuring System	72-05-231 73-03-164												
Program Generic Issues 3A.1, 3A.2, 3B and 4.0	72-06-001 EL 1847	-	-							X			
IDDD (Implementation at 1ESS offices)	72-06-002	-	-			X						X	
4A Tur - General Description T.F.P.	72-06-020	-	-					X					
100A TSP - Computer Aided Method for Rates Cross - Connections	72-06-050 EL 1844	-	-							X			
1ESS - TFP, Div. D, Sec. 10a	72-06-225	-	-			X						X	

PRINCIPAL NEW FACILITIES AND FEATURES FOR DISTANCE DIALING

AVAILABLE OR PLANNED FOR SHIPMENT IN THE NEXT THREE YEARS

Subject	Source GL	Design Info BTL to WE Co.	Initial Ship (Note 1)	Application									
				SXS	1/5XB	1ESS	XBT	4XB	4ESS	TSP(S)	CCIS	IDDD	Other
Establishing 804 NPA in Virginia	72-07-005	-	-										X
SXS CAMA - Remoting of Positions	72-07-030	ISS.	3Q72	X									
	EL 1983												
Common Channel Interoffice Signaling	72-07-036	-	-								X	X	
4A/ETS - Screening Vacant Codes at Source	72-07-069	-	-					X					
17C Testboard - New 3 Bay arrangement	72-07-169	ISS.	3Q72					X					
	EL 1936												
1ESS - TFP, Div. 10, Sec. 10f	72-07-215	-	-			X							
4ESS Planning Price Estimates	72-08-097	-	-						X				
1ESS - TFP, Div. D, Sec. 10-C	72-08-114	-	-			X							
NOTIS System	72-08-127	-	-										X
100A TSP - Addition of Callback and DDD Class of	72-08-166	ISS.	2Q73							X			
Charge Features	EL 2062												
New Intertoll Trunk Maintenance Arrangements	72-08-172	ISS.	1Q73					X					
	EL 1895												
Effects of Test Calling on the Network	72-08-210	-	-										X
IDDD - IOTC Plans & Procedures	72-08-228	-	-									X	
TSPS Dual Rate Feature	72-09-006	ISS.	-							X			
XBT CAMA - Immediate Reorder by Inc. Reg. on "11X"	72-09-080	ISS.	4-73	X			X			X			
Calls and Peg Count of Dial "O" Coin Calls Served by	EL 2021												
100A TSP													
4ESS Circuit Maintenance System	72-09-100	-	-						X				
Revised Charge Guard Procedures for Offices arranged	72-09-124	ISS.	1Q74		X								
for AMA Trunk Transfer	EL 2110												
4A/ETS Generic Program	72-09-145	-	-					X					
5XB - LAMA Recorder Expansion to 26 Maximum	72-09-153	ISS.	4Q73		X								
	EL 2106												
SXS - Jack Circuit-Signal Lead Access	72-09-195	ISS.	3Q73	X									
	EL 2103												
SXS - New 101 Test Line Termination Circuit	72-10-012	ISS.	4Q73	X									
	EL 2135												
Small Crossbar Switch Link Frames	72-10-022	ISS.	2Q73					X					
	EL 1962												

PRINCIPAL NEW FACILITIES AND FEATURES FOR DISTANCE DIALING

AVAILABLE OR PLANNED FOR SHIPMENT IN THE NEXT THREE YEARS

Subject	Source GL	Design Info BTL to WE Co.	Initial Ship (Note 1)	Application									
				SXS	1/5XB	1ESS	XBT	4XB	4ESS	TSP(S)	CCIS	IDDD	Other
Reduction of Installation Interval and Revised Schedule for ETS Questionnaire	72-10-028	-	-					X					
Improved AC Balance in Outgoing Trunks	72-10-072 EL 2152	ISS.	4Q72		X								
BSP - Pulsing Requirements - Section 333-124-500	72-10-077 EL 2058	-	-										X
Application of New Transistorized MF Receivers	72-10-087 EL 1727	ISS.	3Q73					X					
Application of ELA Signaling Units	72-10-120 EL 2003	-	-										X
TFP - Div. G, Sec. 4d (3) (e)	72-10-131	-	-										X
4XB - New Developments	72-10-149	-	-					X					
XBT - Standard Reorder Trap and Marker Route Verification Features	72-10-157 EL 2168	-	-				X						
Mechanized CTRAP Ticket	72-10-176	-	4Q72										X
Trunk Design and Remoting Arrangements	72-10-178 EL 1830	-	-							X			X
Cut-through to Operator after Intercept Feature	72-10-204 EL 2174	ISS.	-			X							
Planning Information Review and Code Utilization Survey	72-11-002	-	-										X
Methods to Reduce ANI Failures	72-11-015	-	-	X	X		X			X			X
1ESS 2-Wire Toll Operation	72-11-020	-	-			X							
XBT - CAMA Tests, Trouble Locating Tests and Circuit Change Check Lists	72-11-021	-	-				X						
Modification of 60A Control Unit to Prevent Unauthorized Use of Loop-Around Test Circuits	72-11-025 EL 2194	ISS.	3Q73										X
Network Administration - Study on Network Controls	72-11-057	-	-										X
Network Administration - Identification Codes for Recorded Announcements	72-11-082	-	-										X
End Office Intertoll Trunking	72-11-099	-	-										X
D3 Channel Banks with Toll Maintenance Features	72-11-134 EL 2116	-	-										X
4XB - CAMA Trouble Locating Tests	72-12-007	-	-					X					

Chart 3

PRINCIPAL NEW FACILITIES AND FEATURES FOR DISTANCE DIALING

AVAILABLE OR PLANNED FOR SHIPMENT IN THE NEXT THREE YEARS

Subject	Source GL	Design Info BTL to WE Co.	Initial Ship (Note 1)	Application									
				SXS	1/5XB	1ESS	XBT	4XB	4ESS	TSP(S)	CCIS	IDDD	Other
1ESS - TFP, Div. D, Sec. 10a(1)	72-12-008	-	-			X							
TSPS - Hotel ANI Screening	72-12-018	-	-							X			
TSPS - Credit Card Check Feature	72-12-031	-	-							X			
TSPS - Credit Card Validation	72-12-048	-	-							X			
1ESS - Service Link Networks	72-12-045	-	-			X							
XBT - AMA Recording Improvements	72-12-075	ISS.	3Q73				X						
CCIS Implementation Plans	72-12-076	-	-								X	X	
Modification of Dial Pulse Outgoing Sender for Immediate Reorder on Stop Dial Signal	72-12-163 EL 2187	ISS.	2Q74		X								
Discussion of ITT CAMA Identifier Equipment	72-12-196 EL 2311	-	-										X
4ESS - TFP, Div. D, Sec. 14a(1)	73-01-018	-	-						X				
4XB - Correction of SD-68595-01 Trunk Circuit (OSAE) Malfunctions Caused by Excessive Heat	73-01-028 EL 2248	-	-					X					
1ESS - Programs and Features Update	73-01-034	-	-			X						X	
1ESS - TFP, Div. D, Sec. 10g	73-01-050	-	-			X						X	
1ESS - TFP, Div. D, Sec. 10h	73-01-069	-	-			X							
Trunk Maintenance Improvement Items	73-01-167 EL 2356	-	-					X					
1ESS - Trunk Record Update Support Technique	73-01-168	-	-			X							
Summary GL's Dialing with Completion Activities Since 1970	73-01-172	-	-										X
Introduction of No/1X Codes	73-01-222	-	-										X
TSPS - TFP, Div. E, Sec. 4b	73-02-010	-	-							X			
Modification of MF Sender SD-25978-01 to prevent fraudulent use	73-02-019 EL 2373	ISS.	8-73				X						
Routing Changes	73-02-032	-	-										X
5XB Features Required when Associated with TSPS	73-02-071	-	-		X					X			
TSPS - Dual Rate Study	73-02-080	-	-							X			
SXS CAMA - Revised Charge Guard Procedures for AMA Trunk Transfer Offices	73-02-086 EL 2264	ISS.	3Q73	X									
Billing No. Identification in Dial Central Offices	73-02-110									X			X
D3 Channel Banks with SMAS Features	73-02-121 EL 2186	ISS.	4Q73										X

Chart 3

PRINCIPAL NEW FACILITIES AND FEATURES FOR DISTANCE DIALED

AVAILABLE OR PLANNED FOR SHIPMENT IN THE NEXT THREE YEARS

Subject	Source GL	Design Info BTL to WE Co.	Initial Ship (Note 1)	Application									
				SXS	1/5XB	1ESS	XBT	4XB	4ESS	TSP(S)	CCIS	IDDD	Other
Automatic Trunk Testing - 104 Test Lines and Automatic Outgoing I.T. Trunk Test Circuit - Operational Improvements	73-02-133 EL 1935	ISS.	3Q73										X
TSPS - Remote Trunk Arrangement	73-02-160 EL 2413	-	-							X			
1XB - Modification to Trace Calling Lines causing 2 x 5 Failures in Wire Spring Subscriber Senders	73-02-192 EL 2417	ISS.	1Q74		X								
1XB - Provision for Call Through Tests from OGT Frame on ANI - CAMA calls over PCI Trunks.	73-02-193 EL 2418	ISS.	1Q74		X								
5XB - One Second Timing for Paper Tape AMA	73-03-004 EL 2425	ISS.	9-73		X								
TSPS Generic Issue 4 Retrofit and Recent Change Inf.	73-03-022	-	-							X			
1ESS - Announces Initial Phase of Network Management Controls in the CTX-6 Generic Program	73-03-031 EL 2435	3-73				X							
ATMS and Associated Test Frames - New "E" Forms	73-03-033 EL 2434	-	-					X					X
5XB - Remote Office Testing with CAROT	73-03-045 EL 2439	ISS.	9-73		X								X
Numerical Display Test Set for 100B Console	73-03-080 EL 1933 PL 2651	ISS.	6-73							X			
Facilities - Marker Traffic Engineering	73-03-112	-	-					X					
1XB - Overtime Charging on Single Message Unit Calls	73-03-126 EL 2463	7-73			X								
New BSP (865) - Transmission Maintenance Systems	73-03-128	-	-										X
1ESS - 2 Wire Toll Operation with CTX-7 Program	73-03-129 EL 2461	-	-			X							
AMA Trunk Test Frame Block-on-Busy Feature	73-03-151 EL 2466 73-04-196	-	-				X						
1XB Trouble Locating Tests	73-03-176	-	-		X								
Change in Nationwide Cutover Time	73-03-199	-	-										X
Additional Memory Requirements - Generic Program 5	73-04-017	-	-							X			

Chart 3

PRINCIPAL NEW FACILITIES AND FEATURES FOR DISTANCE DIALING

AVAILABLE OR PLANNED FOR SHIPMENT IN THE NEXT THREE YEARS

Subject	Source GL	Design Info BTL to WE Co.	Initial Ship (Note 1)	SXS	Application								
					1/5XB	1ESS	XBT	4XB	4ESS	TSP(S)	CCIS	IDDD	Other
1ESS - Receive RP Office Brush and Group Selections with CTX-6 Program	73-04-021 EL 2493	-	-			X							X
CAROT - 8A Tone Detector	73-04-032 EL 2146 PL 2631	ISS.	10-73										X
Improved Dynamic Overload Features	73-04-039 EL 2007	ISS.	10-73				X	X					
Automatic Quoting of Time and Charges - (Hotel-Motel Service)	73-04-061	-	-							X			
1ESS Trap Register	73-04-066	-	-			X							
1ESS Centralized Spare Parts	73-04-074	-	-			X							
Carrier Transmission Maintenance System	73-04-084 EL 1800	-	-										X
5XB - One Second Paper Tape Timing for AMA	73-04-127	-	-		X								
Hotel Automation and Other New Features - Generic Issue 4	73-04-128 EL 2511	ISS.	-							X			
Trial of CAMA-C	73-04-161	-	-					X					X
4A/4M Systems and Toll Switchboards - Overseas Operator Bridged Access Trunk Circuit for IOTC and IOC	73-04-186 EL 2170	-	-					X				X	X
Transmission Aspects of No. 1ESS Toll	73-05-003 EL 2160 PL 2619	-	-			X							

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 WE. Certain dates are based on intervals for similar developments, and are in advance of detail information.

Chart 4

NO. 4-TYPE TOLL CROSSBAR OFFICES IN SERVICE - END OF 1972

(BASED ON APRIL 1973 CONSTRUCTION BUDGET)

Location	Type/ Class	Service Date		CAMA	Machine* Responsibility			
		Office	ETS		T	E	A	M
NEW ENGLAND								
Boston 2, Mass.	4M/2	11-49		C, T	L	L	L	C
Boston 9, Mass.	4A/2	4-70	4-70	C, T	L	L	L	L
Springfield, Mass.	4A/2	5-63	6-75		L	L	L	C
Providence, R.I.	4A/3	6-72	6-72		L	L	L	L
NEW YORK								
Albany 2 ø	4A/2	4-50		T	C	C	C	C
Buffalo	4A/3	5-56	5-73	C	C	C	C	C
New York (32 A of A)	4M/2	11-48			L	L	L	L
New York (811 10th Ave.)	4A/2	9-63			L	L	L	L
Suffolk	4A/2	6-70	6-70	T	L	L	L	L
Syracuse	4A/3	5-54	4-75	C	C	C	C	C
White Plains 2	4A/1	11-54	10-70		L	L	L	L
Varick St.	4A/3	12-71	12-71	T	C	C	C	C
New York 6	4A/3	8-72	8-72		L	L	L	L
NEW JERSEY								
Camden 2	4A/2	10-69	10-69	T	L	L	L	L
Newark 2	4A/2	8-53			L	L	L	L
New Brunswick	4A/3	8-70	8-70	T	C	C	C	C
Rochelle Park 1	4A/3	11-66	10-74	T	C	C	C	C
PENNSYLVANIA								
Harrisburg	4A/2	12-55	6-74	C	L	L	L	L
Philadelphia	4M/2	8-43		T	L	C	L	C
Pittsburgh 1 ø	4A/1	7-51	9-70	T	L	L	L	C
Pittsburgh 2	4A/3	11-70	11-70		L	L	L	L
Scranton	4A/3	5-53		C	C	C	C	C
Wayne	4A/1	5-57	6-71		L	L	L	L
Ft. Washington	4A/3	6-72	6-72		C	C	C	C
CHES. & POT.								
Baltimore 2 ø, Md.	4A/2	8-50	1976		C	C	C	C
Charleston, W.Va.	4A/2	3-61		X	C	C	C	C
Richmond, Va.	4A/2	6-54	5-72	X	C	C	C	C
Washington 1 ø, D.C.	4A/3	9-50			C	C	C	C
Washington 3, D.C.	4A/2	3-67	5-71		C	C	C	C
Norfolk 3, Va.	4A/3	5-72	5-72		C	C	C	C
Arlington 2, Va.	4A/3	2-72	2-72		C	C	C	C
SOUTHERN								
Atlanta 1 ø, Ga.	4A/2	10-51	5-74		L	L	L	L
Charlotte, N.C.	4A/2	11-54	4-72	C, T	L	L	L	L
Columbia, S.C.	4A/2	4-59	3-75	C	L	L	L	L
Greensboro, N.C.	4A/3	8-60	3Q-73	C	L	L	L	L
Jacksonville 1, Fla.	4A/2	12-55	5-73	C, T	L	L	L	L
Miami 2, Fla.	4A/3	11-57		T	L	L	L	L
Orlando 1, Fla.	4A/2	11-62	9-73	C, T	L	L	L	L
Rockdale, Ga.	4A/1	6-60	6-70	T	L	L	L	L
Columbus, Ga.	4A/4	11-71	11-71	C	C	C	C	C
Raleigh, N.C.	4A/4	8-71	8-71	C, T	C	C	C	C

Location	Type/ Class	Service Date		C=CAMA T=TSPS	Machine* Responsibility			
		Office	ETS		T	E	A	M
SOUTHERN (Cont'd)								
Ojus 1, Fla.	4A/4	11-72	11-72	C	L	L	L	L
Florence, S.C.	4A/4	4-72	4-72	C	C	C	C	C
SOUTH CENTRAL								
Birmingham, Ala.	4A/2	8-57	4-74	C, T	L	L	L	L
Jackson, Miss.	4A/2	6-59	3-73	C, T	L	L	L	L
Knoxville, Tenn.	4A/3	2-61		C	C	C	C	C
Louisville, Ky.	4A/2	11-57	4-72	C	L	L	L	L
Memphis, Tenn.	4A/2	10-56	4-72	C, T	L	L	L	L
Nashville, Tenn.	4A/2	10-56	5-73	C, T	L	L	L	L
New Orleans, La. ø	4A/3	3-53	2-74	T	C	C	C	C
Baton Rouge, La.	4A/4	8-71	8-71		C	C	C	C
OHIO								
Dayton	4A/3	11-63	4-73	C, T	C	C	C	C
Cleveland 1	4M/2	6-49	6-72	C, T	L	L	L	L
Columbus 2	4A/3	10-56	11-71	C, T	C	C	C	C
Toledo	4A/3	8-61	4-73	C	L	L	L	L
Cleveland 2	4A/3	8-72	8-72		L	L	L	L
MICHIGAN								
Detroit	4A/2	10-53	12-70		L	L	L	L
Grand Rapids 1	4A/2	4-69	4-69		L	L	C	C
Plymouth	4A/3	7-69	7-69	C, T	C	C	C	C
Pontiac	4A/3	6-72	6-72	C	C	C	C	C
INDIANA								
Bloomington	4A/4	8-70	8-70	T	C	C	C	C
Indianapolis ø	4A/2	5-50	6-73	C	L	L	L	L
South Bend 1	4A/2	4-70	4-70		L	L	L	L
WISCONSIN								
Eau Claire	4A/2	5-70			C	C	C	C
Milwaukee 1	4A/2	5-55			L	L	L	L
ILLINOIS								
Chicago 2	4M/2	12-48		C	L	L	L	L
Chicago 3	4A/2	9-54		T	L	L	L	L
Chicago 6	4A/3	6-71	6-71		L	L	L	L
Norway	4A/1	12-62	6-75		L	L	L	L
Springfield	4A/2	9-60	6-74		L	L	L	L
Champaign	4A/3	11-72	11-72		C	C	C	C
Oak Brook	4A/4	8-72	8-72		L	L	L	L
NORTHWESTERN								
Des Moines, Ia.	4A/2	6-57	10-70	C	L	L	L	C
Minneapolis, Minn. ø	4A/2	2-51	6-71	C, T	L	C	L	C
Omaha, Neb.	4A/2	2-52	1-71	C	L	L	L	C
St. Paul 2, Minn. ø	4A/3	11-71	11-71	C	L	C	L	C

Chart 4

NO. 4-TYPE TOLL CROSSBAR OFFICES IN SERVICE - END OF 1972

(BASED ON APRIL 1973 CONSTRUCTION BUDGET)

Location	Type/ Class	Service Date		C=CAMA T=TSPS	Machine* Responsibility				Location	Type/ Class	Service Date		C=CAMA T=TSPS	Machine* Responsibility			
		Office	ETS		T	E	A	M			Office	ETS		T	E	A	M
SOUTHWESTERN									PACIFIC (Cont'd)								
Dallas 1 ø, Tex.	4A/1	11-51	6-71	C, T	L	L	L	C	Redwood City	4A/3	2-70	2-70	T	C	C	C	C
Dallas 2, Tex.	4A/2	7-71	7-71	C, T	L	L	L	C	Sacramento	4A/1	6-53			C	C	C	C
Fort Worth, Tex.	4A/2	7-60	10-72	C, T	C	C	C	C	Fresno 2	4A/3	6-72	6-72	C	C	C	C	C
Houston 1 ø, Tex.	4A/2	7-52	3-73	C, T	C	C	C	C	San Bernardino	4A/1	10-57	4-74		C	C	C	C
Houston 2, Tex.	4A/3	6-71	6-71	T	C	C	C	C	San Diego 1	4A/2	3-67	3-74		C	C	C	C
Kansas City ø, Mo.	4A/2	11-50	7-73	C, T	C	C	C	C	San Francisco 1	4A/3	6-69	1-72	C, T	C	C	C	C
Little Rock, Ark.	4A/3	5-54	8-76	C	C	C	C	C	San Jose 1	4A/2	6-58	4-73		C	C	C	C
Oklahoma City, Okla.	4A/2	2-54	9-73	C, T	C	C	C	C	Sherman Oaks 2	4A/3	4-71	4-71	C	C	C	C	C
San Antonio, Tex.	4A/2	8-55	1-75	C, T	C	C	C	C									
St. Louis 1, Mo.	4A/1	4-55	2-70	T	L	L	L	C									
St. Louis 2, Mo.	4A/3	4-70	4-70	C, T	L	L	L	C	SO. NEW ENGLAND								
Tulsa, Okla.	4A/3	4-57	4-73	C	C	C	C	C	New Haven 4	4A/3	5-68	5-71	T	L	L	L	L
Wichita, Kan.	4A/3	10-57	4-74	C	C	C	C	C									
Mission, Kan.	4A/3	4-72	4-72	C	C	C	C	C	CINCINNATI								
Dallas, Tex.	4A/L	2-70	2-70		C	C	C	C	Cincinnati ø	4A/2	9-52	4-72	C, T	L	L	L	L
MOUNTAIN																	
Albuquerque, N.M.	4A/2	4-60	4-75	C	L	L	L	L	CANADA								
Colorado Springs, Colo.	4A/3	5-71	5-71	C, T	C	C	C	C	Montreal 1	4A/1	5-56	7-72	C	C	C	C	C
Denver 1, Colo.	4A/2	11-54	12-70	C, T	L	L	L	L	Toronto 1	4A/2	6-55		C	C	C	C	C
Phoenix 1, Ariz.	4A/2	12-66	11-73		L	L	L	L	Toronto 3	4A/4	11-72	11-72	C	C	C	C	C
Pueblo, N.M.	4A/3	8-69	8-69		C	C	C	C									
Salt Lake City, Utah	4A/2	3-58	7-73	C	L	L	L	C									
Cheyenne, Wyo.	4A/2	5-72	5-72	C	C	C	C	C	NON-BELL								
Denver 3, Colo.	4A/1	6-72	6-72		L	L	L	L	Clearwater, Fla.	4A/4	11-72	11-72	C				
									Ft. Wayne, Ind.	4A/4							
									Halifax 2, N.S.	4A/3			C				
PACIFIC NW									Saskatoon, Sask.	4A/3			C				
Portland 1, Ore.	4A/2	11-55	3-75	C,T	C	C	C	C	St. Petersburg, Fla.	4A/4							
Seattle 1, Wash.	4A/2	1-59	1-72	C	C	C	C	C	Tampa, Fla.	4A/3		2-74					
Spokane, Wash.	4A/3	4-62		C	C	C	C	C	Vancouver 2, B.C.	4A/2		4-71	C				
									Winnipeg, Man.	4A/2			C				
									Fayetteville, N.C.	4A/3	5-72	5-72					
PACIFIC									Honolulu, Haw.	4A/3	1-72	1-72	C				
Anaheim	4A/2	12-64	4-72	T	C	C	C	C	Everett 1, Wash.	4A/3	4-72	4-72	C				
Los Angeles 2	4A/2	5-54	4-72		C	C	C	C	Las Vegas 1, Nev.	4A/4	11-72	11-72	C				
Los Angeles 3	4A/3	3-62	9-69	T	C	C	C	C	Edmonton, Alb.	4A/3	3-72	3-72	C				
Oakland-Franklin 3	4M/2	10-49	2-72	T	C	C	C	C									

ø Originally installed as A4A

* Machine Responsibility - T = Traffic Engineering
E = Equipment Engineering
A = Machine Administration
M = Machine Maintenance

C = Associated Company
L = Long Lines

60 cc
1/4

Chart 5

NEW CONTROL SWITCHING POINTS
AND OTHER 4A, XBT AND ESS TOLL OFFICES
IN SERVICE 1973-78
(BASED ON APRIL, 1973 CONSTRUCTION BUDGET VIEW)

Co.	Location	Switching Class	Type Switching Eqpt.	Frames	Dates		CAMA	ANI	Notes
					Ship	Service			
N.E.	Manchester 2, N.H.	3	XBT	107	6-72	5-73	X		
	Portland, Me.	3	4A	390	4-72	6-73			
	Lawrence, Mass.	3	4A	997	5-72	12-73			
	Cambridge 16, Mass.(Kendall Sq.)	3	4A	1,604	1-72	6-73			
	Framingham 2, Mass.	3	4A	750	2-73	8-74			
	Brockton 2, Mass.	3	4A	900	12-73	4-75			
	Worcester 2, Mass.	3	4A	611	4-74	10-75			
	Fairhaven 1, Mass.	3	4A	786	11-74	4-76			
	Salem, Mass.	3	4A	1,000	4-75	9-76			
	Cambridge 18, Mass.	2	4ESS	1,700	6-75	6-77			
	Springfield 2, Mass.	2	4ESS	1,700	12-76	6-78			
N.Y.	New York 10	3	4A	1,000	5-72	6-73			
	White Plains 4	3	4A	954	6-71	9-73	X		
	Garden City 1	4	4A	961	9-72	10-73	X		
	323 Broadway 2	LCL	4A	1,144	4-72	1Q74			
	Williamsburg 1	4	ESS	430	3-73	3-74	X		
	New York 11	3	4A	1,045	12-72	6-74			
	W. 42 St. 1	LCL	ESS	300	1-74	3Q75	X		
	East Meadow	3	4A	523	1-75	5-76			
	Wappingers Falls 1	3	ESS	500	1Q75	3Q76	X		
	Williamsburg 2	4	ESS	500	1Q75	3Q76			
	New York 12	3	4ESS	1,200	1-76	6-77			
	W. 42 St. 2	4	ESS	450	1Q76	3Q77			
	New York 13	-	4ESS	600	1976	1977			
	Staten Island 2	4	XBT	340	1Q77	2Q78			
	Rockland County	4	ESS	450	1Q77	2Q78			
	New York 4E	2	4ESS	1,200	1-77	6-78			Rem. 4E
	White Plains 5	1	4ESS	1,000	3-77	9-78			
	Civic Center 1	4	ESS	500	1Q77	3Q78			
	Buffalo 2	2	4ESS	450	1Q77	4Q78			
N.J.	Newark 7	3	4A	624	3-72	7-73			
	Morristown (Cedar Knolls) 1	3	4A	676	2-73	6-74			
	Hamilton Square 1	3	4A	543	6-73	10-74			
	Rochelle Park 2	4	4A	761	1-74	6-75			
	Freehold 2	4	4A	596	1-75	5-76			
	Rutherford	4	1ESS	-	1-75	6-76			
	Absecon 1	3	4A	536	11-75	4-77			
PA.	Philadelphia 3	3	4A	968	12-72	6-74			
	Wilmington, Del.	3	4A	526	3-74	6-75	X	X	Rem. XBT
	Wayne 2	4	4ESS	800	7-76	6-77			Repl 4A
	Pittsburg 3	4	4ESS	800	3-76	3-77			Repl 4A
C.&P.	Baltimore 9, Md.	3	4A	623	10-72	5-74			
	Roanoke, Va.	3	4A	672	11-73	5-75	X	X	Rem. XBT
	Richmond 2, Va.	4	4A	850	11-74	5-76	X	X	
	Silver Springs 2, Md.	4	4A	850	11-74	5-76	X	X	
	Baltimore 8, Md.	4	1ESS	150	1-76	11-76			
	Wheeling, W. Va.	3	1ESS	-	3-76	2-77	X	X	
SO.	Pensacola, Fla.	4	4A	311	1-72	5-73			Rem. SXS
	Atlanta 3, Ga.	3	4A	212	12-72	1-74			
	Gainesville, Fla.	3	4A	505	6-73	8-74			Rem. SXS
	Gastonia, N.C.	3	4A	518	12-73	3-75	X	X	Rem. SXS
	Winston-Salem, N.C.	3	4A	556	1-74	4-75	X	X	Rem. SXS
	Macon 2, Ga.	2	4A	763	12-73	5-75	X		Rem. XBT
	Greenville, S.C.	3	4A	992	2-74	6-75	X	X	Rem. XBT

Chart 5

NEW CONTROL SWITCHING POINTS
AND OTHER 4A, XBT AND ESS TOLL OFFICES
IN SERVICE 1973-78
(BASED ON APRIL, 1973 CONSTRUCTION BUDGET VIEW)

Co.	Location	Switching Class	Type Switching Eqpt.	Frames	Dates		CAMA	ANI	Notes
					Ship	Service			
SO.	Ojus 2, Fla.	4	4A	1,436	8-74	11-75			
	West Palm Beach, Fla.	3	4A	630	5-74	9-75			Rep 1 XBT
	Panama City, Fla.	3	4A	512	3-74	5-75	X	X	Rem. SXS
	Ft. Lauderdale, Fla.	4	4A	641	4-75	7-76			XBT to Lcl
	Miami (Red Road)	-	1ESS	350	9-75	9-76			
	Jacksonville 2, Fla.	2	4ESS	500	5-76	5-77			
	Pompano Beach, Fla.	4	1ESS	400	7-76	9-77			
	Ft. Pierce, Fla.	4	1ESS	300	8-76	9-77			
	Atlanta 4, Ga.	3	4ESS	800	9-76	5-78			
	Orlando 2, Fla.	2	4ESS	600	4-77	10-78			
SO CN	Shreveport (Main), La.	3	4A	680	11-72	3-74	X	X	Rem. XBT
	Decatur, Ala.	3	4A	459	1-73	4-74	X		Rem. SXS
	Montgomery, Ala.	3	4A	550	1Q75	2Q76			Rem. SXS
	Chattanooga (9 St.) Tenn.	4	4A	550	4-76	5-77	X		Rem. XBT
	Birmingham, Ala.	2	4ESS	1,800	2-77	4-78			Rem. 4A
	Nashville, Tenn.	2	4ESS	1,800	3-77	5-78			Rem. 4A
	Louisville, Ky.	2	4ESS	1,800	3-77	5-78			
	Memphis, Tenn.	2	4ESS	1,800	4-77	6-78			
OHIO	Akron 2	3	4A	413	7-72	11-73			
	Youngstown 2	3	4A	241	1-74	4-75			
	Columbus 3	4	4A	502	1-75	5-76			
MICH.	Traverse City 1	4	XBT	237	7-72	6-73	X		
	Detroit 2	4	4A	851	9-72	2-74			
	Kalamazoo 2	3	4A	392	1-73	6-74			
	Saginaw 2	3	4A	411	9-73	12-74			
	Lansing 2	3	4A	365	4-74	8-75			
	Flint 2	3	1ESS	200	3-77	6-78			
IND.									
WISC.	Waukesha 2	3	4A	583	1-72	5-73			1ESS to Lcl
	Madison 2	3	4A	583	11-74	3-76			
	Appleton 2	3	4A	500	11-76	3-78			XBT to Lcl
ILL.	Peoria 2	3	4A	496	6-72	10-73			
	Rock Island	4	XBT	246	1-73	10-73	X		XBT to C14
	Northbrook 2	4	4A	1,060	1-73	4-74			
	Rockford 2	3	XBT	133	6-74	2-75	X	X	
	Collinsville 2	2	4A	642	1-74	4-75	X		XBT to C13
	Chicago 7	HVT	4ESS	987	5-74	1-76	X		
	Joliet	4	XBT	200	1-76	10-76	X	X	
N.W.	Grand Forks, N.D.	3	XBT	179	1-73	10-73	X		
	Fargo 1, N.D.	2	4A	670	6-74	11-75	X		Repl XBT
	Davenport 1, Iowa	3	4A	641	4-75	7-76	X		Repl XBT
	Sioux Falls, S.D.(paired with present XBT)	3	XBT	50	1-76	4-77	X	X	
	Minneapolis 3, Minn.	4	4ESS	500	6-76	6-77			
	Des Moines 2, Ia.	2	4ESS	850	1-77	4-78			
SW	Longview, Tex.	3	4A	466	8-71	1-73	X	X	Repl SXS
	Corpus Christi, Tex.	3	4A	579	5-72	6-73	X	X	Repl SXS
	Kirkwood, Mo.	LCL	1ESS	129	1-73	12-73			
	Austin(Greenwood), Tex.	3	4A	900	1-73	4-74	X	X	Repl XBT
	Wichita Falls, Tex.	3	1ESS	505	10-73	10-74			
	Topeka, Kan.	4	1ESS	366	12-73	11-74			
	Hou. 3 (Wesleyan), Tex.	4	4A	1,173	12-73	6-75	X	X	
	San Antonio 2, Tex.	3	4A	881	7-74	12-75	X	X	
	Lawton, Okla.	3	4A	292	10-74	2-76	X		5XB to Lcl
	Midland (Mutual), Tex.	3	4A	543	2-75	5-76	X	X	Repl SXS
	Kansas City 2, Mo.	2	4ESS	1,500	2-75	7-76			Repl
	Lubbock 2, Tex.	4	1ESS	400	3-75	7-76			
	Amarillo 2, Tex.	4	1ESS	400	3-75	7-76			
	Dallas 3, Tex.	3	4ESS	850	8-75	11-76			

Chart 5

NEW CONTROL SWITCHING POINTS
AND OTHER 4A AND XBT OFFICES
IN SERVICE 1973-78
(BASED ON APRIL, 1973 CONSTRUCTION BUDGET VIEW)

Co.	Location	Switching Class	Type Switching Eqpt.	Frames	Dates		CAMA	ANI	Notes
					Ship	Service			
S.W.	Ft. Worth, Tex.	4	4ESS	700	12-75	12-76			
	Muskogee, Okla.	4	1ESS	300	1-76	12-76			
	Hou. (BMT Term.), Tex.	4	1ESS	230	6-76	5-77			
	Hou. 4 (Wesleyan), Tex.	2	4ESS	175	7-76	5-77			
	Okla. City 2, Okla.	4	4A	834	4-76	8-77	X		
	Hays, Kan.	4	1ESS	240	3-77	1-78			
	Waco, Tex.	3	4ESS	-	1-76	4-78			
	Wichita 2, Kan.	3	4ESS	-	10-76	4-78			
	St. Louis 3, Mo.	3	4ESS	850	2-77	5-78			
	Joplin 1, Mo.	-	4A	734	1977	1978			
	Sikeston 1, Mo.	-	4A	534	1977	1978			Repl XBT
MTN.	Denver 4, Colo.	4	4A	784	1-73	4-74			Repl XBT
	Tucson 2, Ariz.	3	4A	790	2-73	6-74			Repl XBT
	Greely, Colo.	3	4A	394	12-73	3-75			5XB toLcl
	Boise-Main 2, Idaho	3	4A	676	11-73	4-75	X	X	Repl XBT
	Mesa, Ariz.	4	4A	736	7-74	10-75			Repl XBT
	Twin Falls, Idaho	4	XBT	ONEW	-	4-76	X	X	Reused Eq.
	Idaho Falls, Idaho	4	XBT	ONEW	-	5-76	X	X	Reused Eq.
	Provo 1, Utah	3	4A	515	3-75	X			5XB toLcl
	Billings 2, Mont.	2	4A	834	1-76	3-77	X	X	Repl XBT
	Provo 2, Utah	-	4A	834	1976	1977			
	Casper, Wyo.	3	4A	267	12-76	2-78	X	X	
	Grand Junction, Col.	3	4A	700	12-76	6-78	X		
	Salt Lake City, Utah	2	4ESS	900	1977	1978			Repl 4A
	Phoenix 3, Ariz.	2	4ESS	900	1977	1978			Repl 4A
PNB	Seattle 2, Wash.	3	4A	484	7-72	11-73	X	X	
	Portland 2, Ore.	3	4A	403	9-72	1-74			
	Tacoma, Wash.	3	4ESS	600	11-76	3-78			
PAC.	Hayward, Cal.	3	4A	600	12-71	3-73	X	X	
	Reno 3, Nev.	2	4A	399	3-72	5-73			
	Gardena 2, Cal.	3	4A	1,356	1-72	6-73			
	Oakland 5 (Franklin), Cal.	3	4A	1,179	12-71	6-73	X		
	Anaheim 2, Cal.	4	4A	598	2-73	5-74			
	San Fran. (Folsom), Cal.	4	4A	610	12-72	3-74	X		
	Stockton, Cal	2	4A	293	2-73	4-74			
	Sherman Oaks 3, Cal.	4	4A	1,108	11-72	10-74			
	Santa Clara, Cal.	LCL	4A	580	12-73	3-75			
	Santa Rosa, Cal.	2	4A	387	1-74	5-75			
	Gardena 3, Cal.	4	4A	915	3-74	5-75			
	Sacramento 3, Cal.	2	4A	457	6-74	11-75			
	Walnut Creek, Cal.	4	4A	954	12-76	3-78	X		
	Salinas, Cal.	3	4A	450	12-76	4-78			
	Glendale, Cal.	3	4A	993	4-76	4-78			
	San Diego 2, Cal.	4	4ESS	375	4-77	6-78			
S.N.E.	Hartford 3, Conn.	3	4A	750	4-72	10-73	X		
	Bridgeport 4, Conn.	3	4A	843	12-73	4-75	X		
CIN.	Cincinnati 2, Ohio	3	4A	581	1-75	4-76			
CAN (BELL)	Ottawa 2	3	4A			4-73	X	X	
	Thunder Bay	3	SP1			5-74	X	X	
	Oshawa	4	SP1			4-75	X	X	
	St. Catharines	4	SP1			3-76	X	X	
	Montreal 3	4	SP1			3-76	X	X	
	London 2	3	SP1			3-77	X	X	
	Dryden	4	SP1			3-77	X	X	
NON-BELL	Prince George, B.C.	3	XBT			5-73			
	Rocky Mount, N.C.	3	4A			4-74			
	Sarasota 3, Fla.	4	4A			10-74			
	Lexington, Ky.	4	ETS4			4-75			
	Long Beach, Cal.	4	ETS4			5-75			
	Tampa 2, Fla.	4	4A			10-75			
	Erie 1, Pa.	4	ETS4			1976			

Chart 5

NEW CONTROL SWITCHING POINTS
AND OTHER 4A, XBT AND ESS TOLL OFFICES
IN SERVICE 1973-78
(BASED ON APRIL, 1973 CONSTRUCTION BUDGET VIEW)

Co.	Location	Switching Class	Type Switching Eqpt.	Frames	Dates		CAMA	ANI	Notes
					Ship	Service			
NON-BELL	Santa Monica, Cal.	4	ETS4			6-76			
	York, Pa.	4	ETS4			1977			
	Wausau, Wis.	-	3EAX			1978			
	Ontario, Cal.	-	ETS4			1978			

Dates - The above ship and service dates are those indicated by the Companies in the April, 1973 Construction Budget View. These in no way imply a firm schedule as ship and complete dates must be negotiated with the WECO in the usual manner.

Chart 6

CROSSBAR TANDEMS IN SERVICE - END OF 1972
(BASED ON APRIL 1973 CONSTRUCTION BUDGET)

Location	Service Date	Class+	TSP(T) TSPS(S)	CAMA	ANI	6-Digit Translation
NEW ENGLAND						
Bangor, Me.	10-69	4		X		
Boston (Dorchester)	1-64	4		X	X	X
(Harrison)	6-65	4	T	X	X	X
(Metro)	6-49	4	T,S			
(Malden)	12-67	4				X
(Newton)	6-55	4				X
Brockton 1, Mass.	6-63	4		X		X
Fall River, Mass.	5-64	3		X	X	X
Framingham 1, Mass.	1-65	4	S	X	X	X
Lawrence, Mass.	11-60	3		X	X	X
Manchester, N.H. 1	6-63	3		X	X	X
Portland, Me.	4-62	3		X	X	X
Providence 1 (*), R.I.	9-56	4C		X	X	X
Providence (*), R.I.	3-49	4C				
White River Jct., Vt.	11-61	3		X		X
Worcester, Mass.	11-59	4		X	X	X
Lewiston, Me.	6-72	4		X		
Boston 17, Mass.	10-72	3		X		
Boston CAMA, Mass.	4-57	4		X		
Framingham, Mass.	10-72	4				
NEW YORK						
- Upstate						
Albany 1	12-61	3C	S	X	X	X
Binghamton 1	6-59	3		X	X	X
Buffalo Erie	10-48	L				
Buffalo Frontier	11-61	L				
Rochester 1 (Non-Bell)	3-58	4		X		X
Rochester 2 (Non-Bell)	4-69	4		X	X	X
Utica	10-63	4		X	X	X
Binghamton 2	10-72	3		X		
- Manhattan	Notes					
Amsterdam 1 (#)	A	8-48	L			
Amsterdam 2 (#)	A	11-59	4			X
Midtown 1 (#)	A	9-62	4			X
Midtown 2 (#)	A	9-64	4			X
Borough 3 (*)	B	10-52	3			
Borough 4 (*)	B	4-55	3			
City (#)	C	9-56	L			
Gotham 8 (#)	C	6-48	4			
Gotham 9 (#)	C	6-50	4			
Interzone (#)	C	10-41	L			
Chelsea 1 (*)	D	8-69	4C			X
Chelsea 2 (*)	D	8-69	4C			X
Connecticut	E	7-52	3			
Lexington	F	6-68	4C			X
Tenth Ave. 1 (#)	G	12-63	4			X
Tenth Ave. 2 (#)	G	8-65	3	T	X	X
Tenth Ave. 3 (#)	G	10-67	3		X	X
Vesey 1 (*)	H	10-49	4			X
Vesey 2 (*)	H	9-50	4			X
Vesey 3 (*)	H	9-54	4			X
West St. 4 (*)	H	9-59	3		X	X
West St. 5 (*)	H	10-63	3	T	X	X
York 1 (#)	I	11-47	L			
York 2 (#)	I	10-51	L			
E-97th St. 4 DID	E	7-71	4			
West St. 6	H	10-72	3		X	
- Mid-State	Notes					
Bronx 1 (*)	R	2-60	3C		X	X
Bronx 2 (*)	R	7-64	3C	T	X	X
Tremont 1 (*)	R	7-63	4C			X
Tremont 2 (*)	R	11-65	4C			X
Mt. Kisco		3-58	3C		X	X
Mt. Vernon 1 (#)		10-49	4C			
Mt. Vernon 2 (#)		12-68	L			X
White Plains 1		3-50	4C			
Nyack		5-59	3C		X	X
Monticello		3-65	4	T	X	X
Poughkeepsie		11-65	3		X	X

Location	Service Date	Class+	TSP(T) TSPS(S)	CAMA	ANI	6-Digit Translation
NEW YORK (Cont'd)						
-Brooklyn-Queens	Notes					
Albemarle Rd. 2(*)	J	2-59	3C		X	X
Albemarle Rd. 3(*)	J	11-66	3C	T	X	X
Brooklyn (*)	J	9-48	4C			
Bushwick 1 (#)	K	9-63	4C			X
Bushwick 2 (#)	K	3-67	4C			X
Kings 1 (*)	L	8-64	4C			X
Kings 2 (*)	L	11-68	4C			X
Forest Hills 1 (#)	M	11-59	3C		X	X
Forest Hills 2 (#)	M	3-64	3C	T	X	X
Jamaica	N	8-47	L			
Richmond Hill 1 (*)	O	3-54	4C			
Richmond Hill 2 (*)	O	7-58	4C			
Queens 1 (#)	P	8-65	4C			X
Queens 2 (#)	P	12-70	4			X
Staten Island	Q	1-67	4C			X
- Nassau-Suffolk						
Hempstead 1 (*)		7-50	4C			X
Hempstead 2 (*)		6-57	4C	T		X
Hempstead 3 (*)		8-66	3C		X	X
Hempstead 4 (*)		8-66	3C			X
Deer Park 1		11-65	4C			X
Deer Park 2		7-71	4C			
NEW JERSEY						
Asbury Park		2-66	3			X
Atlantic City		4-61	3		X	X
Camden		3-53	4	T	X	X
Hackensack		6-53	4C		X	X
Jersey City (Bergen)		1-55	4		X	
Morristown		1-55	3	S	X	X
Newark (Essex 1) (#)		11-57	3			
(Essex 2) (#)		3-61	3		X	X
(Jersey 1) (*)		10-47	4			
(Jersey 2) (*)		11-52	4		X	
(TSP Tdm) (*)		7-65	4	T	X	X
New Brunswick		6-57	4		X	X
Peterson		7-50	4		X	X
Trenton		3-57	3		X	X
PENNSYLVANIA						
Allentown		10-61	4		X	X
Altoona		11-57	3		X	X
Greensburg		8-59	4		X	
Lancaster		5-62	4		X	X
Phila. (East A) (#)		3-53	3	S	X	
(East B) (#)		6-60	3		X	X
(North A) (*)		8-55	4		X	
(North B) (*)		10-64	3	T	X	X
(West)		8-55	3		X	X
Pitts. (Tandem A) (#)		4-55	4		X	
(Tandem B) (#)		8-57	4		X	X
Reading		11-59	4		X	X
Tullytown		3-59	4		X	X
Wilkes-Barre		11-62	4		X	X
Williamsport		5-61	3		X	X
Wilmington, Del.		3-59	3	S	X	X

Note: Location of New York City XBT Systems:

A	221 E 37 St., Manhattan
B	435 W 50 St. "
C	204 Second Ave. "
D	210 W 18 St. "
E	151 E 97 St. "
F	228 E 56 St. "
G	811 Tenth Ave. "
H	140 West St. "
I	227 E 30 St. "
J	Albemare Rd., Brooklyn
K	Bushwick Ave. "
L	Bridge St. "
M	107-15 70th Rd., Queens
N	89-63 163rd St. "
O	87-28 109th St. "
P	71-40 164th St. "
Q	355 Forest Ave., Staten Island
R	1775 Grand Concourse, Bronx

Chart 6

CROSSBAR TANDEMS IN SERVICE - END OF 1972
(BASED ON APRIL 1973 CONSTRUCTION BUDGET)

Location	Service Date	Class+	TSP(T) TSPS(S)	CAMA	ANI	6-Digit Translation
CHES. & POT.						
Arlington, Va. (Local)	9-51	L				X
(Toll)	3-66	4				X
Baltimore 3	10-48	3		X	X	X
Baltimore 7	12-67	L				X
Clarksburg, W. Va.	10-64	3		X	X	X
Norfolk 1, Va.	10-61	4		X	X	X
Roanoke, Va.	5-57	3		X	X	X
Silver Spring (Local)	9-51	L				X
(Toll)	5-64	4		X	X	X
Wash., D.C. (Dupont)	11-64	L				X
(Uptown)	1-49	4		X	X	X
Mt. Pleasent)	10-66	L				X
SOUTHERN						
Asheville, N.C.	6-66	3		X		X
Atlanta, Ga	10-60	3C		X	X	X
Atlanta-Decatur, Ga.	9-64	L				
Charleston, S.C.	4-66	4	S	X	X	X
Ft. Lauderdale, Fla.	12-64	4	S	X		X
Greenville, S.C.	8-60	3		X	X	X
Macon, Ga.	8-67	3		X	X	X
Miami 3, Fla.	9-59	4		X	X	X
West Palm Beach, Fla.	11-66	4		X		X
Miami-Biscayne	7-72	L				
SOUTH CENTRAL						
Chattanooga, Tenn.	9-57	3	S	X		X
Lafayette, La.	11-60	3		X	X	X
Mobile, Ala.	5-65	3		X	X	X
Montgomery, Ala.	7-62	3		X	X	X
New Orleans 2, La.	12-62	4		X	X	X
Paducah, Ky.	5-60	3		X	X	X
Shreveport, La.	9-61	3		X	X	X
OHIO						
Akron	11-57	3		X	X	X
Canton	6-60	3		X	X	X
Clev. (Clearwater 1)	1-59	3C	T	X	X	X
(Clearwater 2)	7-69	L				
(Garfield)	2-55	3		X	X	X
(Henderson 1)	4-48	L				
(Henderson 2)	9-66	L				
Columbus 1	7-58	4C		X		
Youngstown	8-56	3	S	X	X	X
MICHIGAN						
Detroit (Bell)*	5-48	L				
(Cadillac)*	7-58	4C		X	X	X
(Trinity)	10-41	L				
(University)	6-59	3				X
(Woodward)*	12-53	4C		X	X	X
Flint	6-57	4		X	X	X
Grand Rapids 2	4-57	3		X	X	X
Jackson	7-67	3		X	X	X
Kalamazoo	11-65	3		X	X	X
Lansing	8-64	4		X	X	X
Pontiac	4-58	4		X	X	X
Saginaw	6-61	3		X	X	X
INDIANA						
Evansville	10-58	3		X	X	X
Indianapolis	10-70	L				X
South Bend 2	8-56	3		X	X	X
WISCONSIN						
Appleton	5-62	3		X	X	X
Madison	5-63	2		X	X	X
Milwaukee 2	11-48	3		X	X	X
(Fairway Dr.)	11-65	L				
Racine	5-65	3		X	X	X
ILLINOIS						
Centralia	7-61	2		X	X	
Chicago (Belle Plains 1)	8-54	4				
(Belle Plaine 2)	12-61	L				
(Congress)	9-62	L				
(Franklin 1)	7-55	L				
(Franklin 2)	5-59	L				
(Kedzie 1)	10-58	4				
(Kedzie 2)	7-69	4				
(Stewart 1)	11-52	4				
(Stewart 2)	10-66	4				
(Wabash 1)	9-46	L				
(Wabash 2)	5-61	4				
(Morton Grove)	9-67	L				
Chicago 5	7-69	3		X		
Decatur	12-68	4		X		
Peoria 1	9-61	3		X		X
Rockford	12-61	3C		X	X	X
Alton	12-72	4		X	X	X
DeKalb		4				
NORTHWESTERN						
Bismarck, N.D.	4-70	3		X		X
Cedar Rapids, Ia.	12-66	4		X	X	X
Davenport, Ia.	10-58	3		X	X	X
Fargo, N.D.	4-59	2		X	X	X
Grand Island, Neb.	5-70	3		X		X
Omaha, Neb.	2-69	L				
Rapid City, S.D.	3-70	4		X	X	X
St. Paul, Minn.	8-57	4C		X	X	X
Sioux City, Ia.	6-60	3	T	X	X	X
Sioux Falls, S.D.	11-58	3	S	X	X	X
Waterloo, Ia.	6-61	3		X	X	X
SOUTHWESTERN						
Abilene, Tex.	4-69	3		X	X	X
Amarillo, Tex.	8-55	2		X	X	X
Austin, Tex.	7-66	3		X	X	X
Beaumont, Tex.	5-66	3	T	X	X	X
Ft. Smith, Ark.	11-66	4		X	X	X
Harlingen, Tex.	8-71	3		X	X	X
Joplin, Mo.	6-62	3		X	X	X
Kansas City, Mo.	9-49	L				
Lubbock, Tex.	7-57	3		X	X	X
St. Louis 1, Mo. (Jefferson)	8-49	L				
St. Louis 2, Mo.	4-61	4C		X	X	
(Chestnut)	9-66	4	T	X	X	X
Salina, Kan.	9-56	3		X	X	X
Springfield, Mo.	12-64	4	T	X	X	
Sikeston, Mo.	11-68	3		X	X	
St. Joseph, Mo.	6-70	4		X	X	
Sweetwater, Tex.	3-57	2				X
Waco, Tex.	12-67	3		X	X	X

Chart 6

CROSSBAR TANDEMS IN SERVICE - END OF 1972
(BASED ON APRIL 1973 CONSTRUCTION BUDGET)

Location	Service Date	Class+	TSP(T) TSPS(S)	CAMA	ANI	6-Digit Translation
MOUNTAIN						
Billings, Mont.	11-61	2		X	X	X
Boise, Idaho	12-62	3		X	X	X
Denver, Colo.	4-60	4	S	X	X	X
El Paso, Tex.	8-62	4		X	X	X
Phoenix 2, Ariz.	12-56	4		X	X	X
Tucson, Ariz.	11-61	3		X	X	X
Grand Jct., Colo.	3-68	3		X		X
PACIFIC NW						
Eugene, Ore.	6-65	4		X	X	X
Seattle (East), Wash.	9-54	L				
(Emerson)	10-58	L				
(Mutual)	4-48	3				
Tacoma, Wash.	5-64	3		X	X	X
Yakima, Wash.	8-58	3		X	X	X
PACIFIC						
Alhambra, Cal.	9-57	L				
Anaheim, Cal.	6-57	3		X	X	X
Bakersfield, Cal.	4-58	3		X	X	X
Compton, Cal.	12-58	3				X
Concord, Cal.	7-67	3		X	X	X
El Monte, Cal. 2/1960	~~3-68~~	3				X
Eureka, Cal.	1-59	4		X		X
Fresno, Cal.	10-56	4		X	X	X
Hollywood 3T#, Cal.	1-50	L				
Hollywood 4T#, Cal.	10-68	L				
Los Angeles 5T, Cal.	1-48	L				
Los Angeles 6T, Cal.	8-55	L				
Los Angeles 17T*, Cal.	11-49	L				
Los Angeles 18T*, Cal.	5-67	L				
Modesto, Cal.	6-62	3		X		X
Oakland (Franklin O)#	4-54	4		X	X	X
Oakland 1#, Cal.	1-42	L				
Oakland 4, Cal.	5-63	3		X	X	X
Oceanside, Cal.	5-63	4		X	X	X
Palo Alto, Cal.	7-60	4		X	X	X
Reno, Nev.	1-60	3		X	X	X
Sacramento 2, Cal.	7-58	3		X	X	X
Salinas, Cal.	4-64	3		X	X	X
San Diego 2, Cal.	4-56	3		X	X	X
Salinas, Cal.	4-64	3		X	X	X
San Diego 2, Cal.	4-56	3		X	X	X

Location	Service Date	Class+	TSP(T) TSPS(S)	CAMA	ANI	6-Digit Translation
PACIFIC (Cont'd)						
San Francisco (Onon O)	8-54	4				X
(Bush O)*	12-41	4				X
(Bush 1)*	5-49	4		X	X	X
San Francisco 5(Mission)	5-65	4	T	X	X	X
San Francisco 6(Juniper)	8-59	4	T	X	X	X
San Jose 2, Cal.	12-51	3		X	X	X
San Rafael, Cal.	8-62	3		X		X
Santa Rosa, Cal.	6-57	3		X	X	X
Sherman Oaks 1, Cal.	12-58	3				X
Stockton, Cal.	8-57	2		1-73	5-73	X
Redding, Cal.	1-72	3		X	X	X
Chico, Cal.	12-72	3		X	X	X
SO. NEW ENGLAND						
Bridgeport, Conn.	3-59	4	S	X	X	X
Hartford 1, Conn.	6-56	4		X	X	X
Hartford 2, Conn.	8-65	4	T	X	X	X
Meriden, Conn.	10-58	4		X	X	X
New Haven 2, Conn.	4-57	4		X	X	X
New London, Conn.	5-62	4		X	X	X
Norwalk, Conn.	12-70	4	S	X	X	X
Stamford, Conn.	9-56	4		X	X	X
Waterbury, Conn.	11-57	4		X	X	X
CINCINNATI						
Cincinnati	10-49	4C		X	X	X
(St. Bernard)	5-63	L				X
CANADA (Bell)						
Barrie	5-64	4		X	X	X
Hamilton	2-61	4		X	X	X
Kitchener	9-64	4		X	X	X
London	8-60	3		X	X	X
Montreal 2	3-60	4		X	X	X
Ottawa 1	5-63	3		X	X	X
Quebec	9-63	2		X	X	X
Sherbrooke	3-66	3		X	X	X
Sudbury	12-64	3		X	X	X
Toronto 2	8-58	4		X	X	X
Windsor	5-62	4		X	X	X
CANADA (Non-Bell)						
Calgary	4-59	2		X	X	X
Regina	11-55	1		X		X
Saint John	5-62	2		X	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 Local and Toll traffic is handled, the system is classed here as "C" Local - only systems are noted as "L".

Chart 7

NO. 5 CROSSBAR CSP'S IN SERVICE-END OF 1972

(All Class 3)

Location	Service Date	Type Mkr.*	CAMA	ANI
New York				
Plattsburg	1959	W	X	
Pennsylvania				
Warren	1959	W		
Westchester	1956	B	X	
Ches. & Pot.				
Wheeling, W. Va.	1956	W	X	
Southern				
Chipley, Fla.	1956	W	X	
Laurinburg, N. C.	1957	W	X	
Thomasville, Ga.	1956	W	X	X
Waycross, Ga.	1957	W	X	X
South Central				
Danville, Ky.	1960	W	X	
Greenwood, Miss.	1958	W	X	X
Humboldt, Tenn.	1957	W	X	
Madisonville, Ky.	1957	W	X	X
Paintsville, Ky.	1957	W	X	
Tupelo, Miss.	1956	B	X	
Winchester, Ky.	1958	W	X	X
Jackson, Tenn.	1963	W	X	X
Michigan				
Escanaba	1958	W		
Petosky	1972	W	X	
Wisconsin				
Oshkosh	1958	W	X	
Stevens Point	1957	W	X	
Watertown	1970		X	
Northwestern				
Mason City, Ia.	1957	W	X	X
Owatonna, Minn.	1951	W	X	
Sidney, Neb.	1969	W	X	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	X	X

Location	Service Date	Type Mkr.*	CAMA	ANI
Southwestern				
Clinton, Okla.	1959	W	X	X
Durant, Okla.	1961	W	X	X
Enid, Okla.	1955	B	X	X
Greenville, Texas	1955	F	X	X
Lawton, Okla.	1956	B		
Moberly, Mo.	1959	W	X	X
Parsons, Kan.	1961	W		
Mountain				
Casper, Wyo.	1964	W	X	X
Great Falls, Mont.	1962	W	X	X
Helena, Mont.	1955	F	X	
Pocatello, Ida.	1958	W	X	X
Roswell, N.M.	1955	B	X	
Pacific N.W.				
Astoria, Ore.	1957	W	X	X
Bellingham, Wash.	1958	W		
Bend, Ore.	1956	B	X	X
Medford, Ore.	1962	W	X	X
Pendleton, Ore.	1957	W	X	X
Aberdeen, Wash.	1959	W	X	
Pacific				
El Centro, Cali.	1955	F	X	X
San Luis Obispo, Cali.	1951	W	X	X
Canada (Bell)				
Chicoutimi, Quebec	1959	W	X	
North Bay, Ont.	1959	W		
Non Bell				
Newcastle, N.B.	1959	W	X	X
Rimouski, Quebec	1967	W	X	
St. John's, Nfld.	1966	W	X	X
Val D'or				

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

Chart 8

BELL SYSTEM
No. 5 CROSSBAR CLASS 4 OFFICES IN SERVICE END OF 1972

Co.	Location	Co.	Location	Co.	Location
N.E.	Ayer, Mass.		Washington		Brunswick, Ga.
	Gardner, Mass.		Red Bank		Cartersville, Ga.
	Marlboro, Mass.		Freehold		Griffin, Ga.
	Milford, Mass.				Newnan, Ga.
	Plymouth, Mass.	Pa.	Coatesville		Morganton, N.C.
	Salem, Mass.		Kennett Square		Newton, N.C.
	Walpole, Mass.		Lansdale 5XB		Salisbury, N.C.
	Falmouth, Mass.		Norristown 5XB		Goldsboro, N.C.
	Hyannis, Mass.		Pottstown		Orangeburg, S.C.
	Wareham, Mass.		Warrington		De Land, Fla.
	Northampton, Mass.		Stroudsburg		Lake City, Fla.
	Pittsfield 2, Mass.		Bloomsburg		Homestead, Fla.
	Newport, R.I.		Du Bois		Cocoa, Fla.
	Woonsocket, R.I.		Connellsville		Fort Pierce, Fla.
	Portsmouth, N.H.		Rochester		Melbourne, Fla.
	Dover, N.H.		Sharon		Sanford, Fla.
	Keene, N.H.		Washington		Titusville, Fla.
	Laconia, N.H.		Dover, Del.		
	Burlington 2, Vt.			SOCN	Decatur, Ala.
		C&P	Bel Air, Md.		Huntsville, Ala.
N.Y.	Kingston		Cambridge, Md.		Sheffield, Ala.
	Newburgh		Chestertown, Md.		Tuscaloosa, Ala.
	Amsterdam		Cumberland, Md.		Crowley, La.
	Catskill		Easton, Md.		Minden, La.
	Troy		Elkton, Md.		Monroe, La.
	Malone		Hagerstown, Md.		Ruston, La.
	Saranac Lake		Havre de Grace, Md.		Covington, La.
	Hornell		Westminster, Md.		Hammond, La.
	Ithaca		Danville, Va.		Houma, La.
	Oneonta		Fredericksburg, Va.		Gulfport, Miss.
	Batavia		Petersburg, Va.		Columbus, Miss.
	Dunkirk		Norton, Va.		Mc Comb, Miss.
	Olean		Leesburg, Va.		Grenada, Miss.
	Geneva		Winchester, Va.		Columbia, Tenn.
	Herkimer		Elkins, W. Va.		Lebanon, Tenn.
	Newark		Fairmont, W. Va.		Shelbyville, Tenn.
	Ogdensburg		New Martinsville, W.Va.		Athens, Tenn.
	Oneida		Weirton, W. Va.		Harriman, Tenn.
	Oswego		Lewisburg, W. Va.		Morristown, Tenn.
	Potsdam		Logan, W. Va.		Dyersburg, Tenn.
	Rome		Williamson, W. Va.		Union City, Tenn.
	Watertown		Frederick, Md.		Middlesboro, Ky.
	Peekskill		La Plata, Md.		Frankfort, Ky.
	Riverhead		Annapolis, Md.		Shelbyville, Ky.
	Southhampton		Culpeper, Va.		Mayfield, Ky.
			Onancock, Va.		Jasper, Ala.
N.J.	Penns Grove				Gadsden, Ala.
	Vineland	SO.	Cordele, Ga.		Hattiesburg, Miss.
	Woodbury		Dublin, Ga.		Laurel, Miss.
	Burlington		Millen, Ga.		Meridian, Miss.
	Mt. Holly		Bainbridge, Ga.		Bowling Green, Ky.
	Dover (Orig. only)		Valdosta, Ga.		Henderson, Ky.

Chart 8

BELL SYSTEM
NO. 5 CROSSBAR CLASS 4 OFFICES IN SERVICE END OF 1972

Co.	Location	Co.	Location	Co.	Location
OH.	Piqua		Canton		Forrest City, Ark.
	Coshocton		Rock Island		Jonesboro, Ark.
	Gallipolis		Collinsville		Magnolia, Ark.
	Ironton		Mount Vernon		Mc Gehee, Ark.
	Lancaster		Edwardsville		Pine Bluff, Ark.
	Marietta		Springfield		Rogers, Ark.
	Washington (Ct. Hse.)		Vandalia		West Memphis, Ark.
	Kent		Belleville		Chanute, Kan.
	Alliance		Crown Point, Ind.		Coffeyville, Kan.
	East Liverpool		Hammond, Ind.		Independence, Kan.
	Findlay				Pittsburg, Kan.
	Sandusky	N.W.	Bemidji, Minn.		Atchison, Kan.
	Tiffin		Shakopee, Minn.		Lawrence, Kan.
			Crookston, Minn.		Leavenworth, Kan.
MICH.	Monroe		Thief River Falls, Minn.		Olathe, Kan.
	Niles		Anoka, Minn.		Ottawa, Kan.
	Iron Mountain		Ames, Ia.		Arkansas City, Kan.
	Traverse City		Boone, Ia.		El Dorado, Kan.
	Marquette		Carroll, Ia.		Emporia, Kan.
	Port Huron		Webster City, Ia.		Mc Pherson, Kan.
			Charles City, Ia.		Newton, Kan.
IND.	Crawfordsville		Clinton, Ia.		Winfield, Kan.
	Kokomo		Ft. Madison, Ia.		Belleville, Ill.
	New Castle		Iowa City, Ia.		Abilene, Kan.
	Vincennes		Dubuque, Ia.		Concordia, Kan.
	Auburn		Muscatine, Ia.		Ada, Okla.
	Huntington		Oelwein, Ia.		Ardmore, Okla.
			Spencer, Ia.		Chickasha, Okla.
WIS.	Berlin		Storm Lake, Ia.		Norman, Okla.
	Fond du Lac		Grafton, N.D.		Shawnee, Okla.
			Jamestown, N.D.		Stillwater, Okla.
ILL.	La Salle		Valley City, N.D.		Elk City, Okla.
	Morris		Aberdeen, S.D.		Altus, Okla.
	Sterling		Deadwood, S.D.		Duncan, Okla.
	Woodstock		Winona, Minn.		Bartlesville, Okla.
	Arlington Hghts.		Watertown, S.D.		Claremore, Okla.
	Barrington		Winner, S.D.		Cushing, Okla.
	Blue Island		Fremont, Neb.		Mc Alester, Okla.
	Chicago Hgts.		Norfolk, Neb.		Okmulgee, Okla.
	Downers Grove		Shenandoah, Ia.		Hereford, Tex.
	Elgin		Atlantic, Ia.		Waxahachie, Tex.
	Geneva		Mc Cook, Neb.		Cisco, Tex.
	Highland Park		North Platte, Neb.		Graham, Tex.
	La Grange				Wharton, Tex.
	Libertyville	S.W.	Flat River, Mo.		Beeville, Tex.
	Cairo		Hannibal, Mo.		Seguin, Tex.
	Riverdale		Mexico, Mo.		Sinton, Tex.
	Waukegan		St. Charles, Mo.		Denison, Tex.
	Wheaton		Chillicothe, Mo.		
	Beardstown		Sedalia, Mo.	MTN.	Miles City, Mont.
	Quincy		Blytheville, Ark.		Logan, Utah
	Danville		Fayetteville, Ark.		Price, Utah

Chart 8

BELL SYSTEM
NO. 5 CROSSBAR CLASS 4 OFFICES IN SERVICE END OF 1972

Co.	Location	Co.	Location	Co.	Location
MTN.	Provo, Utah	SNE	Danbury, Conn.		New Market, Ont.
	Vernal, Utah		Danielson, Conn.		Lindsay, Ont.
	Idaho Falls, Ida.				St. Agathe, Que.
	Twin Falls, Ida.	CIN.	Batavia, Ohio		Cornwall, Ont.
	Boulder, Colo.				Markham, Ont.
	Ft. Collins, Colo.	CAN	St. Anne de Bellevue,		
	Greeley, Colo.	(Bell)	Que.	CAN.	
	Sterling, Colo.		St. Jerome, Que.	(Non-	Donnacona, Que.
	Durango, Colo.		Valleyfield, Que.	Bell)	Montmagny, Que.
	Alamogordo, N.M.		St. Felicien, Que.		
	Prescott, Ariz.		Lac Megantic, Que.		
	Livingston, Mont.		Brockville, Ont.		
			Kingston, Ont.		
PNB	Salem, Ore.		Smiths Falls, Ont.		
	Longview, Ore.		Brampton, Ont.		
	Auburn, Wash.		Fort Erie, Ont.		
	Olympia, Wash.		Oshawa, Ont.		
	Walla Walla, Wash.		Peterborough, Ont.		
			Brantford, Ont.		
PAC	Yuba City, Cal.		Guelph, Ont.		
	Red Bluff, Cal.		Orangeville, Ont.		
	Fairfield-Suisun, Cal.		Stratford, Ont.		
	Santa Rosa, Cal.		Chatham, Ont.		
	Santa Cruz, Cal.		Owen Sound, Ont.		
	Jackson, Cal.		St. Thomas, Ont.		
	Dinuba, Cal.		Simcoe, Ont.		
	Rialto, Cal.		Granby, Que.		
	Newhall, Cal.		Joliette, Que.		
	Escondido, Cal.		Trois Riveres, Que.		
	South Tahoe, Cal.		Drummondville, Que.		
	Lakeport, Cal.		Bellville, Ont.		
	Paso Robles, Cal.		Sarnia, Ont.		

BELL SYSTEM
NO. 1 ESS LOCAL/TOLL OFFICES IN SERVICE END OF 1972

Co.	Location	Sw Cl.	Co.	Location	Sw Cl.	Co.	Location	Sw Cl.
N.J.	Wildwood	4						
	Paterson	4						
	Morristown	4						

Chart 9

BELL SYSTEM

STEP-BY-STEP CAMA SYSTEMS IN SERVICE - END OF 1972

Company	Location	ANI
N.E.	Augusta, Me.	X
	Brattleboro, Vt.	X
	Concord, N. H.	X
	Fitchburg, Mass.	X
	St. Johnsbury, Vt.	X
	Littleton, N. H.	X
	Montpelier, Vt.	X
	Newburyport, Mass.	X
	Rockland, Me.	X
	Rutland, Vt.	
	Waterville, Me.	X
N.Y.	Glens Falls	
Pa.	Bradford	X
	Easton	X
	Hazleton	
	New Castle	X
C&P	Beckley, W. Va.	X
	Huntington, W. Va.	X
	Lynchburg, Va.	X
	Martinsburg, W. Va.	X
	Newport News, Va.	X
	Parkersburg, W. Va.	X
	Staunton Va.	X
	Salisbury, Md.	
So.	Augusta, Ga.	
	Delray Beach, Fla.	X
	Daytona Beach, Fla.	
	Gainesville, Ga.	
	Panama City, Fla.	
	Pensacola, Fla.	
	Savannah, Ga.	
Ohio	Ashtabula	
	Barnesville	X
	Hillsboro	X
	Middletown	X
	New Lexington	X
	Springfield	X
	Steubenville	X
	Upper Sandusky	X
	Winchester	X
	Xenia	X
	Zanesville	X
	Fremont	X
Ind.	Columbus	X
Ill.	Aurora	X
	Gary, Ind.	X
	Joliet 1	X
	Kankakee	X
	Peoria	X
	Springfield	X
Wisc.	Ashland	X
	Eau Claire	X
	Green Bay	X
	Hudson	X
	Janesville	X
	Marinette	
	Rhinelander	X
	Sheboygan	X
	Superior	X
N.W.	Duluth, Minn.	X
	Marshall, Minn.	X
	Sheldon, Iowa	X
S.W.	Brenham, Texas	X
	Cleveland, Texas	X
	El Dorado, Ark.	X
	Garden City, Kan.	X
	Great Bend, Kan.	X
	Hays, Kan.	X
	Hope, Ark.	X
	Hutchinson, Kan.	X
	Liberal, Kan.	X
	Manhattan, Kan.	X
	Midland, Tex.	X
	Nacogdoches, Tex.	X
	Newport, Ark.	X
	Odessa, Texas	X
	Ponca City, Okl.	X
	Texas City, Texas	X
	Topeka, Kan.	X
	Woodward, Okl.	X
	Corpus Christi, Tex	X
	Temple, Tex.	X
	Victoria, Tex.	X
	Huntsville, Tex.	X
	Eldon, Mo.	X
	Kirksville, Mo.	X
Mtn.	Artesia, N. M.	
	Cedar City, Utah	
	Clovis, N.M.	
	Deming, N. M.	
	Farmington, N. M.	
	Galleys, N. M.	X
	Glendive, Mont.	X
	Globe, Ariz.	X
	Las Cruces, N. M.	X
	Santa Fe, N. M.	X
	Rock Springs, Wyo.	X
Pac.	Salida, Cal.	X
	Ventura CAMA, Cal.	X

STEP-BY-STEP CSP's IN SERVICE - END OF 1972

(All Class 3)

Company	Location	Init. Serv.	CAMA	ANI
Wisc.	Janesville	'49	X	X
SW	Longview, Tex.	'53		X
PNW	Klamath Falls, Ore.	'40		X
	Roseburg, Ore.	'51		X
Canada (Non Bell)	Abbotsford	'53	X	
	Brandon	'52		X
	Campbell River	'55	X	
	Cranbrook	'55		
	Dauphin	'52		
	Gander	'59		
	Halifax 1	'51		
	Kamloops	'61	X	X
	Nanaimo	'60	X	X
	Nelson	'62	X	X
	New Westminister	'56	X	
	Prince George	'58		
	Terrace	'68	X	X
	Vancouver 1	'59	X	
Canada (Bell)	Thunder Bay	'54	X	

Chart 10

BELL SYSTEM
STEP-BY-STEP CLASS 4 OFFICES IN SERVICE END OF 1972

Co.	Location	Co.	Location	Co.	Location
NE	Fitchburg, Mass.	N.J.	Manahawkin		Spartanburg, S.C.
	New Bedford, Mass.				Americus, Ga.
	Taunton, Mass.	PA	Doylestown		Eastman, Ga.
	Haverhill, Mass.		Easton		Ft. Valley, Ga.
	Lowell, Mass.		Lansdale, SXS		Savannah, Ga.
	Newburyport, Mass.		Langhorne		Vidalia, Ga.
	Greenfield, Mass.		Lebanon		Hazelhurst, Ga.
	North Adams, Mass.		Lewistown		Jesup, Ga.
	Pittsfield, 1, Mass.		Hazelton		Athens, Ga.
	Claremont, N.H.		McDonald		Augusta, Ga.
	Concord, N.H.		Shamokin		Carrollton, Ga.
	Conway, N.H.		Sunbury		Gainesville, Ga.
	Nashua, N.H.		Norristown SXS		La Grange, Ga.
	Augusta, Me.		Bellefonte		Marietta, Ga.
	Bangor, Me.		Clearfield		Rome, Ga.
	Bath, Me.		Butler		Brooksville, Fla.
	Biddeford, Me.		Charleroi		Daytona Beach, Fla.
	Calais, Me.		Indiana		Gainesville, Fla.
	Dover Foxcroft, Me.		New Castle		Palatka, Fla.
	Ellsworth, Me.		New Kensington		St. Augustine, Fla.
	Houlton, Me.		Uniontown		Panama City, Fla.
	Lewiston, Me.		Bradford		Pensacola, Fla.
	Norway, Me.		Georgetown, Del.		Key West, Fla.
	Presque Isle, Me.		Wilmington, Del.		Belle Glade, Fla.
	Rockland, Me.				Delray Beach, Fla.
	Waterville, Me.	C&P	Beckly, W. Va.		
	Bellows Falls, Vt.		Huntington, W. Va.	SOCN	Anniston, Ala.
	Bennington, Vt.		Montgomery, W. Va.		Flomaton, Ala.
	Brattleboro, Vt.		Parkersburg, W. Va.		Opelika, Ala.
	Burlington 1, Vt.		Morgantown, W. Va.		Selma, Ala.
	Middlebury, Vt.		Sutton, W. Va.		Biloxi, Miss.
	Montpelier, Vt.		Martinsburg, W. Va.		Natchez, Miss.
	Morrisville, Vt.		Leonardtown, Md.		Clarksville, Miss.
	Rutland, Vt.		Oakland, Md.		Cleveland, Miss.
	St. Albans, Vt.		Salisbury, Md.		Greenville, Miss.
	St. Johnsbury, Vt.		Lynchburg, Va.		Corinth, Miss.
	Narragansett, R.I.		Newport News, Va.		New Albany, Miss.
			Staunton, Va.		Alexandria, La.
NY	Cobleskill		Christiansburg, Va.		Bunkie, La.
	Glens Falls		Radford, Va.		Eunice, La.
	Greenwich				Lake Charles, La.
	Hudson	SO	Gastonia, N.C.		New Iberia, La.
	Schenectady		Lenoir, N.C.		Opelousas, La.
	Ticonderoga		Shelby, N.C.		De Ridder, La.
	Bath		Statesville, N.C.		Leesville, La.
	Corning		Wilmington, N.C.		Many, La.
	Cortland		Hendersonville, N.C.		Winnfield, La.
	Elmira		Burlington, N.C.		Winnsboro, La.
	Lockport		Winston-Salem, N.C.		Bogalusa, La.
	Niagara Falls		Aiken, S.C.		Covington, La.
	Auburn		Sumter, S.C.		Donaldsonville, La.
	Sodus		Anderson, S.C.		Morgan City, La.

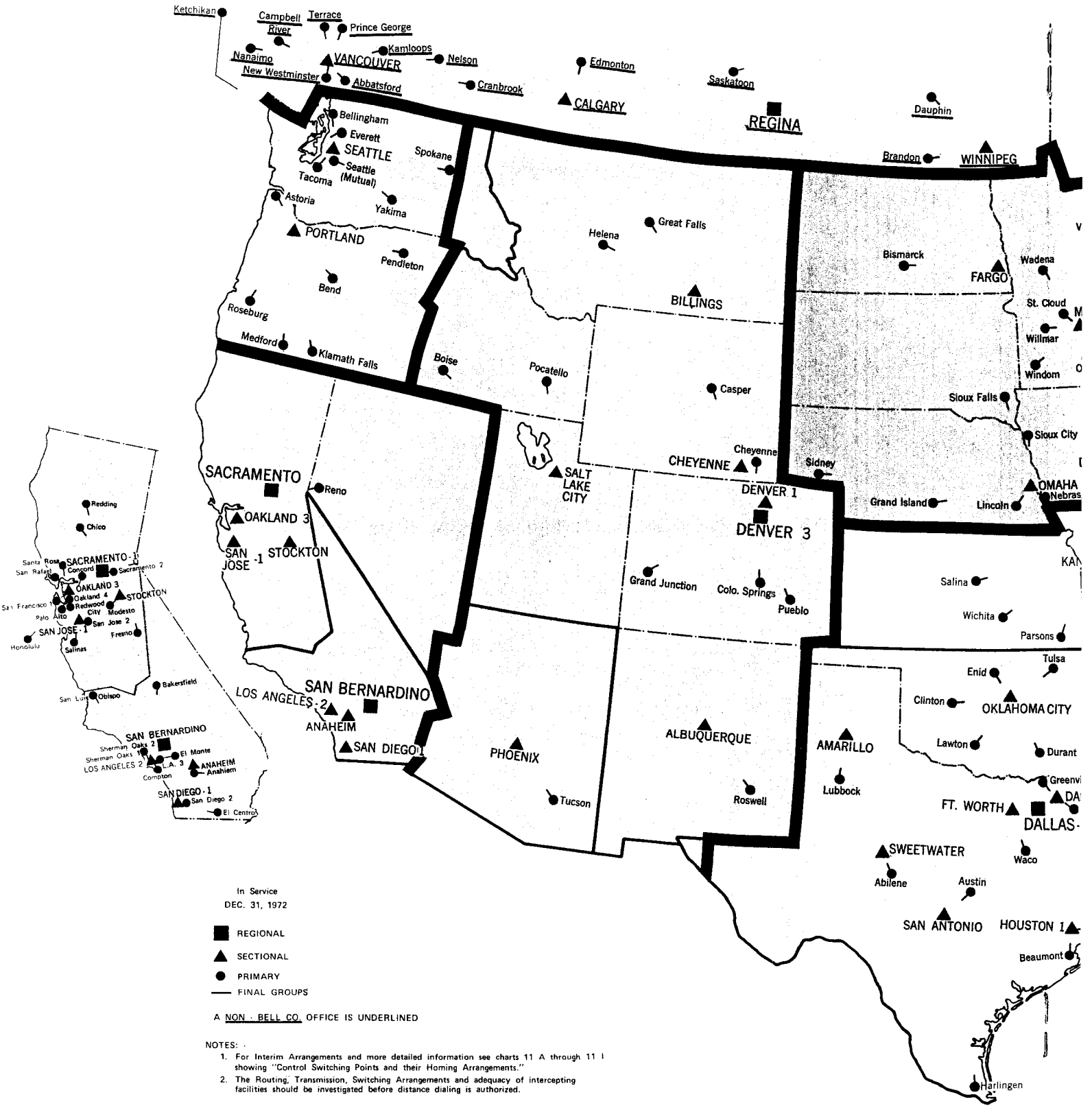
Chart 10

BELL SYSTEM
STEP-BY-STEP CLASS 4 OFFICES IN SERVICE END OF 1972

Co.	Location	Co.	Location	Co.	Location
SOCN	Plaquemine, La.	WISC	Ashland		Perry, Ia.
	Maysville, Ky.		Eau Claire SXS		Algona, Ia.
	Williamstown, Ky.		Hudson		Iowa Falls, Ia.
	Pikeville, Ky.		Baraboo		Burlington, Ia.
	Owensboro, Ky.		Superior		Decorah, Ia.
	Hopkinsville, Ky.		Marinette		Vinton, Ia.
	Clarksville, Tenn.		Rhinelander		Sheldon, Ia.
	Dickson, Tenn.		Madison (Term. only)		Minot, N.D.
	Cleveland, Tenn.		La Crosse		Wahpeton, N.D.
	Hernando, Miss.		Beloit		Dickinson, N.D.
	Huntingdon, Tenn.		Green Bay		Williston, N.D.
	Lexington, Tenn.		Sturgeon Bay		Grand Forks, N.D.
			Manitowoc		Huron, S.D.
OHIO	Middletown		Sheboygan		Madison, S.D.
	Springfield		Waukesha		Mitchell, S.D.
	Xenia		West Bend		Mobridge, S.D.
	Barnesville		Kenosha		Pierre, S.D.
	New Lexington		Lake Geneva		Council Bluffs, Ia.
	Steubenville		Beaver Dam		Missouri Valley, Ia.
	Zanesville				Red Oak, Ia.
	Ashtabula	ILL	Joliet		Chadron, Neb.
	Painesville		Kankakee		
	Akron		Aurora	SW	Eldon, Mo.
	Salem		Springfield Main		Festus, Mo.
	Hillsboro		Peoria 1		Union, Mo.
	Fremont		Gary, Ind.		Cape Girardeau, Mo.
	Youngstown				Kennett, Mo.
	Upper Sandusky	NW	Lake Minnetonka, Minn.		Poplar Bluff, Mo.
	Winchester		Cloquet, Minn.		Arkadelphia, Ark.
			Duluth, Minn.		Camden, Ark.
MICH	Ann Arbor		Little Falls, Minn.		El Dorado, Ark.
	Mt. Clemens		Sauk Centre, Minn.		Helena, Ark.
	Hillsdale		Pine City, Minn.		Hope, Ark.
	Bad Axe		Red Wing, Minn.		Hot Springs, Ark.
	Bay City		Montevideo, Minn.		Newport, Ark.
	Cadillac		Ortonville, Minn.		Searcy, Ark.
	Holland		Albert Lea, Minn.		Dodge City, Kan.
	Big Rapids		Austin, Minn.		Garden City, Kan.
	Reed City		Fairbault, Minn.		Great Bend, Kan.
	Battle Creek		Northfield, Minn.		Harper, Kan.
	Benton Harbor		Preston, Minn.		Hutchinson, Kan.
	Sault St. Marie		Rochester, Minn.		Liberal, Kan.
			Luverne, Minn.		Pratt, Kan.
IND	Anderson		Marshall, Minn.		Wellington, Kan.
	Attica		Grand Rapids, Minn.		Manhattan, Kan.
	Frankfort		Hibbing, Minn.		Marysville, Kan.
	Marion		Brainerd, Minn.		Sabetha, Kan.
	Muncie		Detroit Lakes, Minn.		Topeka, Kan.
	Shelbyville		Fergus Falls, Minn.		Colby, Kan.
	Clinton		Marshalltown, Ia.		Hays, Kan.
	Columbus		Oskaloosa, Ia.		Oakley, Kan.
	New Albany		Ottumwa, Ia.		Plainville, Kan.

DISTANCE DIALING NETW

(INCLUDING REGIONAL A



In Service
DEC. 31, 1972

- REGIONAL
- SECTIONAL
- PRIMARY
- FINAL GROUPS

A NON - BELL CO. OFFICE IS UNDERLINED

NOTES:

1. For Interim Arrangements and more detailed information see charts 11 A through 11 I 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 1972

IONAL AREA BOUNDARIES)

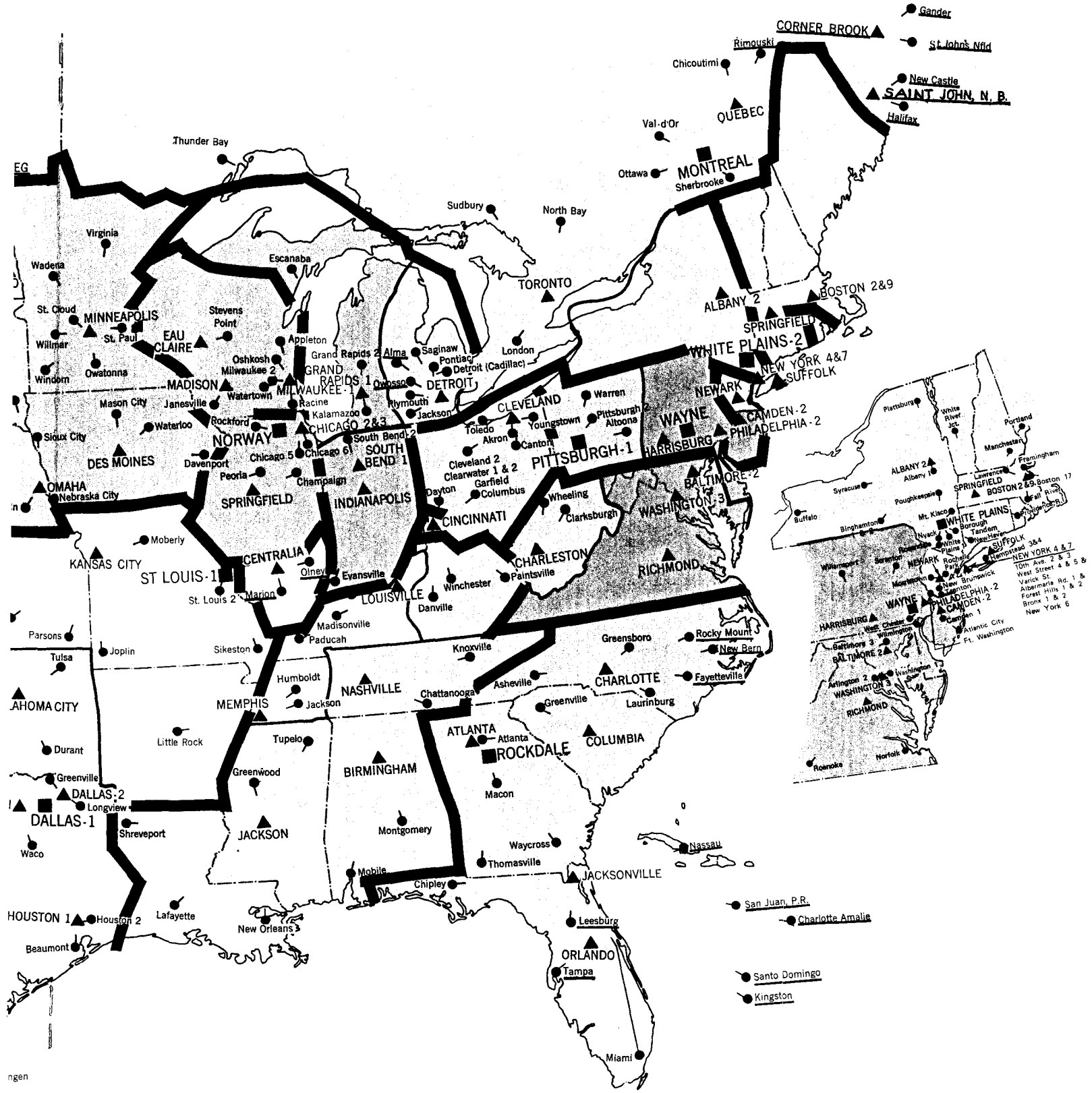


Chart 10

BELL SYSTEM
STEP-BY-STEP CLASS 4 OFFICES IN SERVICE END OF 1972

Co.	Location	Co.	Location	Co.	Location
SW	Ponca City, Okla.		Havre, Mont.	PAC	Ely, Nev.
	Hobart, Okla.		Shelby, Mont.		Winnemucca, Nev.
	Hugo, Okla.		Butte, Mont.		Marysville
	Woodward, Okla.		Missoula, Mont.		Portola
	Miami, Okla.		Rock Springs, Wyo.		Willows
	Muskogee, Okla.		Sheridan, Wyo.		Dunsmuir
	Vinita, Okla.		Worland, Wyo.		Yreka
	Pampa, Tex.		Fort Morgan, Colo.		Auburn
	Plainview, Tex.		Granby, Colo.		Grass Valley
	Corsicana, Tex.		Limon, Colo.		Woodland
	Mercedes, Tex.		Salida, Colo.		Pittsburg
	McAllen, Tex.		Craig, Colo.		Hayward
	Brownsville, Tex.		Glenwood Springs, Colo.		Fairfield - Suisun SXS
	McKinney, Tex.		Alamosa, Colo.		Fort Bragg
	Terrell, Tex.		Canon City, Colo.		Napa
	Tyler, Tex.		La Junta, Colo.		Petaluma
	Paris, Tex.		Lamar, Colo.		Ukiah
	Marshall, Tex.		Trinidad, Colo.		Vallejo
	Mt. Pleasant, Tex.		Deming, N.M.		Monterey
	Cleburne, Tex.		Farmington, N.M.		Watsonville
	Vernon, Tex.		Gallup, N.M.		Lodi
	Weatherford, Tex.		Las Cruces, N.M.		Sonora
	Wichita Falls, Tex.		Las Vegas, N.M.		Coalinga
	Mexia, Tex.		Raton, N.M.		Hanford
	Temple, Tex.		Santa Fe, N.M.		Merced
	Brenham, Tex.		Artesia, N.M.		Visalia
	Cleveland, Tex.		Clovis, N.M.		Whittier
	Freeport, Tex.		Payette, Ida.		Downey
	Galveston, Tex.		Cedar City, Utah		Mojave
	Hearne, Tex.		Ogden, Utah		Ventura
	Huntsville, Tex.		Richfield, Utah		
	Liberty, Tex.		Flagstaff, Ariz.	SNE	Ansonia Derby
	Nacogdoches, Tex.		Globe, Ariz.		Bridgeport 1
	Rosenberg, Tex.		Yuma, Ariz.		Bristol
	Texas City, Tex.		Bisbee, Ariz.		Canaan
	Silsbee, Tex.		Nogales, Ariz.		Manchester
	Alice, Tex.				Meriden
	Corpus Christi, Tex.	PNB	Bremerton, Wash.		Middletown
	Cuero, Tex.		Centralia, Wash.		New Britain
	Eagle Pass, Tex.		Pt. Angeles, Wash.		New Milford
	Kingsville, Tex.		Ephrata, Wash.		Norwalk
	Laredo, Tex.		Pasco, Wash.		Norwich
	Uvalde, Tex.		Wenatchee, Wash.		Saybrook
	Victoria, Tex.		Albany, Ore.		Torrington
	Taylor, Tex.		Corvallis, Ore.		Waterbury
	Alpine, Tex.		Lewiston, Ida.		Willimantic
	Big Spring, Tex.		Newport, Ore.		Windsor Locks
	Midland, Tex.		Salem SXS, Ore.		
	Odessa, Tex.		The Dalles, Ore.	CIN	Hamilton
			Vancouver, Wash.		
MTN	Glasgow, Mont.		Baker, Ore.	CAN (Bell)	St. Hyacinthe, Que.
	Glendive, Mont.				St. Jean, Que.

Chart 10

BELL SYSTEM
STEP-BY-STEP CLASS 4 OFFICES IN SERVICE END OF 1972

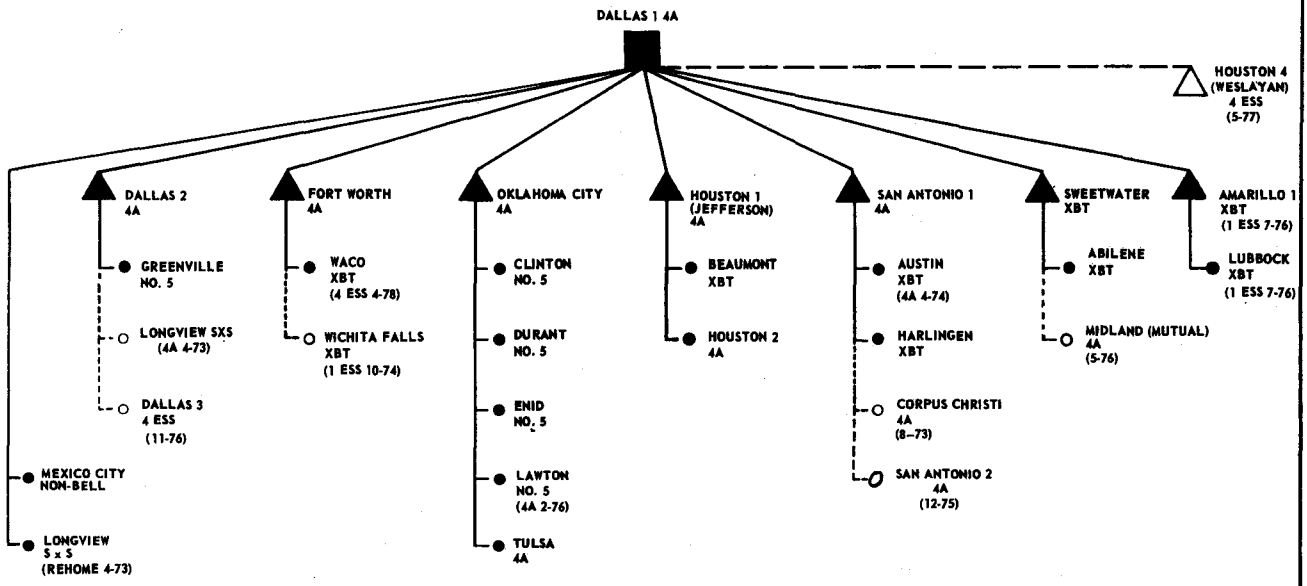
Co.	Location	Co.	Location	Co.	Location
(CAN Bell)	Sorel, Que.				
	Trois Rivieres, Que.				
	Drummondville, Que.				
	Victoriaville, Que.				
	Thetford Mines, Que.				
	La Malbaie, Que.				
	Riviere du Loup, Que.				
	Alma, Que.				
	Pembroke, Ont.				
	Renfrew, Ont.				
	Clinton, Ont.				
	Tillsonburg, Ont.				
	Woodstock, Ont.				
	Niagara Falls, Ont.				
	Port Hope, Ont.				
	St. Catharines, Ont.				
	Welland, Ont.				
	Beaverton, Ont.				
	Bracebridge, Ont.				
	Huntsville, Ont.				
	Midland, Ont.				
	Orillia, Ont.				
	Parry Sound, Ont.				
	Blind River, Ont.				
	Ft. Frances, Ont.				
	Kenora, Ont.				
	Dryden, Ont.				
	Goose Bay, Nfld.				
	L'Anse are Loup, Nfld.				
	La Tuque, Que.				

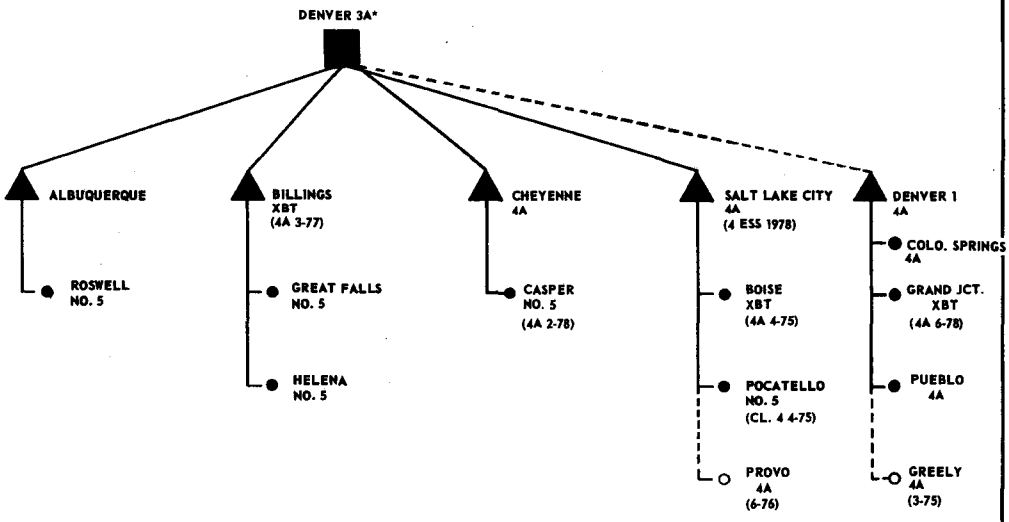
Chart 11A

CONTROL SWITCHING POINTS AND THEIR HOMING ARRANGEMENTS

(Present & Future Arrangements through 1978)

(Based on April 1973 Construction Budget View)





SOME OF THE LOCATIONS HAVE NOT MET ALL OF THE REQUIREMENTS FOR CSP'S OF THE CLASSES SHOWN FOR DISTANCE DIALING. THEREFORE, THE ROUTING, SWITCHING, TRANSMISSION ARRANGEMENTS AND ADEQUACY OF INTERCEPTING FACILITIES SHOULD BE INVESTIGATED BEFORE DISTANCE DIALING IS AUTHORIZED TO GO THROUGH ANY SYSTEM.

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

PLANNED DATE IS SHOWN IN ( )

* INTERNATIONAL SWITCHING CENTER

FINAL GROUP

IN SERVICE 12-31-72 ————————

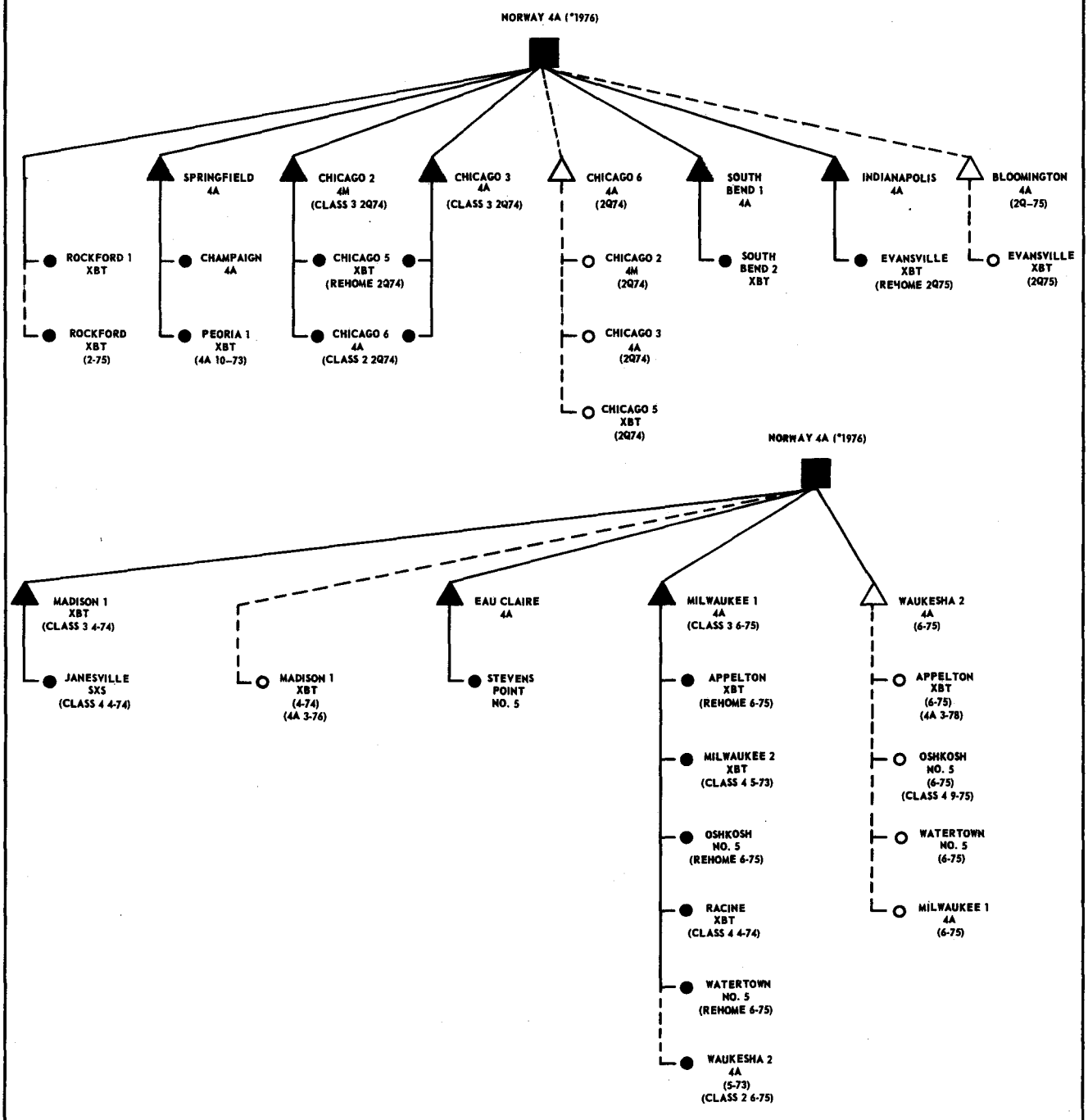
PLANNED BY END OF 1978 — — — — — — —

Chart 11B

CONTROL SWITCHING POINTS AND THEIR HOMING ARRANGEMENTS

(Present & Future Arrangements through 1978)

(Based on April 1973 Construction Budget View)



SOME OF THE LOCATIONS HAVE NOT MET ALL OF THE REQUIREMENTS FOR CSP'S OF THE CLASSES SHOWN FOR DISTANCE DIALING, THEREFORE, THE ROUTING, SWITCHING, TRANSMISSION ARRANGEMENTS AND ADEQUACY OF INTERCEPTING FACILITIES SHOULD BE INVESTIGATED BEFORE DISTANCE DIALING IS AUTHORIZED TO GO THROUGH ANY SYSTEM.

EXISTING — CSP — FUTURE

- ■ / □ REGIONAL CENTER (CLASS 1)
- ▲ / △ SECTIONAL " (" 2)
- ● / ○ PRIMARY " (" 3)

PLANNED DATE IS SHOWN IN ( )

* INTERNATIONAL SWITCHING CENTER

FINAL GROUP

IN SERVICE 12-31-72 ———————

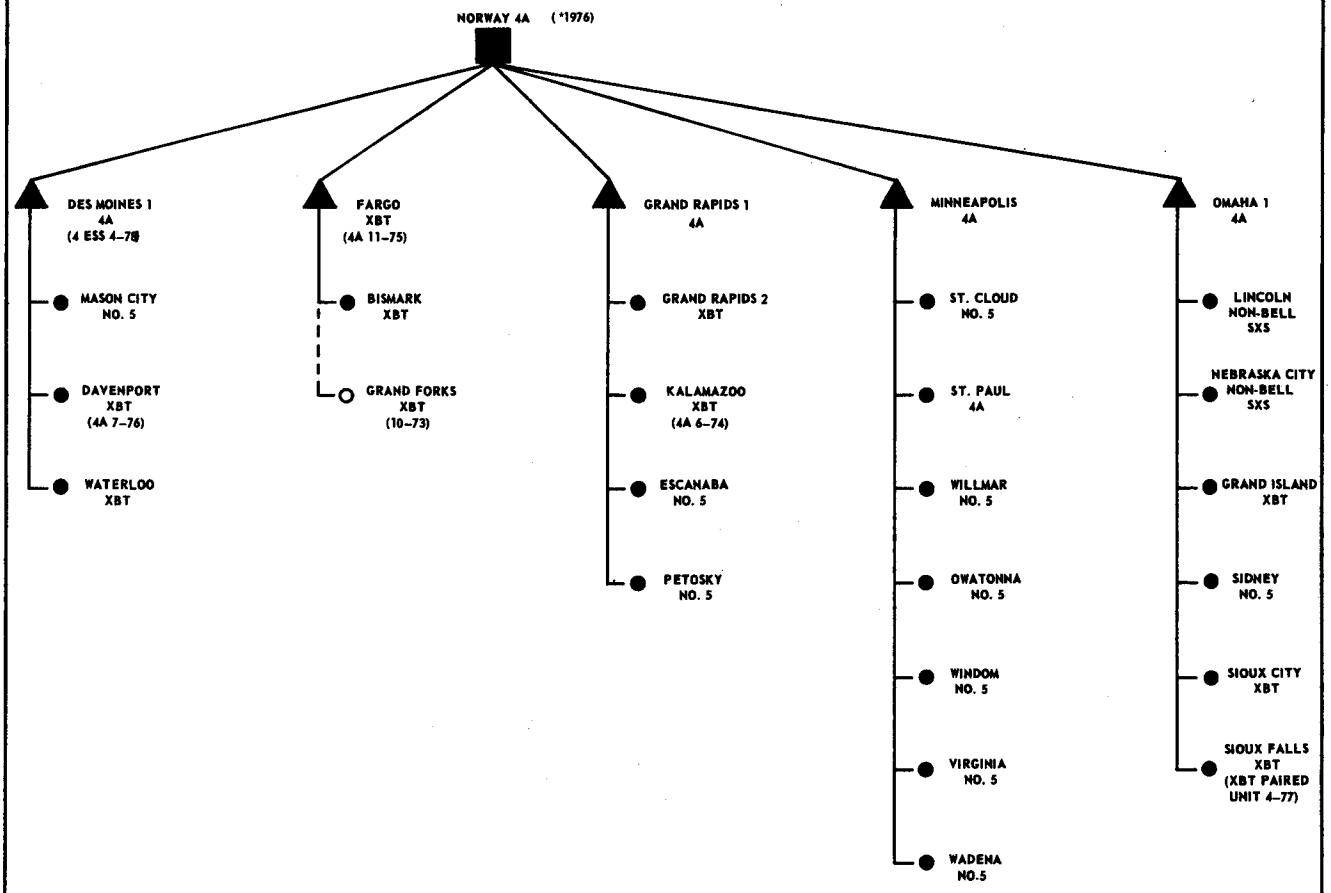
PLANNED BY END OF 1978 — — — — — —

Chart 11C

CONTROL SWITCHING POINTS AND THEIR HOMING ARRANGEMENTS

(Present & Future Arrangements through 1978)

(Based on April 1973 Construction Budget View)



SOME OF THE LOCATIONS HAVE NOT MET ALL OF THE REQUIREMENTS FOR CSP'S OF THE CLASSES SHOWN FOR DISTANCE DIALING, THEREFORE, THE ROUTING, SWITCHING, TRANSMISSION ARRANGEMENTS AND ADEQUACY OF INTERCEPTING FACILITIES SHOULD BE INVESTIGATED BEFORE DISTANCE DIALING IS AUTHORIZED TO GO THROUGH ANY SYSTEM.

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

PLANNED DATE IS SHOWN IN ( )
* INTERNATIONAL SWITCHING CENTER

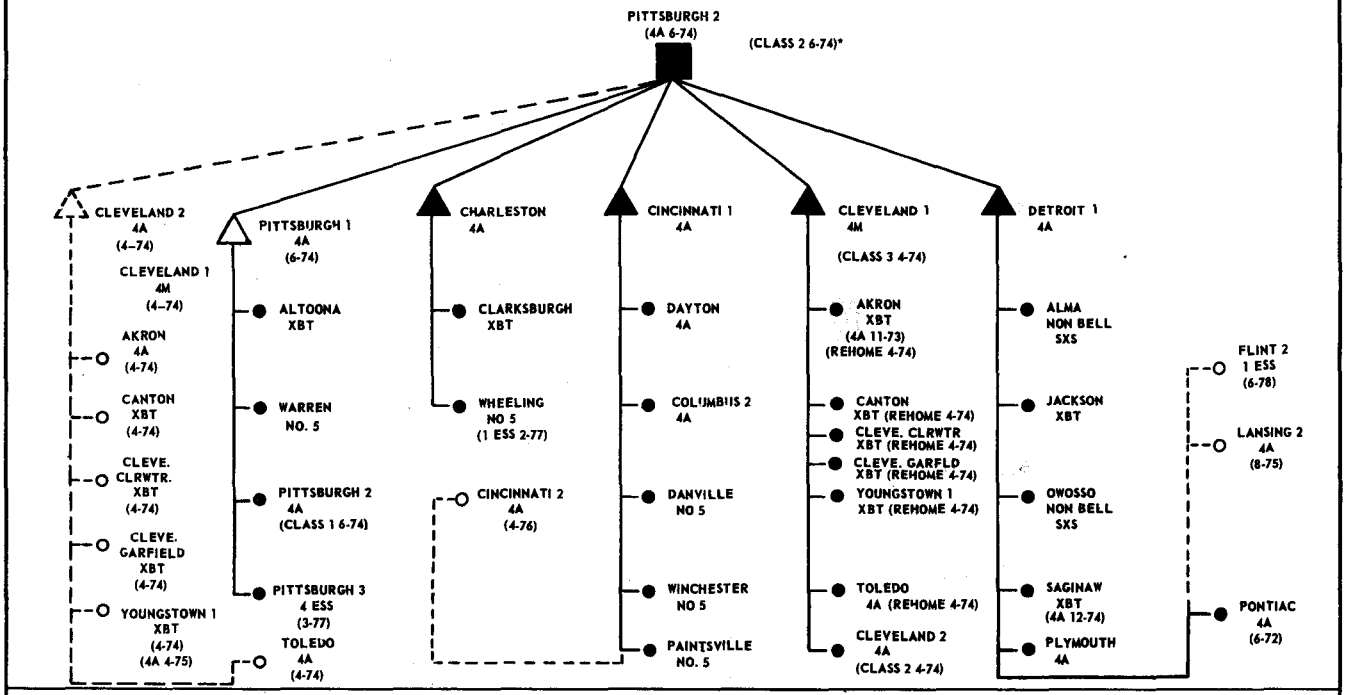
FINAL GROUP
IN SERVICE 12-31-72 _____
PLANNED BY END OF 1978 - - - - - - - - - -

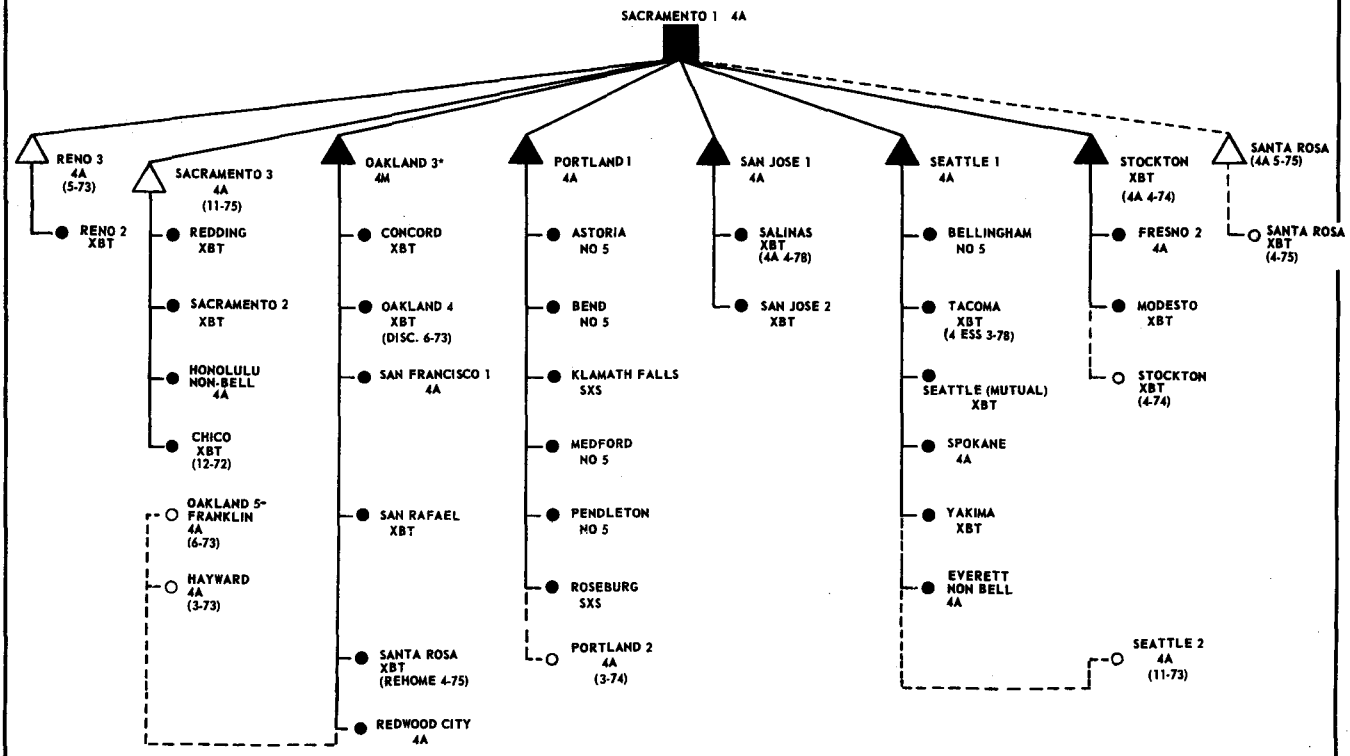
Chart 11D

CONTROL SWITCHING POINTS AND THEIR HOMING ARRANGEMENTS

(Present & Future Arrangements through 1978)

(Based on April 1973 Construction Budget View)





SOME OF THE LOCATIONS HAVE NOT MET ALL OF THE REQUIREMENTS FOR CSP'S OF THE CLASSES SHOWN FOR DISTANCE DIALING. THEREFORE, THE ROUTING, SWITCHING, TRANSMISSION ARRANGEMENTS AND ADEQUACY OF INTERCEPTING FACILITIES SHOULD BE INVESTIGATED BEFORE DISTANCE DIALING IS AUTHORIZED TO GO THROUGH ANY SYSTEM.

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

PLANNED DATE IS SHOWN IN ( )
* INTERNATIONAL SWITCHING CENTER

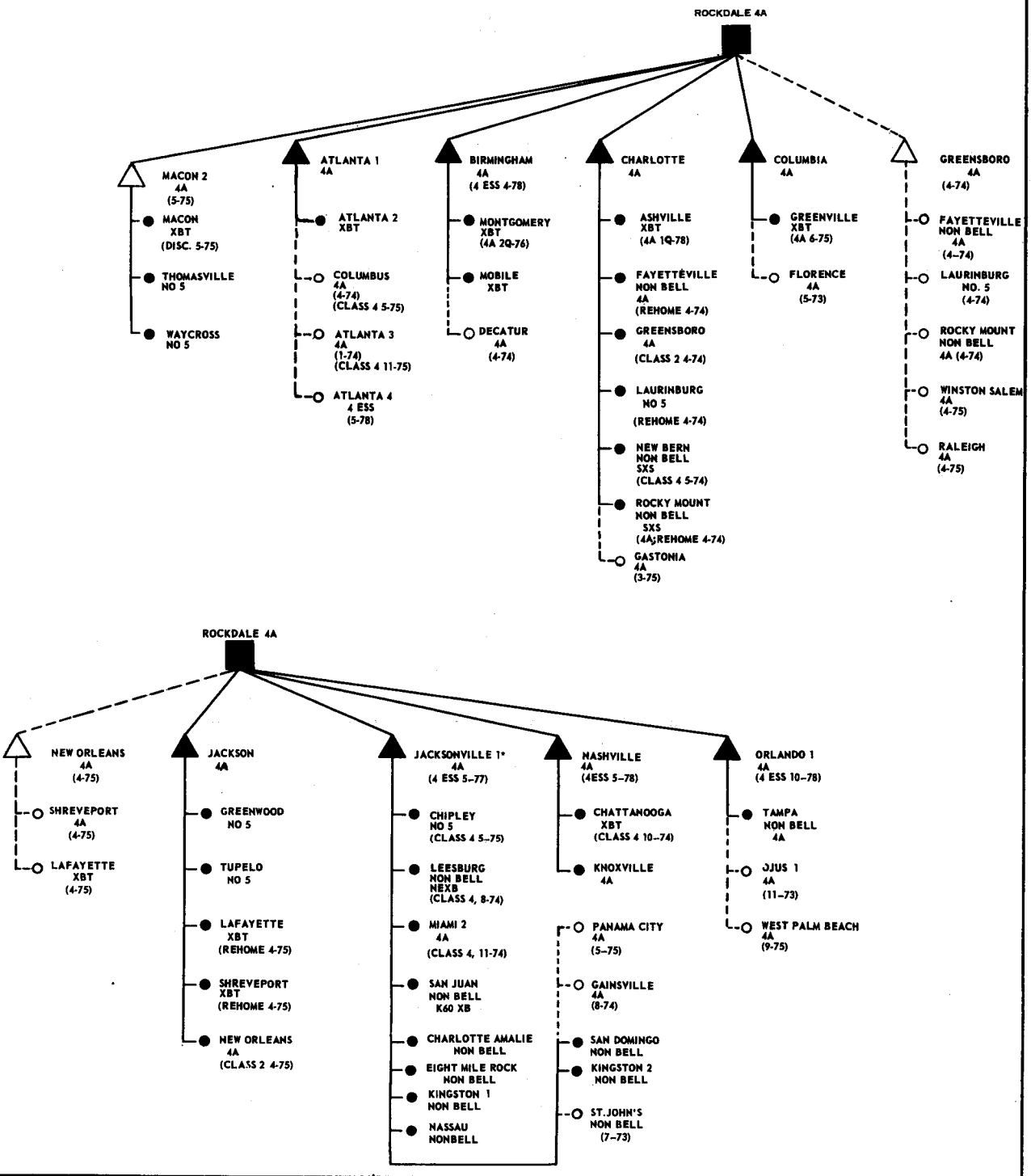
FINAL GROUP
IN SERVICE 12-31-72 ———
PLANNED BY END OF 1978 — — — — — —

Chart 11E

CONTROL SWITCHING POINTS AND THEIR HOMING ARRANGEMENTS

(Present & Future Arrangements through 1978)

(Based on April 1973 Construction Budget View)



SOME OF THE LOCATIONS HAVE NOT MET ALL OF THE REQUIREMENTS FOR CSP'S OF THE CLASSES SHOWN FOR DISTANCE DIALING. THEREFORE, THE ROUTING, SWITCHING, TRANSMISSION ARRANGEMENTS AND ADEQUACY OF INTERCEPTING FACILITIES SHOULD BE INVESTIGATED BEFORE DISTANCE DIALING IS AUTHORIZED TO GO THROUGH ANY SYSTEM.

CSP

EXISTING — FUTURE

- ■ REGIONAL CENTER (CLASS 1) — □
- ▲ SECTIONAL " (" 2) — △
- ● PRIMARY " (" 3) — ○

PLANNED DATE IS SHOWN IN ( )

* INTERNATIONAL SWITCHING CENTER

FINAL GROUP

IN SERVICE 12-31-72 _____

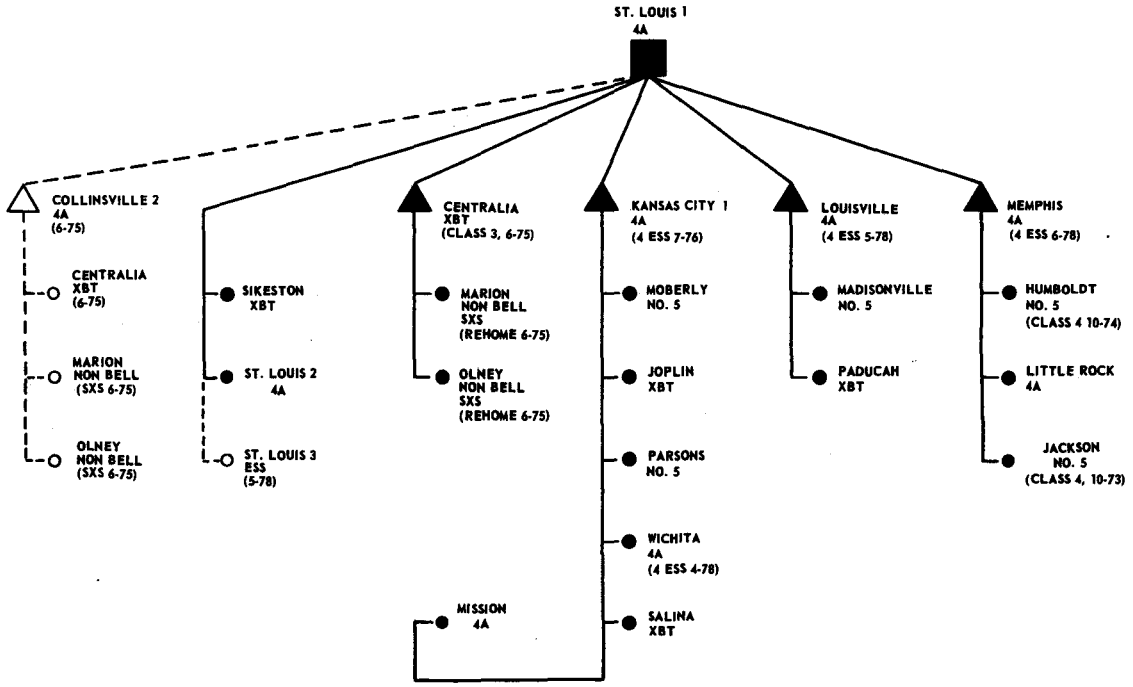
PLANNED BY END OF 1978) _ _ _ _ _ _ _ _

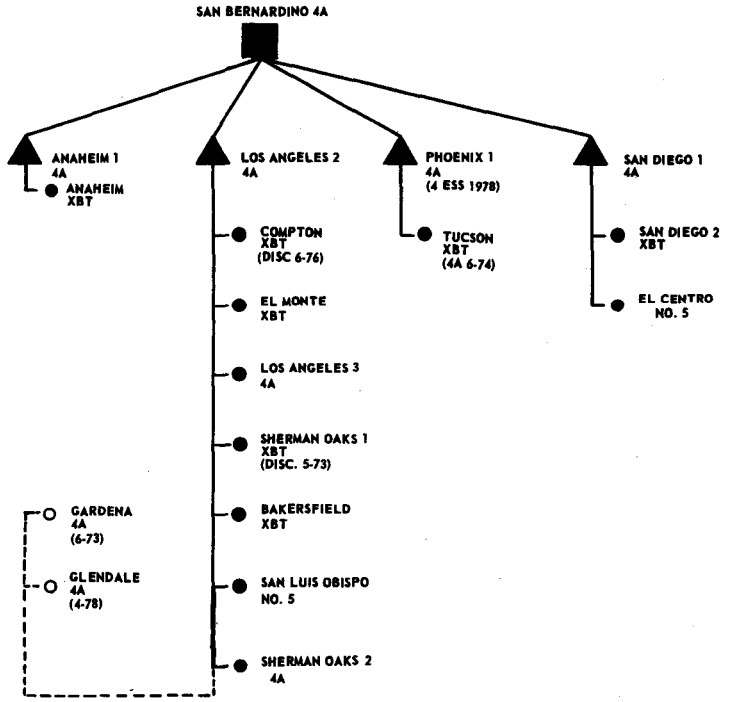
Chart 11F

CONTROL SWITCHING POINTS AND THEIR HOMING ARRANGEMENTS

(Present & Future Arrangements through 1978)

(Based on April 1973 Construction Budget View)





SOME OF THE LOCATIONS HAVE NOT MET ALL OF THE REQUIREMENTS FOR CSP'S OF THE CLASSES SHOWN FOR DISTANCE DIALING. THEREFORE, THE ROUTING, SWITCHING, TRANSMISSION ARRANGEMENTS AND ADEQUACY OF INTERCEPTING FACILITIES SHOULD BE INVESTIGATED BEFORE DISTANCE DIALING IS AUTHORIZED TO GO THROUGH ANY SYSTEM.

EXISTING — CSP — FUTURE

- ■ REGIONAL CENTER (CLASS 1) □
- ▲ SECTIONAL " (" 2) △
- ● PRIMARY " (" 3) ○

PLANNED DATE IS SHOWN IN ( )

* INTERNATIONAL SWITCHING CENTER

FINAL GROUP

IN SERVICE 12-31-72 ———————

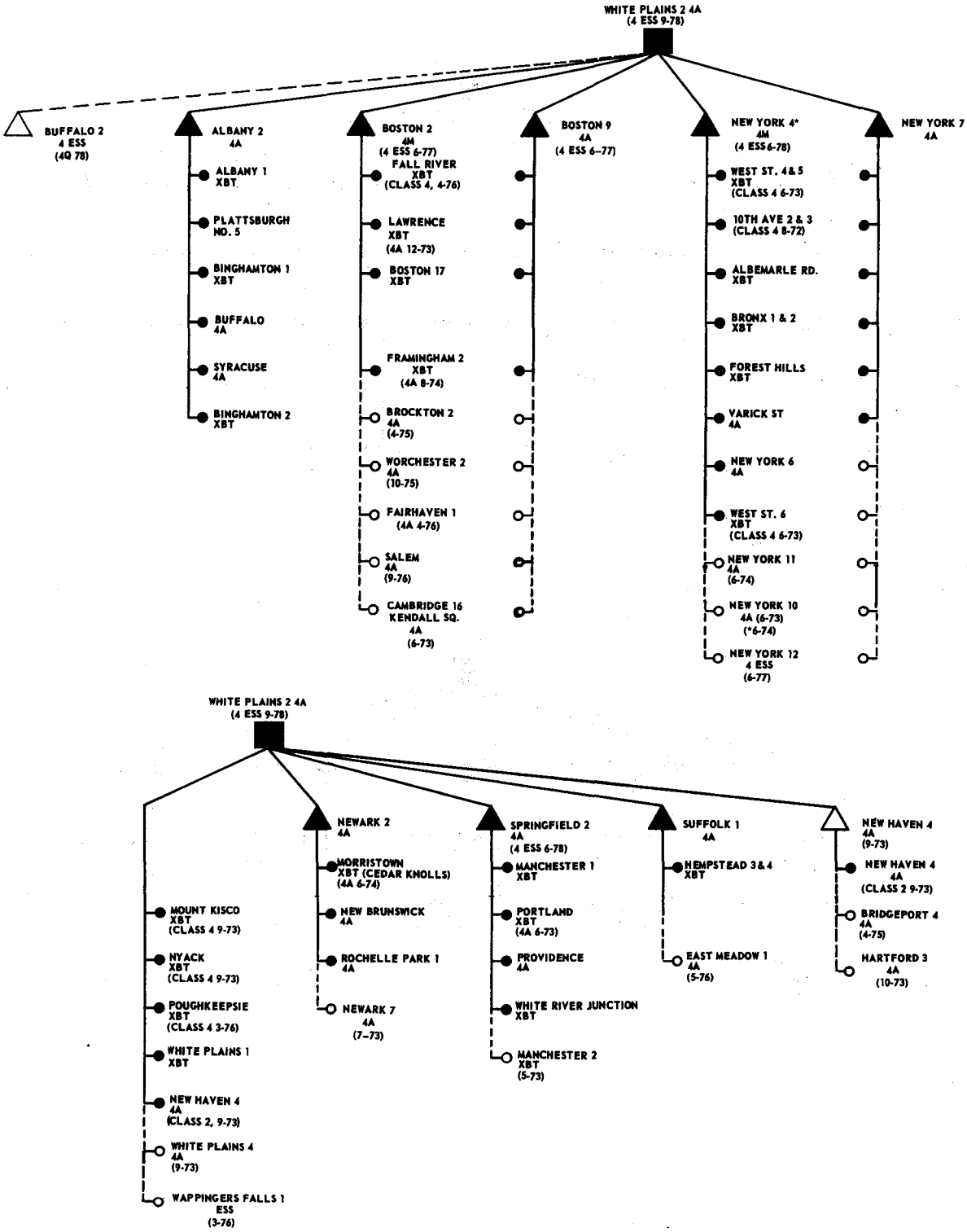
PLANNED BY END OF 1977 — — — — — — —

Chart 11G

CONTROL SWITCHING POINTS AND THEIR HOMING ARRANGEMENTS

(Present & Future Arrangements through 1978)

(Based on April 1973 Construction Budget View)



SOME OF THE LOCATIONS HAVE NOT MET ALL OF THE REQUIREMENTS FOR CSP'S OF THE CLASSES SHOWN FOR DISTANCE DIALING. THEREFORE, THE ROUTING, SWITCHING, TRANSMISSION ARRANGEMENTS AND ADEQUACY OF INTERCEPTING FACILITIES SHOULD BE INVESTIGATED BEFORE DISTANCE DIALING IS AUTHORIZED TO GO THROUGH ANY SYSTEM.

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

PLANNED DATE IS SHOWN IN ( )

* INTERNATIONAL SWITCHING CENTER

FINAL GROUP

IN SERVICE 12-31-72 ————————

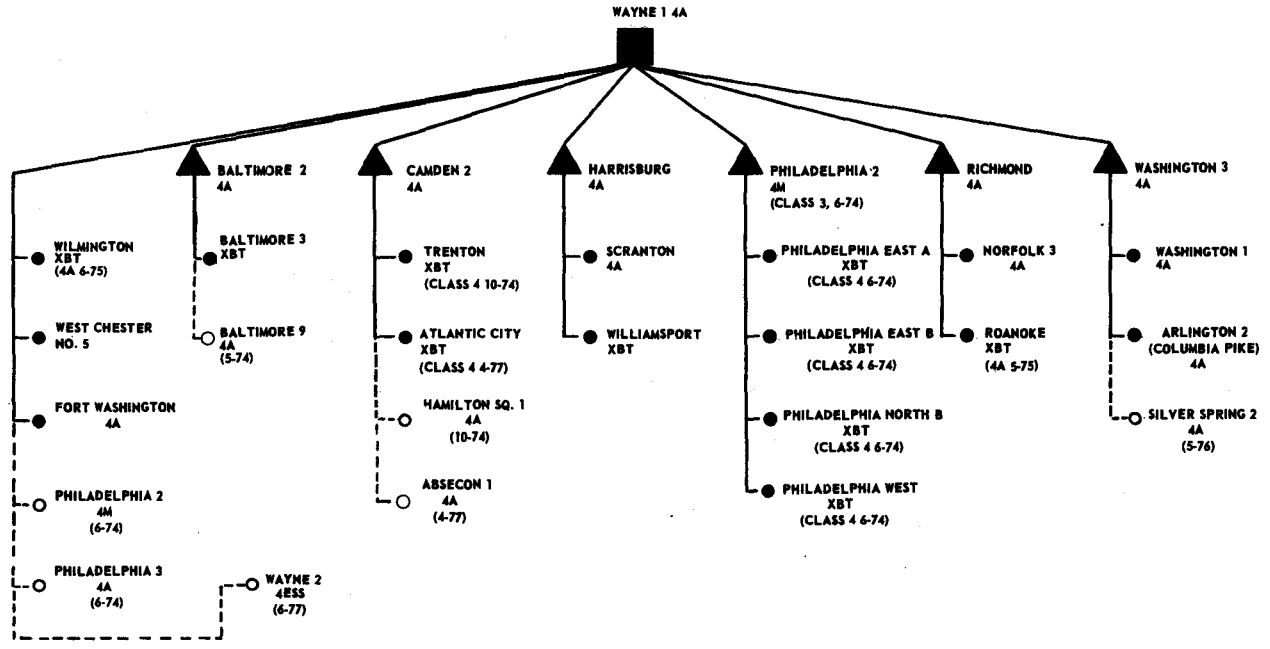
PLANNED BY END OF 1978 — — — — — — —

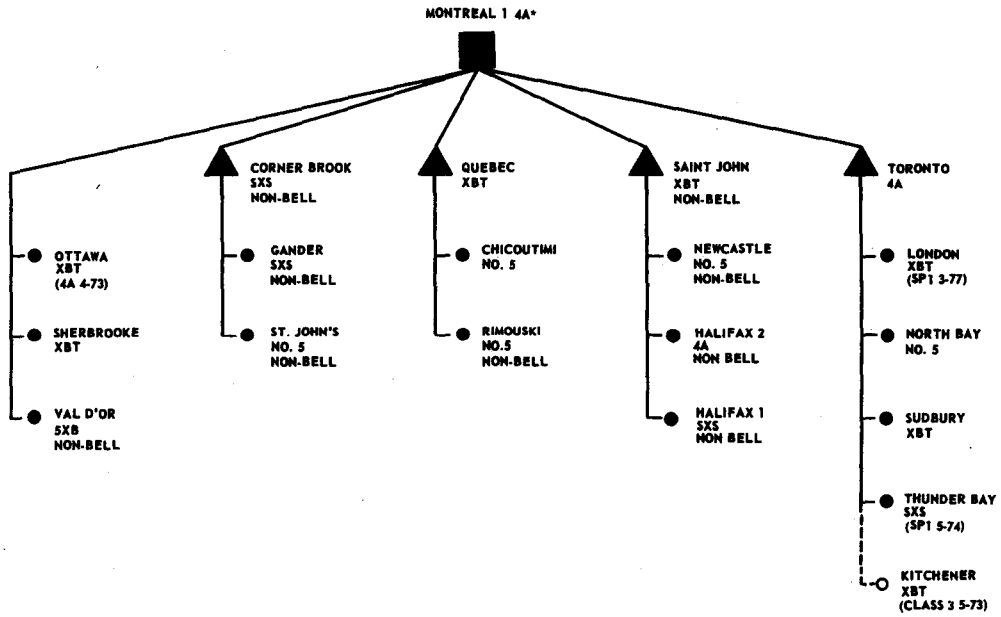
Chart 11H

CONTROL SWITCHING POINTS AND THEIR HOMING ARRANGEMENTS

(Present & Future Arrangements through 1978)

(Based on April 1973 Construction Budget View)





SOME OF THE LOCATIONS HAVE NOT MET ALL OF THE REQUIREMENTS FOR CSP'S OF THE CLASSES SHOWN FOR DISTANCE DIALING. THEREFORE, THE ROUTING, SWITCHING, TRANSMISSION ARRANGEMENTS AND ADEQUACY OF INTERCEPTING FACILITIES SHOULD BE INVESTIGATED BEFORE DISTANCE DIALING IS AUTHORIZED TO GO THROUGH ANY SYSTEM.

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

PLANNED DATE IS SHOWN IN ( )

*INTERNATIONAL SWITCHING CENTER

FINAL GROUP

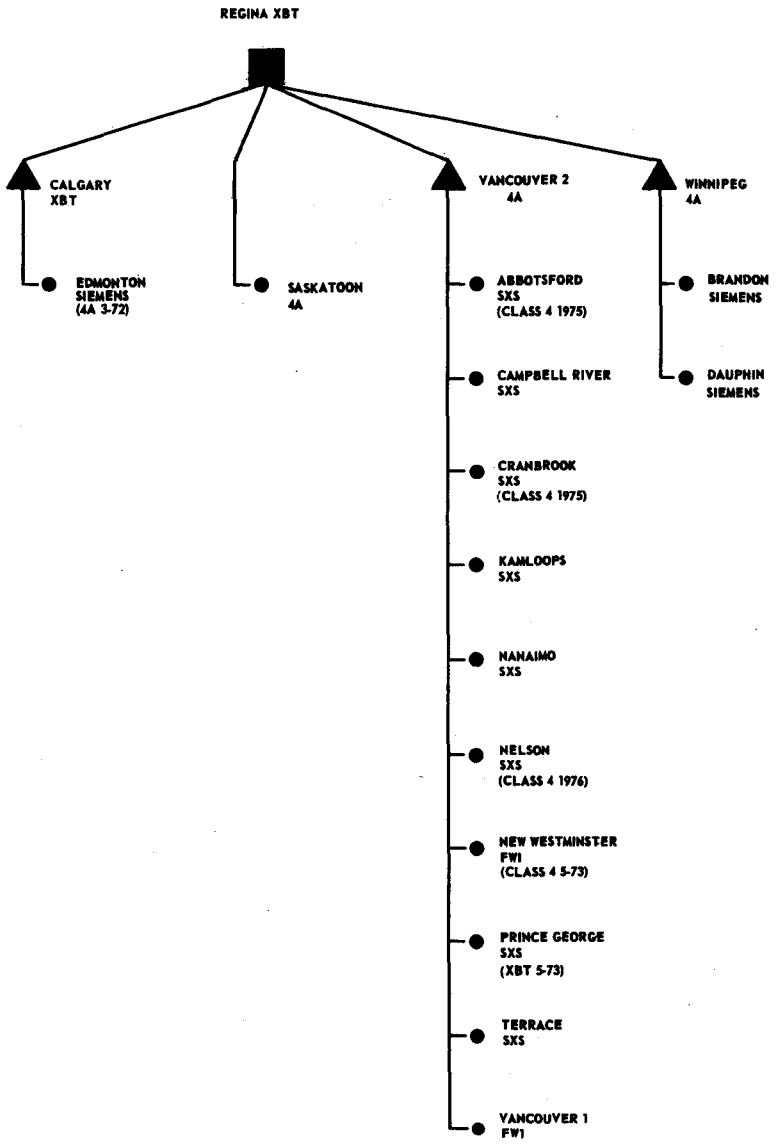
IN SERVICE 12-31-72 ————————

PLANNED BY END OF 1978 — — — — — — —

Chart 11I

CONTROL SWITCHING POINTS AND THEIR HOMING ARRANGEMENTS

(Present & Future Arrangements through 1978)



NOTE: ALL LOCATIONS ARE NON-BELL -

SOME OF THE LOCATIONS HAVE NOT MET ALL OF THE REQUIREMENTS FOR CSP'S OF THE CLASSES SHOWN FOR DISTANCE DIALING. THEREFORE, THE ROUTING, SWITCHING, TRANSMISSION ARRANGEMENTS AND ADEQUACY OF INTERCEPTING FACILITIES SHOULD BE INVESTIGATED BEFORE DISTANCE DIALING IS AUTHORIZED TO GO THROUGH ANY SYSTEM.

EXISTING CSP FUTURE

REGIONAL CENTER (CLASS 1)

SECTIONAL " (" 2)

PRIMARY " (" 3)

PLANNED DATE IS SHOWN IN ( )

* INTERNATIONAL SWITCHING CENTER

FINAL GROUP

IN SERVICE 12-31-72 ————————

PLANNED BY END OF 1978 — — — — — — —

Chart 12

NUMBERING PLAN AREA PRINCIPAL CITIES
End of 1972

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

* Principal city for more than one NPA.

Chart 13

TRAFFIC SERVICE POSITIONS SYSTEM NO. 1
IN SERVICE - END OF 1972

Location	Service Date
NEW ENGLAND	
Framingham, Mass.	6-70
Boston (Franklin St.) Mass.	4-72
NEW YORK	
Albany State	1-71
Dix Hills	5-71
Varick St. (NYC 1)	11-72
NEW JERSEY	
Morristown	1-69
Rochelle Park 1	6-70
New Brunswick	6-71
Camden	4-72
PENNSYLVANIA	
Philadelphia, Pa.	10-70
Pittsburgh, Pa.	12-71
Wilmington, Del.	10-71
CHES. & POT.	
Washington, D.C.	5-70
Norfolk-Bute, Va.	9-72
SOUTHERN	
Miami 2, Fla.	9-69
Jacksonville, Fla.	12-70
Charlestown, S.C.	4-71
Rockdale, Ga.	4-71
Raleigh, N.C.	8-71
Charlotte, N.C.	11-71
Ft. Lauderdale, Fla.	11-71
Orlando, Fla.	8-72
SOUTH CENTRAL	
Memphis, Tenn.	6-70
New Orleans, La.	10-70
Nashville, Tenn.	4-71
Jackson, Miss.	4-72
Chattanooga, Tenn.	7-72
Birmingham, Ala.	6-72
OHIO	
Cleveland	3-71
Columbus	6-71
Dayton	2-72
Youngstown	9-72
MICHIGAN	
Plymouth	6-71
INDIANA	
Bloomington	8-70
WISCONSIN	
ILLINOIS	
Chicago (Canal)	10-71
NORTHWESTERN	
Minneapolis, Minn.	3-72
Sioux Falls, S.D.	11-71
St. Paul, Minn.	6-72
SOUTHWESTERN	
Houston 1, Tex.	3-70
Dallas 1, Tex.	4-70
Fort Worth 1, Tex.	1-71
Kansas City, Mo.	9-71
San Antonio 1, Tex.	5-71
St. Louis, Mo.	8-71
Oklahoma City, Okla.	9-71
Dallas 2, Tex.	11-71
Houston 2 (Jefferson),Tex.	12-72
MOUNTAIN	
Denver, Colo.	5-71
Colorado Springs, Colo.	6-72
PACIFIC NORTHWEST	
Portland, Ore.	7-71
Seattle 1. Wash.	9-71
PACIFIC	
San Francisco 1, Cal.	3-72
Redwood City, Cal.	3-72
Los Angeles 1, Cal.	4-72
Oakland-Franklin 1, Cal.	7-72
Anaheim 1, Cal.	6-72
SO. NEW ENGLAND	
Bridgeport	1-71
Norwalk	6-71
New Have #2	7-72
CINCINNATI	
Cincinnati	11-70

Chart 14

TRAFFIC SERVICE POSITIONS SYSTEM NO. 1
IN SERVICE - 1973-1978
(BASED ON APRIL 1973 CONSTRUCTION BUDGET)

Location	Ship Date	Service Date
NEW ENGLAND		
Lawrence, Mass.	11-74	4-76
Providence (Green St.), R.I.	2-76	1-77
Brockton, Mass.	2-76	4-77
NEW YORK		
811 Tenth Ave. (NYC-2)	9-71	10-73
White Plains	11-71	1-74
1095 A of A (NYC-4)	8-74	9-75
Williamsburg 1	1-74	1-75
Dix Hills	5-74	5-75
Buffalo	4-75	6-76
Williamsburg 2	10-75	11-76
Syracuse (State)	2-76	2-77
NEW JERSEY		
Newark	6-73	10-74
Trenton	2-74	3-75
Rochelle Park 2	1-75	2-76
Freehold	1-76	3-77
Absecon	2-77	3-78
PENNSYLVANIA		
Fort Washington	5-73	5-74
Harrisburg	4Q74	4Q75
Greensburg	4-75	1-76
Wilmington, Del.	1975	2Q76
CHES. & POT.		
Richmond (Grace St.), Va.	5-72	9-73
Baltimore 1, Md.	10-72	5-74
Columbia Pike, Va.	11-73	1-75
Silver Spring, Md.	1-75	2-76
Baltimore 2, Md.	11-75	4-77
Roanoke, Va.	2-76	4-77
SOUTHERN		
Pensacola, Fla.	3-72	5-73
Atlanta 2, Ga.	1-72	5-73
Ojus 1, Fla.	3-72	7-73
Greensboro, N.C.	4Q72	1Q74
Atlanta 3, Ga.	3-73	5-74
Columbia, S.C.	1-73	6-74
Ojus 2, Fla.	6-73	8-74
Columbus, Ga.	6-74	4-75
Macon, Ga.	7-74	5-75
West Palm Beach, Fla.	6-74	9-75
Savannah, Ga.	6-75	5-76
Daytona Beach, Fla.	7-75	8-76
Greenville, S.C.	1-76	12-76
Augusta, Ga.	6-76	5-77
Charlotte, N.C.	4Q76	1Q78
Rome, Ga.	9-77	6-78
Athens, Ga.	9-77	6-78
SOUTH CENTRAL		
Louisville, Ky.	12-71	4-73
Knoxville, Tenn.	5-73	5-74
Shreveport, La.	11-74	10-75
Baton Rouge, La.	3-75	3-76
Montgomery, Ala.	4-75	6-76
Decatur, Ala.	4-75	6-76
Lafayette, La.	11-76	10-77
Gulfport, Miss.	2Q76	1Q78
OHIO		
Akron	7-72	11-73
Toledo	1-73	6-74
MICHIGAN		
Pontiac	12-73	1-75
Detroit	12-74	1-76
Grand Rapids	1Q75	2Q76
Saginaw	1Q76	1Q77
Lansing	1Q76	1Q77
Traverse City	2Q76	2Q77
Flint	2Q77	2Q78
INDIANA		
Indianapolis	7-75	8-76
South Bend	7-72	12-73
WISCONSIN		
Waukeshau	11-72	2-74
Madison	1-75	3-76
Appleton	1-77	3-78
ILLINOIS		
Wabash	9-72	12-73
Oakbrook	5-73	10-74
Northbrook 2	8-74	10-75
NORTHWESTERN		
Omaha, Neb.	2-74	3-75
Des Moines, Ia.	1Q76	4Q76
Davenport, Ia.	1Q77	1Q78

Chart 14

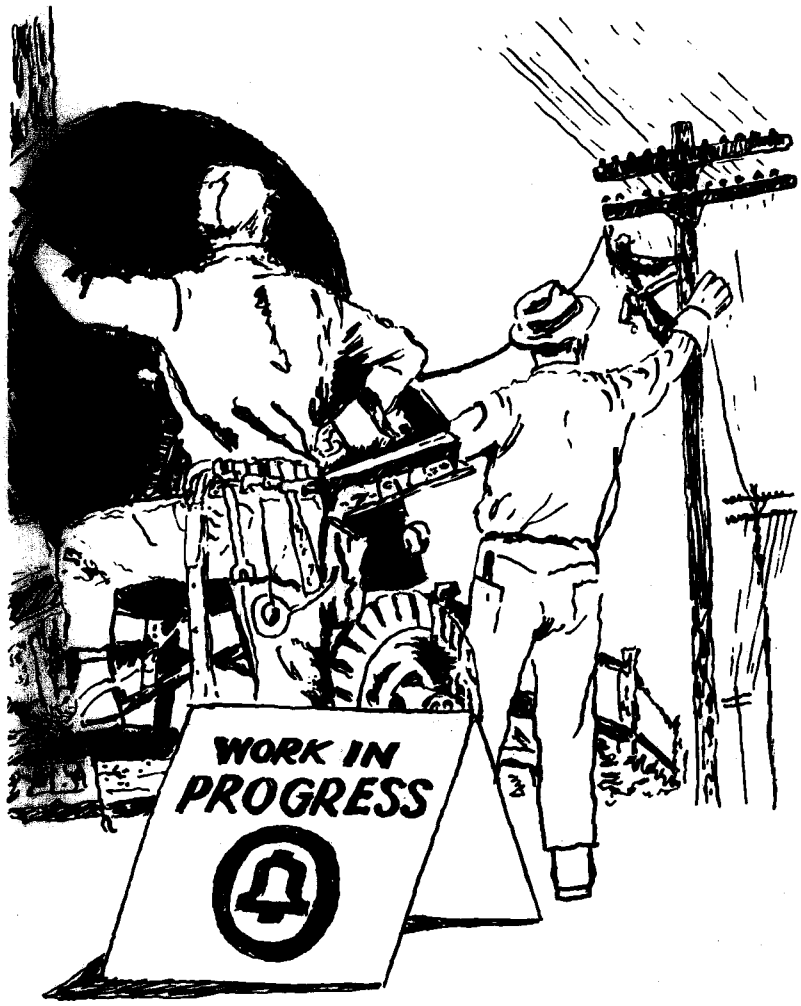
TRAFFIC SERVICE POSITIONS SYSTEM NO. 1
IN SERVICE - 1973-1978
(BASED ON APRIL 1973 CONSTRUCTION BUDGET)

Location	Ship Date	Service Date	Location	Ship Date	Service Date
SOUTHWESTERN					
Longview, Tex.	5-71	4-73			
Tul a, Okla.	7-72	12-73			
Dallas 3, Tex.	9-72	12-73			
Little Rock, Ark.	4-73	6-74			
Wichita Falls, Tex.	1-73	10-74			
Austin-Greenwood, Tex	9-73	10-74			
Corpus Christi, Tex.	6-74	9-75			
Houston (Weslayan), Tex.	1-75	1-76			
Ft. Worth 2, Tex.	1-75	5-76			
San Antonio 2, Tex.	3-75	5-76			
Wichita, Kan.	7-75	9-76			
Midland (Mutual),Tex.	2-76	2-77			
Houston (BMT Term), Tex.	6-76	5-77			
Ft. Smith, Ark.	7-76	5-77			
Amarillo 2, Tex.	10-76	11-77			
Mission, Kan.	2-77	4-78			
Springfield, Mo.	1-77	5-78			
Lubbock, Tex.	2-77	7-78			
Waco, Tex.	9-77	10-78			
MOUNTAIN					
Tucson, Ariz.	1-75	12-75			
Phoenix, Ariz.	1-76	12-76			
Denver (Zuni), Colo.	4-76	2-77			
Salt Lake City, Utah	1-76	10-77			
PAC. NORTHWEST					
Seattle 2, Wash.	5-76	9-77			
Tacoma, Wash.	6-77	8-78			
PACIFIC					
San Diego, Cal.	3-72	6-73			
Sherman Oaks, Cal.	2-72	7-73			
Sherman Oaks 3, Cal.	8-73	10-74			
Reno, Nev.	2-74	5-75			
Gardena, Cal.	5-76	4-77			
Sacramento, Cal.	6-76	6-77			
Hayward, Cal.	1-77	3-78			
San Jose, Cal.	1-77	3-78			
Anaheim 2, Cal.	6-77	6-78			
SO. NEW ENGLAND					
Hartford 3	4-73	8-74			
CINCINNATI					
CANADA					

DISTANCE DIALING COORDINATORS - AS OF JUNE 1, 1973

Co.	Area	Location	Coordinator	Tel. No.
N.E.	Staff	Boston	T.T. Pettingell	617-743-4835
	Mass.	Framingham	W.L. Jewell	617-879-9375
	No. States	Manchester	R.A. Leask	603-645-3323
	Rhode Island	Providence	J.I. Macomber	401-525-2516
N.Y.	Staff	New York	A.B. Bortz	212-394-1248
	Eastern	Albany	R.S. Knapp	518-471-2878
	Western	Buffalo	D.D. Ince	716-857-6121
	Mid-State	New York	R. Turker	212-370-2810
	Central	Syracuse	D.W. Haller	315-422-1397
	Northern	Utica	J.D. Favaloro	315-738-7361
N.J.	Staff	East Orange	M.C. Hutchinson	201-649-7700
Pa.	Staff	Philadelphia	R.J. Redilla	215-466-3284
	Philadelphia	Philadelphia	T.J. Watson	215-466-4042
	Eastern	Philadelphia	H.A. Fisher	215-466-4377
	Central	Harrisburg	A.H. Peters	717-232-5904
	Western	Phittsburgh	R.S. Stoker	412-633-4783
C&P	Washington	Washington	M.J. Dumas	202-392-3111
	Maryland	Baltimore	H.M. Pragel	301-393-3504
	Virginia	Richmond	D.E. Mokr	703-772-5402
	W. Virginia	Charleston	T.N. Brasselle	304-344-6572
So.	Staff	Atlanta	R.A. White	404-529-7271
	No. Florida	Jacksonville	R.A. Widell	904-353-2668
	So. Florida	Miami	H.E. Starr	305-350-8296
	S.E. Florida	Ft. Lauderdale	R.E. Moore	305-772-0223
	Georgia-Metro	Atlanta	R.W. Gunnin	404-256-2262
	Georgia-Outstate	Atlanta	H.T. Cowart, Jr.	404-877-3316
	No. Carolina	Charlotte	G.K. Robinson	703-372-1591
	So. Carolina	Columbia	W.A. Humphries	803-252-4385
So. Cn.	Staff	Birmingham	H.D. Adamson	205-321-8581
	Alabama	Birmingham	M.M. Hunt	205-321-3291
	Kentucky	Louisville	A.P. Crump	502-582-8719
	Louisiana-State	New Orleans	Z.P. Zarich	504-529-8541
	Louisiana-Metro	New Orleans	W.R. Seay	504-529-8541
	Mississippi	Jackson	G.L. Robertson	601-948-3725
	Tennessee	Nashville	V.E. Matthews	615-298-7470
Ohio	Northeast	Cleveland	E.W. Hubman	216-822-7679
	Southwest	Columbus	T.G. Andrian	614-463-7542
Mich.	Metro	Southfield	J.A. McGill	313-355-2971
	No. & So.	Southfield	D.P. Schroeder	313-355-2992
Ind.	-	Indianapolis	L.B. Carr	317-630-5161
Wisc.	-	Milwaukee	W.F. Ribbens	414-393-2164
Ill.	Chicago	Chicago	R.L. McDowell	312-727-6193
	State	Springfield	R.B. Fitts	217-789-5940
	Suburban	Chicago	B.C. Mason	317-727-1851

Co.	Area	Location	Coordinator	Tel. No.
N.W.	Staff	Omaha	G. Sanders	402-422-2274
	Minnesota	Minneapolis	E.O. Bernard	612-334-6118
	Iowa	Des Moines	N.E. Bohner	515-281-6997
	Nebraska	Omaha	C.J. Raffensperger	402-344-3863
	So. Dakota	Sioux Falls	H.M. Scott	605-338-0956
	No. Dakota	Fargo	L.D. Reed	701-235-3355
S.W.	Staff	St. Louis	C.H. Strandberg	314-247-3804
	Arkansas	Little Rock	G.L. Shield	501-376-9703
	Kansas	Topeka	J.E. Ayers	913-357-2791
	Kansas City	Kansas City	W.M. Schmit	816-275-8510
	St. Louis	St. Louis	F.F. Stiefferman	314-247-4469
	Oklahoma	Oklahoma City	F.W. Kamp	405-236-7258
	Dallas	Dallas	K.D. McBee	214-745-3836
	Houston	Houston	V.P. Bearden	713-521-8431
	San Antonio	San Antonio	J.L. Zumwalt	512-222-3909
Mtn.	Staff	Denver	F.E. Marick	303-266-4516
	Arizona	Phoenix	L.T. Slobodnjak	602-261-6366
	El Paso	El Paso	D.H. Becker	915-543-4455
	Colorado	Denver	S.W. Banks	303-266-7657
	Idaho	Boise	L.L. Dieter	208-385-2371
	Montana	Helena	J.E. Sparing	406-449-3300
	New Mexico	Albuquerque	J.H. Clenn	505-765-6335
	Utah	Salt Lake City	C.J. Sartore, Jr.	801-524-6428
	Wyoming	Cheyenne	E.J. Pivik	307-634-2241
PNB	Staff	Seattle	G.D. Frampton	206-345-4060
	Wash-Idaho	Seattle	R.P. Kersten	206-345-3700
	Oregon	Portland	P.V. Perletti	503-226-5560
Pac.	Staff	San Francisco	M.J. Poloski	415-542-3164
	Northern Sector	Sacramento	H.C. Jessen	916-482-3268
	Southern Sector	San Diego	W.D. Hess	714-238-2271
	Bay	San Jose	C.C. Inserra, Jr.	408-291-2947
	Los Angeles	Alhambra	W.R. Gowan	213-576-6066
	Nevada	Reno	H.W. Proctor	702-329-6582
L.L.	Staff	New York	D.R. Ferrantino	212-393-7453
	NE-NJ & Conn.	White Plains	A.R. Klappas	914-320-2263
	NE-New Eng., N.Y.	White Plains	T.E. Hughes	914-320-2295
	NY-City	New York	R.W. Hoffmann	914-320-2959
	Central	Chicago	J.W. Duncan	312-641-3500
	Southern - SB	Atlanta	R.C. Rencher	404-529-6703
	- SCB	Atlanta	H.J. Black	404-529-5228
	Midwestern	Kansas City	H.W. Townsend	816-391-2100
	Eastern-Pa.	Washington, D.C.	D.J. Sandow	202-466-3551
	Eastern-C&P	Washington, D.C.	J.R. Edwards	202-466-6431
	Western	San Francisco	F.J. Curran	415-442-2231
S.N.E.	-	New Haven	H.J. Beaudin	203-771-6569
Cin.	-	Cininnati	R.E. Sigmon	513-397-4151
Can.	CCR	Ottawa	J.H. Carson	613-239-2571
	Trans-Can.	Ottawa	L.H.W. de Launay	613-239-2916



USE OF MINI-COMPUTERS FOR RECORDING BILLING DATA

Development is underway for the use of mini-computers in central offices to record billing data.

CAMA-C

The CAMA-C system uses a duplicated mini-computer system for the gathering and recording of billing data in existing Crossbar Tandem and 4A Crossbar CAMA installations. The major features of the CAMA-C system are:

1. Increased revenue due to more accurate call timing.
2. Elimination of data loss due to single time line entries, paper tape mutilations, etc.
3. Data recording on 1600 bpi industry compatible magnetic tape in single entry format.

The system interfaces to the existing recorder, recorder connector circuits, and the incoming CAMA/TSP trunk circuits via a scanner interface. Initial entry data are received via the recorder interface and answer/disconnect data are received via the trunk interface. This system is designed to avoid major modifications of existing electromechanical equipment by paralleling or tapping on to existing data and logic points. This reduces installation interval

and costs and minimizes the possibility of causing service interruption. A planning letter (GL 72-04-161) describing this system was issued April 25, 1973.

LAMA-C

This is a companion development to CAMA-C but is applicable to No. 5 Crossbar systems. It provides the same three major features listed above plus provision for (1) recording local messages, and for (2) converting non-LAMA offices to recording offices.

The system interfaces to the completing markers and to the outgoing trunk circuits via a scanner interface. Initial entry data are received via the marker interface, and answer/disconnect data via the trunk interface. The basic design philosophy is the same as for CAMA-C. The development of this system is in the initial stages and requirements are still being formulated, so that a planning letter is not anticipated until early 1974.

For those switching units that do not have the traffic volume to economically justify the above systems, a modification described in GL 73-03-004 can provide one second call timing on the existing paper tape AMA system.

W. S. Hinckley

NO. 4 CROSSBAR SYSTEM - SMALL CROSSBAR SWITCHING LINK FRAMES

New No. 4 Crossbar Incoming Link Frames (ILF's) and Outgoing Link Frames (OLF's) have been designed using small crossbar switches. The new frames require about 50% less floor space while providing 20% more trunk terminations compared with conventional ILF's and OLF's. The additional terminations result from using 12-level rather than 10-level crossbar switches as ILF primary switches and OLF secondary switches.

The basic ILF provides 360 trunk terminations and the basic OLF provides 240 trunk terminations. Optionally, a trunk extension frame may be added to each pair of ILF's or OLF's to expand their trunk termination capacities to 480 and 360, respectively.

Coordinating hardware changes are required in the DMT-TR (all offices) and in the AUXRC (CT offices) to identify the eleventh and twelfth levels of the new switches.

Small switch ILF and OLF cable terminations have been connectorized for cables to the TDF and for cables between basic frames and their associated trunk and junctor extension frames.

Small switch ILF's and OLF's are intended primarily for new installations. Since a mixture of small and large switch link frames having different numbers of trunk terminations will require additional administrative effort, small switch link frames are recommended only for growth additions where additional space and/or trunk terminations will limit ultimate machine growth.

Detailed information may be found in E.L. 1962 (GL 72-10-022).

G. T. Clark

NO. 4 CROSSBAR SYSTEM - ETS PERIPHERAL BUS COMPUTER

Development is currently underway on an arrangement for interfacing a commercial mini-computer with the No. 4XB/ETS machine. This arrangement, called the Peripheral Bus Computer (PBC), will provide mechanized analysis of ineffective attempt and sender retrial data and mechanized acquisition, processing, storage, and output of plant and traffic data.

Once it has been standardized, the PBC will be furnished with all new 4A/ETS machines. This is estimated to occur with new jobs shipping during 2Q 1974 and thereafter. General availability of the PBC for retrofitting existing ETS machines is expected during 1Q 1975. Special arrangements have been made for some new 4A/ETS machines having service dates in 1974 and involves introducing the PBC in two phases.

The PBC will be required for ETS Base Issue 9 and subsequent generic programs. The PBC will also be a prerequisite for the Common Channel Interoffice Signaling feature. All existing No. 4XB/ETS machines are expected to retrofit the PBC commencing in 1975.

The cost of adding the PBC will be offset by precluding another pair of ETS store frames as well as precluding conventional plant and traffic data acquisition and recording equipment and its associated maintenance and administrative costs. There will also be a modest improvement in ETS processor real time utilization which becomes significant with future implementation of Common Channel Interoffice Signaling.

Additional information will be covered by E.L. 2468, currently under preparation.

G. T. Clark

NO. 1 ESS - REMOTE CALL FORWARDING

Remote Call Forwarding (RCF) is a communications service between two remote localities. Primarily, it allows a local telephone subscriber to reach the distant location without incurring toll charges, the toll being billed to the terminating service. Therefore, it is similar in some respects to INWATS service. The major difference is that the local telephone customer dials a local directory number for RCF service rather than a 10-digit toll free number for the INWATS case. It, therefore, provides a more selective market area for the RCF customer than INWATS.

Remote Call Forwarding will be provided via the No. 1 ESS and will be standard with the Centrex (CTX) 7 generic program. A standard service order will be sufficient to initiate or deactivate the service with no intervention at a telephone set required. The service order data is capable of being inserted into the program store via the normal updating process. It will be impossible to assign a variable number of terminals for the service. The system will keep track of the number of calls forwarded and allow the call forwarding to take place until the quantity of active call forwarded calls assigned to the service has been reached. The Simulated Facility Group (SFG) feature of the No. 1 ESS is the mechanism used. Standard peg, usage, and overflow traffic measurements can be provided for each enterprise line group (SFG).

C. W. Johnson

NETWORK MANAGEMENT CAPABILITIES IN NO. 1 ESS

The first phase of the Network Management feature in No. 1 ESS 2-Wire switching systems has been incorporated in the CTX-6 generic program. With this program, the No. 1 can be utilized as a class 4P toll point as well as a class 5 local office and the network management capabilities can be effectively utilized in both cases.

These features were described in EL 2435, issued March 9, 1973 and included the following:

1. Selective code cancellation

   Capability of cancelling up to 31 three to ten digit codes simultaneously.

2. Preprogrammed trunk group controls

   The capability of activating cancel to, cancel from and skip route on as many as 63 trunk groups on a preprogrammed basis.

3. Dynamic Overload Control (DOC)

   The capability of receiving up to 30 DOC indications from higher ranking offices and activating preprogrammed trunk group controls.

4. Network Management Teletypewriter

   The option of providing a remote TTY for network management activities where a centralized network management group is provided.

5. Network Management Measurements

   Measurements designed to provide the necessary information to determine the effects of management activities.

The second phase of network management features as included in the CTX-7 generic program which will be available in 1974. This program will equip the No. 1 ESS to effectively serve as a full class 4C toll center and in limited instances as a CSP. The additional development will include flexible (nonpreprogrammed) trunk group controls, DOC sending capability, and expanded network management measurements.

B. G. Reece

NO. 1 ESS TWO-WIRE TOLL APPLICATION

E.L. 2461 (GL 73-03-129), issued March 23, 1973, provides the engineering information for the toll and tandem application of No. 1 ESS with the Centrex 7 generic program. The letter covers the use of No. 1 ESS as a combined local/toll system and the toll or tandem application with no associated Class 5 service. It describes a new network configuration, the 2048 Trunk Link Network, for use in the toll or tandem only application. The transmission aspects of this system in the toll hierarchy are covered in E.L. 2160/P.L. 2619 (GL 73-05-003), issued May 1, 1973.

The Williamsburg No. 1 ESS in Brooklyn, New York, will be the first office application of the 2048 TLN. It is scheduled for service in the third quarter of 1974 and will have approximately 15,500 trunk terminations initially, including an associated TSPS base unit. It will switch both toll and local tandem traffic.

J. R. Walsh

NETWORK OPERATIONS TROUBLE INFORMATION SYSTEM - NOTIS

NOTIS is an analysis system designed to locate network troubles, identify weakspots and provide assistance in improving network service. Trouble reports from Traffic Service Position Systems (TSP's) and 3CL Cordboard Operators are transmitted to the Long Lines Data Service Center in Cleveland where they are sorted and summarized by computer. Printouts to pinpoint trouble spots are relayed within hours to 70 participating Network Analysis Bureaus and seven Area Network Service Centers.

By year end 1973 NOTIS will be receiving trouble reports from approximately 75 TSPS and 30 cordboard locations. With over 160,000 reports daily, this data will provide a valuable analysis tool for operator and customer-encountered network troubles. "Trouble Pattern Summaries" are provided for HNPA and FNPA analysis. Special programs are also utilized for INWATS and Call Completion Busy and Don't Answer Studies. A supplement to NOTIS is being developed for cordboards and is described in the next article.

W. T. Kane

AUTOMATED TROUBLE REPORTING SYSTEM (ATRS)

ATRS is a mini-computer system being developed by Bell Laboratories to supplement the NOTIS analysis system (described in previous article) and make cordboard operator trouble reporting and analysis less costly and more effective.

ATRS will simplify the collection and analysis of trouble reports from cordboard locations by allowing the operator to key (MF) the report directly to the mini-computer, rather than phoning it in to the bureau or preparing a trouble ticket. The report will then be forwarded to Cleveland for inclusion in the present NOTIS analysis program. At the same time, the mini-computer will provide the bureau with some "real time" analysis features; such as selective hold and trace, trouble counters, tracking and a limited retention of trouble reports from both cordboard and TSPS locations.

Two trial locations, Denver and Syracuse, are scheduled for operation in the third quarter 1973. It is planned to have the trial evaluation completed and the system ready for release to the companies by early 1974.

Further information may be found in GL 73-05-083, issued May 15, 1973.

B. S. Luckett

EXTENSION OF INTERNATIONAL DIALING

A. International Operating Centers (IOC)

Six International Operating Centers in the United States now have the capability of dialing directly to subscribers in over 40 countries outside the North American network. It is planned to extend operator dialing to an additional 20 countries by the end of 1974. A new IOC in Springfield, Massachusetts, is scheduled for service in May, 1974.

B. International Originating Toll Center (IOTC)

IOTC operation, which permits U.S. Originating Toll Center operators to complete calls directly to foreign subscribers, has been extended to include up to 18 countries in Europe, Asia, the Middle East and South America. IOTC service is presently being offered by 14 Associated and Independent Companies in 26 NPA's. By the end of 1974, over 17 Associated Companies and Independents within their territories plan to have IOTC operation in about 50 NPA's.

C. International Direct Distance Dialing (IDDD)

IDDD permits direct distance dialing of international calls from subscribers in the U.S. to those in countries outside the North American network. Initial implementation of IDDD is limited to international, station-to-station, sent-paid calling from subscribers served by modified No. 5 crossbar and No. 1 ESS local offices equipped with SP/CC-CTX-4 or later vintage generic programs. IDDD of all types of international calls will be possible from subscribers served by modified No. 5 crossbar, No. 5A and No. 3 crossbar, SxS, No. 2 ESS and No. 1 ESS offices with SP/CC-CTX-7 or later vintage generic programs. This latter capability, however, is dependent on TSPS modifications expected to be available in the fourth quarter of 1974. TSPS will record, provide operator assistance and perform the principal processing functions for IDDD calls.

IDDD service, permitting direct dialing of international calls from subscribers in the U.S. to subscribers in 18 foreign countries outside the North American network, is presently being offered by seven Associated Companies to certain subscribers in 14 NPA's.

It is planned that 18 Associated Companies will have IDDD service to certain subscribers in over 50 NPA's by end of 1974.

F. G. Hellyer

CHANGE IN NATIONWIDE CUTOVER DATE AND TIME

The recommended time for making cutovers which will require nationwide routing changes is being changed from 2:01 A.M. Eastern time on Sundays to 2:00 P.M. Eastern time on the first and third Saturdays of each month. This change, described in GL 73-03-199 and on Chart 2 of this handbook, is effective beginning in August, 1973.

Even though the traffic loads on Saturday may be significant, it is believed that more resources will be available before Sunday peak hours to correct any major problems which may have developed because of the rearrangements. The first and third Saturday dates will be advanced or deferred when a holiday is celebrated on a Saturday or when they fall on the Easter, Mother's Day or Father's Day weekends.

This recommendation in no way precludes the continued use of "after-midnight" hours for local rearrangements, office replacements or wire center boundary realignments.

W. B. Plossl

LONG RANGE SWITCHING STUDIES (LRSS)

During the past year a new series of computer programs has been developed to assist in making long range toll network planning studies. These are collectively known as the Long Range Switching Studies (LRSS) Program. The computer programs and master files are run and maintained centrally for the Bell System at the Long Lines Centralized Message Data System (CMDS) Computer Center in Kansas City, Mo.

LRSS provides a means of estimating toll network requirements from 5 to 20 years in the future, including:

1. Number, location and approximate size of switching machines
2. Approximate time when machines are needed
3. Homing and classification arrangements
4. Intertoll and toll connecting circuit requirements

The basic input to LRSS is point-to-point data from the CMDS data base. That data base consists of a five per cent sample of toll messages drawn each day during the toll processing operations in the Associated and Independent Companies Accounting Centers and forwarded to the CMDS Center at Kansas City. This provides the foundation for a 20-day busy season sample for LRSS use, which, when projected to the future periods, permits evaluation of alternative configurations from the dimensions of economics, service and manageability.

Southwestern Bell is acting as a pilot company for LRSS with 29 additional toll studies scheduled by the end of 1973 utilizing this new long range planning tool.

R. G. Malinchock
D. E. Richardson

TOLL NETWORK PLANNING PROCEDURES (TNPP)

To fill the growing need for consolidating into a single document the concepts and methods needed by the companies to assist in their toll network planning, a set of procedures has been recently issued. These procedures are contained in a document entitled "Toll Network Planning Procedures" (TNPP) and represent the "state of the art" as it currently exists. They will require frequent updating as our knowledge increases and as technological advances are made. The document provides guidance to assist study personnel and their management in promoting standardization of the approach to and the format of long range planning studies.

The document has been distributed directly to the companies through their Technical Long Range Planning ontacts with the intent that copies will be distributed to or be made readily accessible to long range planning people in the various departments and to those study teams formed to develop long range toll planning studies.

R. R. Mattesich
D. E. Richardson

CODE CONSERVATION

General Letter 73-01-222 announced that the 213 NPA (Los Angeles) will be the first area to introduce interchangeable codes (NPA codes used as central office codes). The first NPA type code to be assigned will be 613. This will occur in early 1974. To avoid the use of interdigital timing after the 7th digit in an ambiguous code situation, the Los Angeles area has adopted the 1 + 10D dialing procedure for all Foreign NPA station calls in July, 1973. The use of interchangeable codes will provide central office code relief in the 213 NPA delaying the necessity of splitting the NPA until the early 1980's.

With the split of Virginia into two NPA's, only 20 NPA codes remain unassigned. This makes it imperative that everything possible be done to conserve central office codes because their exhaust forces the use of additional NPA codes. Conscious of this need, Bell Laboratories is endeavoring to develop a method to share a central office code between two or more offices and to devise a method to utilize a 7-digit number for Plant testing purposes rather than use a dedicated central office code. These two efforts are part of a program to make the remaining unassigned NPA codes last as long as possible.

Current projections indicate that the exhaust of the remaining NPA codes will occur in the 1990-2000 time frame. The modification costs to make possible the use of central office codes as NPA codes can run into hundreds of millions of dollars because of the quantity of electromechanical systems in the network. The longer the exhaust can be deferred, the lower the conversion costs because the conversion of ESS offices can be handled with only a software change. As ESS replaces electro-mechanical systems the overall conversion costs become lower. In addition, consideration of eventual code exhaust in an NPA should be considered in planning current equipment jobs. For example, modification of senders for "1+" dialing is much less expensive if it is done in conjunction with another undertaking such as TSPS modifications rather than as a "stand-alone" job.

R. J. Cooper

THE HIGH VOLUME TANDEM IN LONG RANGE PLANNING

In last year's DDCH, Article 2.02 described the High Volume Tandem (HVT) concept for metropolitan areas. The first HVT is scheduled for service in Chicago in the first quarter of 1976. This installation is also the first No. 4 ESS and will demonstrate the feasibility of the significant features of the HVT discussed in last year's article.

Toll Long Range Switching Studies for metropolitan areas should include an evaluation of the HVT configuration among the alternatives considered to accommodate network growth in metropolitan areas. Detailed guidance

on the formation of study teams for conducting initial or reviewing long range toll switching studies is contained in the Toll Network Planning Procedures (TNPP) issued earlier this year (see article in this section). The standard computer programs to support Toll Long Range Switching Studies (LRSS) include the logic and algorithms to assess an alternative configuration utilizing the High Volume Tandem concept. A discussion of LRSS is contained in this section of the D.D.C.H.

The experiences gained in the detailed planning of the first HVT for Chicago and the practical experiences of study teams evaluating the HVT concept in their study areas using LRSS will be reflected in updates of the information in the Toll Network Planning Procedures. The contents in E.L. 461 are essentially replaced by the issuance and distribution of the TNPP.

M. A. Wernander
D. E. Richardson

COMMON CHANNEL INTEROFFICE SIGNALING

Common Channel Interoffice Signaling (CCIS) is a method of signaling between processor-equipped switching systems. The initial CCIS programs have been designed to function in 4A/ETS and No. 4 ESS offices. Later developments are planned that will equip No. 1 ESS, TSPS and other processor systems with CCIS capabilities.

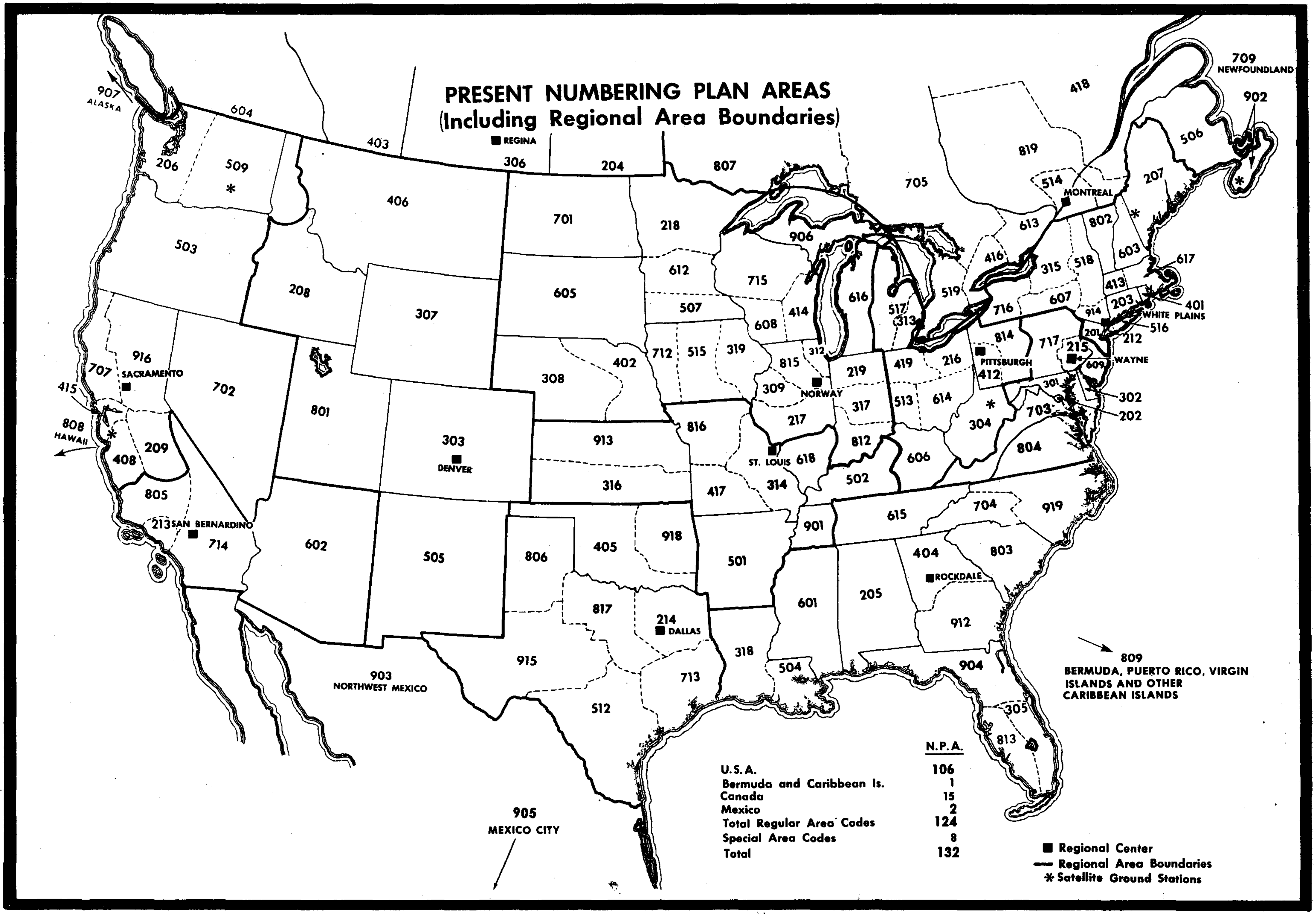
Engineering Letter 1600 presents the basic functional description of CCIS and describes the associated and non-associated signaling methods. The latter will be primarily employed to achieve an early CCIS capability in the network. Additional planning information is provided in E.L. 1900 along with a delineation of specific company responsibilities.

Essentially, CCIS provides a two-way signaling and supervisory link between switching systems independent of the transmission path. In addition to making possible a reduction in call set-up time, CCIS will provide the following features:

1. Significant reduction in post-dialing delay.
2. Capacity and capability for provision of new services and traveling classmarks.
3. Two-way signaling capability for transmittal of Network Management and call disposition signals.
4. Added security against fraud and elimination of customer "talk off".

Specific implementation recommendations for 1976 will be made following analysis of the connectivity data requested in E.L. 1900. Additional Traffic and Engineering information regarding new equipment, modifications, and costs will also be provided at that time.

J. P. Potterveld


PRESENT NUMBERING PLAN AREAS
(Including Regional Area Boundaries)
907 ALASKA
808 HAWAII
709 NEWFOUNDLAND
902
506
418
819
514
MONTREAL
705
613
416
519
807
604
403
REGINA
306
204
206
509
406
701
218
906
715
503
208
307
605
612
507
414
608
616
517
313
716
315
518
802
207
603
617
413
607
914
203
401
WHITE PLAINS
516
212
201
916
SACRAMENTO
707
415
702
801
308
402
712
515
319
815
312
219
419
216
814
717
215
609
WAYNE
PITTSBURGH
412
302
202
301
703
209
408
303
DENVER
913
816
309
NORWAY
217
317
513
614
304
804
805
316
417
314
ST. LOUIS
618
812
502
606
213
SAN BERNARDINO
714
602
505
806
405
918
501
901
615
704
919
803
404
ROCKDALE
205
601
817
214
DALLAS
912
318
915
713
504
904
512
305
813
903 NORTHWEST MEXICO
905 MEXICO CITY
809 BERMUDA, PUERTO RICO, VIRGIN ISLANDS AND OTHER CARIBBEAN ISLANDS
N.P.A.
U.S.A. 106
Bermuda and Caribbean Is. 1
Canada 15
Mexico 2
Total Regular Area Codes 124
Special Area Codes 8
Total 132
Regional Center
Regional Area Boundaries
Satellite Ground Stations