

NETWORK COMPLETION

CONTENTS	PAGE
1. INTRODUCTION	1
2. DESCRIPTION OF NETWORK COMPLETION STUDIES	1
3. OBJECTIVES	5
4. NETWORK COMPLETION CODE FILES	5
5. FACTORS AFFECTING NETWORK COMPLETION	6
A. Trunking, Routing, and Switching	6
B. Busy - Don't Answer	7
C. Independent Company Considerations	7
D. 555 Traffic	7
E. Vacant Codes	8
F. Customer Irregularities	8
G. Other	8
6. NETWORK COMPLETION IMPROVEMENT ACTIVITIES	8
A. Organization	8
B. Responsibilities	9
C. Analysis Techniques	11
D. Additional Approaches to Network Completion Improvement	16
7. TOOLS OR AIDS TO NETWORK COMPLETION IMPROVEMENT	17
8. ROLE OF NETWORK SERVICE CENTERS IN NETWORK COMPLETION IMPROVEMENT ...	22
9. ROLE OF THE LONG LINES AREA NETWORK SERVICE CENTERS IN NETWORK COMPLETION IMPROVEMENT	23

1. INTRODUCTION

This section of the Dial Facilities Management Practice will explain Network Completion data as it is utilized as a "bottom line" indicator of our success in maximizing the use of the network to generate revenue producing messages. Network Operations has the basic responsibility for managing the flow of communications over the net-

work, and Network Completion data provides an overall indication of how well we are performing this function.

Network Operations should also provide leadership in improving network performance and call completion. This responsibility includes establishing service criteria, gathering and analyzing usage data, designing an adequate network to meet customer demand and measuring network performance and completion. The Department should take the lead in developing effective service analysis programs and coordinating the inter-departmental assignment of priorities, resources, responsibilities, and time-tables to obtain completion improvement.

2. DESCRIPTION OF NETWORK COMPLETION STUDIES

(a) Network Completion is a measurement of subscriber dialed toll service. It is expressed as a computed percentage of subscriber attempts to properly supervised and charged messages. The completion data is obtained from AMA recording equipment and is provided on an originating basis by the Regional Accounting Office. This data includes attempts from the point of obtaining a toll trunk and the successful entry on a recording device. It does not measure the attempts by the subscriber to obtain a toll access trunk to the recording location nor the failure to access a trunk out of the recording office. Successful completions are obtained from properly supervised and charged messages. (Exhibit 1.)

(b) Network Completion studies are compiled from data sent to AT&T Comptrollers by each Associated Company. These studies are made one day (24 hour period) each month, usually the first Wednesday of the calendar month, and on Christmas and Mother's Day. Special studies may be requested for other days of the week or for less than a 24 hour period.

(c) The toll completion data is gathered from LAMA, CAMA, #1 ESS having CTX-6, Issue 3, and subsequent generic programs, CAMA-C, #2 ESS and AMA-MTR systems. Completion data for TSP/TSPS systems are not presently included. Future plans are to include customer dialed attempts and messages recorded by TSPS equipment where this capability is available.

(1) Both attempt and message data are available from #1 ESS offices beginning with generic program CTX-6, Issue 3, (G.L. 72-12-081, Dec. 14, 1972) and CAMA-C (G.L. 73-04-161, April 25, 1973). Special provisions must be made for both these single entry systems to obtain call attempt data. For #1 ESS offices having CTX-6, Issue 3 generic programs, an input message using the Plant maintenance teletypewriter is required (refer to Input Message Manual 1A001-AMA-BILL). Gathering CAMA-C attempts is also accomplished using the Plant maintenance teletypewriter associated with the CAMA-C Equipment. Network Completion Coordinators have the responsibility for insuring the gathering of completion data for these systems and also that the attempt gathering feature is removed after study day.

Close interdepartmental coordination is required by Network Operations and Comptrollers to make the necessary arrangements to gather valid completion data on the study days. If attempts are not obtained and only messages are used as input to the completion study base, serious distortions in completion results could occur. Comptrollers should provide program controls necessary to insure that both attempts and messages are included on the study tapes. Where attempt data are missing, the entire file should be excluded from the month's report and appropriate feedback furnished to the Network Completion Coordinator for the company. Traffic Dial Administrators should study the #1 ESS AMA register requirements on study days to insure their adequacy to handle the increased loads generated by recording all attempts.

(2) CAMA, LAMA, #2 ESS and AMA-MTR are multiple entry billing systems which routinely record both attempt and message data and do not require special provisions to gather completion data. Completion Coordinators should insure that toll attempt and message data is obtained from these type offices on the completion study days and submitted for the Network Completion Reports by Comptrollers.

(d) The input data are sent to AT&T Comptrollers so as to arrive not later than fourteen working days after each study date. It is the responsibility of the Company Completion Coordinator to insure that Comptrollers transmit the AMA tapes to Treasury by the due date. Invalid or incomplete data distorts completion results; data transmitted after the due date delays processing and, consequently, publishing of the System reports.

(e) Completion data is summarized by the Associated Company Comptrollers in two forms which result in two separate report categories: Network Completion Reports (NCR) and System Called Line Reports (CLR). The tape for each Report data must contain specific items of information. The Network Completion Report data should include the following:

- (1) The Date of the Study.
- (2) The Number of hours studies. (Normally 24.)
- (3) The Company compiling the data.
- (4) The Originating NPA.
- (5) The Terminating NPA.
- (6) The Terminating NNX.
- (7) The total number of attempts from the Originating NPA to the Terminating NPA-NNX.
- (8) The total number of messages from the Originating NPA to the Terminating NPA-NNX.

The Called Line Report data should include:

- (1) The Date of the study.
 - (2) The number of hours studied (normally 24).
 - (3) The Company compiling the data.
 - (4) The Originating NPA.
 - (5) The Terminating NPA.
 - (6) The Terminating NNX — line number.
 - (7) The total number of attempts from the Originating NPA to the Terminating NPA-NNX — line number. This excludes single attempts from an Originating NPA to an NPA-NNX — line number combination for non-INWATS calls; all attempts to 555-1212 and all IDDD attempts are also excluded. All single attempts from an Originating NPA to an NPA-NNX — line number combination for INWATS calls should be included.
 - (8) The total number of messages from an Originating NPA to a Terminating NPA-NNX — line number.
- (f) All input records for a Company are consolidated before sending to AT&T Comptrollers. Total attempts are included even if there are no associated messages. These data include FNPA and HNPA calls; WATS and non-WATS calls. For the Network Completion study, all attempts and messages from an NPA to a specific NPA-NNX combination are consolidated into one record. For the Called Line Report, all attempts (which meet the specifications mentioned in item 7 of the CLR data) and messages from an NPA to a specific NPA-NNX — line number combination are consolidated into one record. Originating traffic from special NPA's such as SAC 510, 710, etc., are consolidated with the telephone NPA traffic of the same recorder group and show the message telephone NPA as the Originating NPA.
- (g) Independent company recorded AMA data may be included in the Network Completion Study if the independent can meet Comptrollers' requirements and time frames for submitting NCR data. The following guidelines are to be used when considering independent company input:
- (1) The independent data should be completely summarized in accordance with existing instructions.
 - (2) The tape file from the independent should be in a format compatible with the processing capability of each Bell Company involved.
 - (3) The independent input should be summarized and included as part of the consolidated input from the Bell Company sending the data to AT&T Comptrollers.
 - (4) Local arrangements should be made to assure that independent input is for the same study date as that being used by the System, and that it is submitted to the Bell Company in time for processing and transmission to AT&T Comptrollers.
- (h) The Network Completion Report which is summarized by AT&T Comptrollers consists of the following nineteen reports:
1. Percent Completion Originating NPA to Regions by NPA.
 2. Percent Completion Originating Region to Region by NPA.
 3. System Completion to Regions by NPA.
 4. System Completion to Companies by NPA.
 5. Percent Completion of calls from FNPA (-555) — Company rank.
 6. Areas with lowest Percent Completion of HNPA calls (-555).

7. Areas with lowest Percent Completion of calls to FNPA (-555) (Originating FNPA Percent Completion).
8. Areas with lowest Percent Completion of calls from FNPA (-555) (Terminating FNPA Percent Completion).
9. HNPA Percent Completion (-555) — History by NPA.
10. Percent Completion of calls to FNPA (-555) (Originating FNPA Percent Completion) — History.
11. Percent Completion of calls from FNPA (-555) (Terminating FNPA Percent Completion) — History.
12. System Completion to Companies by NPA-NNX.
13. Percent Completion of HNPA calls by NNX.
14. Exception Report — System Completion to Companies by NPA-NNX.
15. Exception Report — HNPA completion by NNX.
16. Percent Completion NPA to NPA by NNX.
17. Percent Completion to each NPA from all other NPA's.
18. NNX Completion by percentage bands.
19. Achievement of Annual Completion Objectives by Individual Company and System.
31. System Completion to Terminating non-INWATS numbers exceeding specific pre-determined NPA parameters.
32. System Completion to Interstate INWATS numbers — no parameters are set.
33. Summary Report — All Originating NPA's to Interstate INWATS NNX's — percent completion.
34. Summary Report — Percent Completion to Intrastate INWATS numbers.
35. Exception Report — Originating NPA Percent Completion to Interstate INWATS numbers.
36. Percent Completion to Terminating Called Numbers by Originating NPA.
37. Percent Completion to Terminating numbers exceeding a specified number of attempts.

A sample copy of each Called Line Report with a detailed description is included in Appendix B.

(j) In addition to these data sent to AT&T Comptrollers, each Company requires additional reports for their detailed analysis. First, the Associated Company requires a printout from their Company Comptrollers similar to Report #1 in order to validate all data being forwarded. It is the responsibility of the Network Completion Coordinator to insure the validity of all data which is crucial in preventing incomplete or distorted results. Secondly, these data sent to AT&T Comptrollers consolidate data from a total originating NPA to all other NPA's (including HNPA) and are sorted on a terminating NPA-NNX and NPA-NNX-line number basis. Each Company requires originating data for every recorder group or recording location, and for each recorder group, the data should be summarized by terminating NPA. For each originating recorder group, the Associated Company should also arrange to obtain a

A sample copy of each Network Completion Report with a detailed description is included in Appendix A.

- (i) There are seven Called Line Reports, numbered 31-37, as follows:

terminating summary by NPA-NNX for all Home Company NPA's and certain high volume NPA's located in other Companies. To facilitate analysis of high volume calling, the above reports should summarize by originating toll center, by primary center, by sectional center, and by total company. Appendix C describes the intra-company reports which will prove useful in analysis of calling patterns.

(k) Completion Reports are sent from AT&T Comptrollers each month approximately five weeks following the study date. These reports are sent to the Company Network Completion Coordinators for distribution to Area Completion Improvement Teams.

3. OBJECTIVES

Network Completion data, 1973 results, show that 66.4% of FNPA attempts on the network excluding 555 attempts and completions became revenue producing messages. Although an optimum overall completion percentage cannot be defined, it is obvious that improvement over 66.4% is possible and desirable.

Through 1973, a procedure had been developed to ascertain a yearly overall FNPA percent completion objective for each associated company and the System. These objectives take into account improvements in both the Busy-Don't Answer and Network Equipment Blockage and Failure categories of non-completed calls (Exhibit 2 is a pie chart exemplifying the dispositions of FNPA attempts on the Network). The objectives are based on Incoming Trunk Service Observing results as well as Network Completion FNPA performance.

First, 555 attempts are excluded in determining the new completion objectives. The percentage of 555 attempts, all of which are counted as ineffective, ranges from 3% to 14% of total traffic; this traffic, therefore, distorts individual company completion results and company comparisons. The Network Completion reports will continue to provide the capability to track 555 Directory Assistance Bureaus although 555 attempts and completions are excluded in reporting completion results.

A second element is based on the System objective of 1.0% for Equipment Blockage and Failure

performance, as obtained from Incoming Trunk Service Observations. The new completion objective is based on the expectation that each company will achieve the System EB&F objective performance. The call completion improvement factor contributed from the EB&F performance is equal to the amount by which a company's past year's EB&F rate exceeded the 1.0% System objective.

The third element is based on an arbitrary 1.0% Call Completion improvement in FNPA completion by each company resulting from a reduction of Buses and Don't Answers. The availability of the System Called Line Reports and the cooperative efforts of Business Services, Commercial and Marketing are expected to support significant improvement.

Appendix D describes this procedure for determining FNPA Completion objectives as well as listing the actual System and Company completion objectives for 1974. These completion objectives are both realistic, achievable and provide our best method to date of measuring progress in completion performance. By focusing on the principal factors causing incompleting calls, Companies can better direct their efforts and assign improvement responsibilities as appropriate.

A trial has also been undertaken by the associated companies and Bell Laboratories to develop a more definitive method of setting objectives based on expected individual NNX performance. The major characteristics of an entity will be taken into consideration; e.g., the number of FNPA attempts, station/line fill, percent business lines, percent PBX lines, percent CENTREX lines, percent resident lines, and in and out movement (number of connects and disconnects). These varying characteristics are presently being studied to ascertain the degree to which each affects network completion. The results of these studies will enable us to formulate individual NNX goals as well as a more comprehensive Toll Center, NPA, Company, and System objective.

4. NETWORK COMPLETION CODE FILES

(a) The code file for Network Completion reports is a data bank containing information detailing network hierarchy. It specifies the inter-relationship of Regions, Companies, NPA's, Toll Centers, and NNX's. Lists

of Company and Region Code File Codes are given in Appendix E-1. Toll Center Code File Codes can be obtained from CLR Report #31 which lists by Company, each Toll Center name and code. Each Company Completion Coordinator should keep an updated list of his Company's Toll Center Codes for reference.

(b) At present, there are four types of code file updating forms for the Network Completion Study and two types for the Called Line Reports. They are:

(1) Updating the Network Completion Study:

- Type 1 - Records identifying Originating NPA's.
- Type 2 - Records identifying Terminating NPA's.
- Type 3 - Records listing Terminating NPA-NNX's.
- Type 4 - Records listing Toll Center Names.

(2) Updating the Called Line Report:

- Type 4 - Records listing Terminating NPA attempt and percent completion parameters established by the operating companies for each of their NPA's.
- Type 6 - Records listing INWATS Toll Center - NNX's and their associated company - NPA's. A list of the Toll Centers for each INWATS NNX is included in Appendix E-2.

A sample form and instructions for preparing each Code File Update is included in Appendix E-3.

(c) In addition to Code File Update Forms, there are three standard forms to be utilized when requesting special Network Completion Study Report #16 and Called Line Reports #36 and 37. Appendix E-4 describes these special request forms and gives a sample of each.

5. FACTORS AFFECTING NETWORK COMPLETION

A successful Network Completion Improvement program requires not only an analysis of all

available data but also a concentration of resources in areas which show the most need of improvement. In order to achieve this goal, the analyzer must have a knowledge and understanding of the numerous factors which cause a call to be incomplete as measured by the Network Completion Study. These factors may be categorized into seven basic causes:

1. Network problems such as trunking, routing or switching deficiencies or inadequate Plant maintenance.
2. Busy and Don't Answer Conditions.
3. Independent Company Considerations.
4. 555 Traffic.
5. Vacant Codes.
6. Customer Irregularities.
7. Other.

The following is a brief description of each factor:

(a) In looking for causes of poor completion one of the first areas of investigation should be the equipment which might be involved with the call. An ineffective attempt due to a network problem may exemplify itself in several ways:

- (1) Reorder tone - due to equipment malfunctions or insufficient trunking provisions. The average calling customer may not be able to distinguish a Reorder (120 IPM) tone from a Busy Tone (60 IPM); thus allowing for numerous subsequent attempts.
- (2) Recorded Announcement - due to equipment malfunctions or insufficient trunking provisions (Trunk Group Overflow).
- (3) No Ring - due to equipment malfunctions either in the Central Office or on the customer's premises. In these cases, the calling subscriber is left "high and dry", resulting in subsequent attempts.

- (4) False Busies and Don't Answers — due to equipment malfunctions in the Central Office or on the customer's premises.
- (5) Improper Supervision — due to equipment malfunctions. Although a calling customer has completed his attempt and conversation takes place, if the trunk being used does not return charge supervision, the Network Completion data reports this attempt as "ineffective" and non-revenue producing. One characteristic of this type of "ineffective" attempt is that it is a single attempt from point A to point B which "failed" and no subsequent attempts were made. An analysis of this type of attempts may aid in pinpointing trunks providing false supervision. The detailed study of AMA tape information (originating line number to terminating line number) will aid in this analysis.
- (b) In order to increase completion on the network, a concentrated effort is required to reduce the volume of Busy — Don't Answer failures. Of all attempts, 25%-30% encounter either of these dispositions. Upon identification of line numbers with a high failure rate utilizing the Called Line Report or any other analysis tool, the determination of the cause of these failures must be made. The corrective action depends upon the type of customer, his equipment, and the reasons for the high failure rate.
- (c) Network Completion studies include in the System results calls to all NPA's in the North American 10-digit numbering plan that are customer dialable. This includes Mexico, Hawaii, the Carribean, and the NPA's in the Regina Region of Canada. The Completion results for these NPA's are not included in any Bell System Company results. However, completion results to Independent Companies within the continental United States are included with Company results (the Florida 813 NPA is charged to Southern). Several NPA's are served by more than one Bell System Company. In these cases, the Company with the largest part of the NPA in its territory has been assigned the Independent Company results.

Because of the inclusion of these results in the Bell Company's completion rate, each company is responsible for coordination with these Independents on network improvement activities. Each Independent must be made aware of the Network Completion Studies and their results. Cooperative analysis and action among all telephone companies is required for improvement to be realized.

Companies should also work with any CPE customer (Customer-Provided Equipment) who is having a detrimental effect on call completion. Network Completion Studies include all attempts and messages to customers who have non-Bell built and maintained equipment. It is the responsibility of the Associated Company involved to insure the adequacy of these interconnection facilities so that they are not negatively affecting network service.

- (d) The volume of directory assistance calling exceeds 6% of the System total FNPA attempts. While many of these calls lead to subsequent revenue — producing messages, it is extremely important that every effort be made to control the volume of these calls particularly when the user does not intend to attempt a revenue-producing message.

The Network Completion Studies will continue to track 555 completion results and attempt volumes although these attempts are excluded from official reports as well as the FNPA completion objectives for 1974 (Section 3). Companies can track their individual 555 volumes, and where supervision is provided, completions by using NCR Reports 12 and 13 (Appendix A). In March, 1974, each Company was requested to furnish an implementation status report of supervision on 555 trunks. A periodic report of percent supervised 555 calls, by Company is issued to emphasize the need to provide this supervision in order to measure completion to the NPA Directory Assistance Bureaus, as requested in a G.L. dated August 15, 1972.

These data are extremely valuable to those responsible for Directory Assistance Volume Control and will give them information upon which to act. In addition to the possible

extension of the distribution of foreign directories, the 555 volumes to certain NPA's may indicate the economy in establishing high usage trunk groups directly into foreign 555 Bureaus to avoid multiple switching or the possible economy in establishing a foreign NPA Bureau in the Home NPA.

(e) System Completion Results include calls to vacant non-working NNX's as well as vacant non-working line numbers.

Calls to vacant non-working codes utilize trunking and switching capacities that would otherwise be available for completing messages. G.L. 71-06-162 dated June 21, 1971, established a system policy that vacant codes should be screened and routed to vacant code announcement as close to the source as economically possible. As ETS conversions continue, we will improve our ability to screen out vacant codes close to the source.

NCR Reports 12 and 13 (Appendix A) includes the total volume to vacant codes. This summary does not include the actual codes dialed, but groups them together as "Vacant". A list of the actual vacant codes dialed is available as part of the edit process and may be obtained by the companies upon request to the "195" Coordinator. A study of vacant codes is recommended at least once a year.

Attempts to vacant non-working line numbers (disconnected or unassigned lines) are included in completion results and can only be identified by the Network Completion Study through the CLR reports (Appendix B) if they exceed the predetermined attempt and completion parameters. These attempts should be studied and an analysis of the causes of high volumes to vacant line numbers should be made.

(f) Customer irregularities may result in ineffective attempts on the network, e.g., misdialing. If a calling customer misdials any of the seven digits of an HNPA call or ten digits of an FNPA call resulting in a non-working NPA, NNX or line number code, the attempt is routed to Vacant Code Announcement, and is seen as a non-completion. Also, if dialing is correct but the subscriber

"Doesn't Wait" for completion of network switching functions, the attempt fails. Although not categorized as an EB&F, the "Doesn't Wait" type call is another ineffective attempt made on the network.

Plans have been undertaken to revise the service observing practice of Incoming Trunk Service Observations to separate the "Doesn't Wait" type of calls from the "Don't Answer". These will become two categories of non-completed calls instead of the one category currently being used, that is, "DA-DW".

(g) Most calls to Official NNX's and/or line numbers are included in the Network Completion Study as non-completions due to the absence of answer supervision. G.L. 72-01-111, dated January 25, 1972, outlines recommendations for controlling Free Line Service. Consideration should be given to these type calls when making a terminating analysis of Network Completion. In addition, attention should be given to toll fraud and code calling conditions.

6. NETWORK COMPLETION IMPROVEMENT ACTIVITIES

(a) Organization.

Improving network service and having as many attempts on the network become revenue-producing messages as possible are the major objectives of Network Operations. These objectives encompass from providing additional facilities to training customers in call handling procedures. The Network Completion Study is a measure of how effective each telephone company, and the industry as a whole, are in working towards these goals.

Within each Associated Company, interdepartmental as well as intercompany efforts are necessary to coordinate network completion improvement activities. These efforts are led by the designated Company Call Completion Coordinators. (Appendix F is a listing of these coordinators.) Improvement activities should involve representatives of various departments and organizations, including:

1. Network Operations including:
 Network Administration and
 Central Office Maintenance and
 Service Centers
2. Business Services.
3. Marketing.
4. Commercial.
5. Engineering.
6. Independent Company Relations.
7. Long Lines — Operations.
8. Long Lines — Business Services and
 Sales.
9. Other Departments as required.

(b) Responsibilities.

The responsibilities of each participating department and/or organization should be clearly defined to facilitate an effective call completion improvement program. Exhibits 3 and 4 are flow charts of the roles each must perform in completion analysis and improvement activities. Exhibit 3 follows the path of an Equipment Blockage and Failure trouble indication and investigation while Exhibit 4 is a terminating line number Busy — Don't Answer analysis and investigation procedure.

As discussed in 6(a) of this practice, several departments and/or organizations should be involved in improvement activities. The responsibilities of each are as follows:

1. Network Operations

- Coordinate all reports submitted to the Company Completion Coordinator by AT&T Comptrollers each month, and distribute these data to the Local Network Service Improvement Committees.
- Work with AT&T in the evaluation of the effectiveness of the existing NCR and CLR reports.

- Update the existing Network Completion Code files to assure the accuracy of data.
- Work with the Company Comptrollers to assure the timeliness and accuracy of the AMA tape data being submitted to AT&T Comptrollers for processing each month.
- Work with the Local Improvement Committees in analyzing all available data for the identification of failure patterns, both equipment and customer related.
- Develop effective service analysis programs to determine the causes of trouble conditions.
- Design an adequate network to meet customer demands.
- Make routing and switching verifications where discrepancies may exist.
- Develop, evaluate and use all analysis tools which may prove helpful in improvement activities.
- Determine all network service criteria and objectives and measure the performance of the network through the completion of attempts.
- Establish an Improvement Action and Feedback routine to assure interdepartmental awareness of activities.
- Work with Long Lines to assure adequate switching and trunking facilities on an Inter-Toll basis where applicable.
- Gather and evaluate all trunk group usage data to assure adequacy of provided facilities.
- Perform all equipment testing routines to assure proper switching functions.

- Make individual line tests to assure the proper functioning of the line and customer equipment before a detailed analysis of calling procedures and handling is undertaken.

2. Business Services

- Identify and analyze all poor completing ACD and PBX customers.
- Gather and use all Subscriber Line Overflow and Usage data.
- Work with the customer to evaluate and pinpoint his problems and make all necessary recommendations for improved service, or where appropriate, refer to Marketing.
- Establish a follow-up routine to assure the continuing good performance of subscribers, once a course of corrective action has been initiated.

3. Marketing

- Analyze all Business Accounts, three lines or greater (or as agreed upon by each Associated Company), which have been pinpointed as low completing customers. In some cases, Business customers having less than three lines and receiving heavy call volumes may also be appropriately contacted by Marketing.
- Analyze all CPE (Customer Provided Equipment) customers who are low completors. Determine and document all cases where their service is detrimental to the network.
- Work with these customers to evaluate and identify their problems and make all necessary recommendations for improved service.
- Where insufficient lines have been identified as the cause of any customer's poor service, perform the

Sales functions which become involved.)

- Establish a follow-up routine to assure the continuing good performance of subscribers once a course of corrective action has been initiated.)

4. Commercial

- Analyze all Business Accounts having less than three lines (or as agreed upon by the Associated Company), and all Resident Accounts which have been pinpointed as poor completing customers.)
- Work with these customers to evaluate and identify their problems and make all necessary recommendations for improved service, or where appropriate, refer to Marketing.
- Establish a follow-up routine to assure the continuing good performance of subscribers once a course of corrective action has been initiated.)

5. Engineering

- Determine the adequacy of all Central Office Equipment.
- Assure the timeliness of all pending equipment relief jobs.

6. Independent Company Relations

- Work with all Independent Companies in completion improvement activities.)
- Provide these Independents with the monthly Network Completion Results and any other appropriate service indicators.)
- Provide any technical assistance which may be required.)
- Establish an Improvement Action and Feedback routine to assure)

Inter-Company awareness of activities.

7. Long Lines — Operations

- Work with the Associated Company Network Administration and Central Office forces to define and correct causes of network blockages and failures wherever they exist.
- Analyze the NCR and CLR Reports as well as all available Service Indicators to identify any weakspot areas.
- Develop effective service analysis programs to determine the causes of trouble conditions.
- Develop, evaluate and use all analysis tools which may prove helpful in improvement activities.
- Assure the adequacy and proper functioning of facilities and equipment.
- Establish an Improvement Action and Feedback routine to assure interdepartmental and inter-company awareness of activities.

8. Long Lines — Business Services and Sales

- Analyze all National Accounts which have been pinpointed as poor completing customers.
- Handle intercity service requirements for customers requiring substantial quantities of interstate private line services.
- Work with these customers to evaluate and identify their problems and make all necessary recommendations for improved service.
- Establish a follow-up routine to assure the continuing good performance of subscribers once a course of corrective action has been initiated.

- Provide channels for escalations of unresolved local problems Customer Headquarters level on Long Lines serviced accounts (Customer Headquarters not in same serving Company territory).

- Advise on customer matters and/or pending Long Lines Sales activity related to identified cases.

(c) Analysis Techniques.

Section 5 describes the factors which cause ineffective attempts on the Network as measured by the Network Completion Studies. There are several analysis techniques which may be used to pinpoint an Area's or NNX's specific problems. The following Terminating and Originating Analyses are a recommended approach to identifying problem causes.

1. Terminating Analysis

1.1 Although the Network Completion Study is based on an Originating call measurement, the most frequently used NCR and CLR reports primarily give terminating Network Completion data. Network Completion improvement activities should center upon the causes of non-completed calls using these results as a barometer of their effectiveness.

1.2 The first step is an analysis of Terminating completion is to pinpoint the problem areas. When studying an NPA, an examination of the volumes and percent completion from all other NPA's should be made. NCR Report 17 summarizes this data. These results are then compared to each NPA's completion rate to the entire Region which the terminating NPA under study works in (Report 3 data). All major differences should be reviewed with the Long Lines Network Completion Coordinator to identify any possible blockage.

1.2.1 If a specific NPA to NPA poor completion rate is identified, a diagram of the configuration of the subtending network to determine the trunking, wiring, and switching hierarchy, should be reviewed with identification of homing arrangements, including high usage and final trunk groups that may first route to primary and toll centers from all switching centers. All possible routes of each call must be known so that potential

blockages can be spotted. In addition, an evaluation of network complexity to identify if there is unnecessary or excessive switching should be made. Are there sufficient high usage groups established? Are final trunk groups receiving too high utilization, indicating that more high usage groups should be established?

1.2.2 Trunk performance information should be gathered to include all trunk groups blocking at P.03 and higher; overdue trunks and planned order complete dates; and unusual trunk outages and trouble rates. It is recommended that data on actual offered and carried loads on high usage trunks be compared to the trunk forecast to evaluate the relative effectiveness of the high usage layout in carrying the maximum amount of traffic without requiring switching.

1.2.3 Review of all the toll switching machine performance information available is required. Exhibit 5 is a suggested form to be used in developing a toll machine profile. Any machine exceeding the following weakspot levels should receive special attention: 2% ineffective machine attempts (average busy hour, total month); 1.2% reorder component; 1.2% NC (NC-IT plus NC-TC); 1.0% SADR for five or more days per month; and any measurable amount of SOA. The trunk groups causing NC problems need to be identified and corrective action taken. Ineffective machine attempts outside the busy hour should be well below 2%. Periodic total day review by hour will determine whether the machine is performing at such reduced levels, or whether it requires a detailed non-busy hour performance check.

1.2.4 At those toll switching centers where ineffective attempts cannot be measured on traffic registers (e.g., SXS intertoll and Independent Company offices), arrangements should be made to take special service observations on either the incoming trunks at the CSP or on the outgoing trunks to the CSP at the next higher ranking office. The need is to identify whether the blockages are in the intertoll trains of the switching machines or in the end offices that home on the toll switches.

1.3 After analysis of the completion to an entire NPA, an examination of the terminating NPA in detail should be made utilizing NCR Report 12 as an indicator. This study should start with the highest level of switching within the NPA and follow the switching hierarchy down the chain

from the sectional center to primary centers, toll centers, each NNX within the toll center, and finally line numbers with the NNX. Differences in completion between sectional centers, primary centers, and toll centers should be evaluated through the switching performance and relative efficiency of the trunking network. HNPA traffic in many companies is routed and switched differently than FNPA traffic, and the completion of these calls must be analyzed separately. NCR Report 13 shows the percent completion of HNPA calls by terminating company toll center and NNX. Analysis of completing sectional, primary and toll centers may be made using the approaches described in 1.2.

1.4 The key to completion improvement is the detailed analysis of individual NNX's. Of special importance is the establishment of an optimum completion objective for each NNX and a specified target date to reach that objective. As discussed in Section 3 on Network Completion objectives, several Associated Companies and Bell Laboratories are undertaking a trial to study NNX variables and set objectives based on these characteristics. Exhibit 6 is a suggested form which can be used to list the key items characterizing each entity.

A number of companies, however, have used an interim method of setting NNX objectives using a historical curve relating the percent completion to the percent business. NNX's having a low percentage of business telephones will likely have lower completion results. NNX's which do not fall within reasonable relationship to the curve and have high call volumes are candidates for detailed investigation. In selecting the NNX for improvement, consideration should be given to attempt volumes, percent completion, and the effect the NNX has on toll center and NPA completion results. For example, some NNX's have low completion but also low call volumes, and, therefore, should not be prime candidates for attention on a priority basis. Conversely, certain NNX's with completion rates above 70% which also have high call volumes can be improved significantly by concentrating on selected business subscribers. NNX's served by the same toll center should be compared, to determine if completion performance varies significantly among the NNX's. Where this occurs, reasons for the differences should be explored.

1.4.1 The details of a specific terminating NNX analysis will vary with the type of end

office. The following is a general analysis technique for all end offices:

- (1) Adequacy and accessibility of trunks at originating or intermediate locations should be verified. Connections per Circuit Hour (CCH) should be calculated using data where .5% or greater overflow was incurred. At lower levels, and especially at zero percent overflow, the completions will be down due to lack of offered demand and, therefore, will not be comparable. CCH is primarily a function of occupancy and holding time and will vary from trunk group to trunk group. A range 7 to 10 CCH on two-way trunk groups and 15-20 CCH on one-way trunk groups may be considered reasonable; however, the real value of this indicator is to look for wide fluctuations from day to day. A low CCH may indicate trunks out of service while a high CCH may indicate a high level of short holding time ineffective attempts.
- (2) A high level of CCH may be due to incoming register congestion. Does percent occupancy on terminating common equipment agree with stated objective levels? Data should be gathered and analyzed by individual components wherever available. For example, in a XB 5 office, analysis of an Incoming Register group may indicate an unbalanced load on an individual group as opposed to an overall excess capacity on all Incoming Registers. For an Incoming Register group of 10 registers (maximum size) any occupancies beyond 50% (the average 10 high day criterion) should be reviewed as service affecting. Similarly, a shortage of terminating senders, by type of pulsing, may be indicated while an overall adequacy of terminating senders is estimated.
- (3) In addition to occupancy, the average holding time should be calculated on common equipment and individual components if available. Division E, Section 5 of the Dial Facilities Man-

agement Practice contains reasonable limit criteria for holding times. An example of excessive holding times on incoming registers may be indicative of completion marker congestion or excessive completing marker maintenance outage in a XB 5 type office. Occupancy should be calculated and for 3 or more markers, levels exceeding 70% (average 10 high day criterion) may be considered service affecting.

- (4) Review link congestion. The percent incoming matching loss is the most direct method for measuring link congestion. Two percent is the maximum for busy hour, average busy season design. Offices with a high level of station busies and/or PBX recycle lines will show a lower matching loss by this measurement than actually exists.
- (5) Request Plant to verify correct operation of all the above indicator registers. Verify that the standard BSP methods are employed when trunks or equipment are removed from service. Checks should be made to determine that Trunks Out of Service limits are not exceeded.
- (6) Contact the Repair Service Bureau analyzer to determine if any trouble patterns can be established. Are there similar trouble reports (Operator and/or Customer) such as Don't Answer, Busy, Can't Hear, Cross Talk, and especially, Can't be Called, etc.? Determine if a particular line choice, line link network, or line link frame is predominant.

1.4.2 The most important step in end office analysis, as well as in overall network service improvement, is Corrective Action and Follow-up. When all the appropriate data have been collected and the problems identified, they should be separated between those which will respond to corrective action in a short term and those requiring longer time frames for correction, such as major machine relief jobs. The responsibility for corrective action should be assigned to

the individuals involved and include time tables and a specific numerical objective to measure progress and service improvement results.

1.5 In conjunction with defining any end office trouble conditions, the analysis of an NNX should include the study of customers who are contributing to poor terminating service. In selecting NNX's in which work will be done with customers, comparisons should be made among predominantly business NNX's. Completion percentage to resident lines is less than to business. The high incoming volumes to businesses make them large contributors in absolute terms to BY-DA failures. An NNX which includes many businesses may have a better completion than the average for the NPA, but still be a good candidate for work designed to improve completions.

1.5.1 In order to determine NNX's with High BY-DA Failure rates, periodic special summaries of Dial Line and Incoming Trunk Service observations may be used. These observations should be summarized on a terminating NNX basis. G.L. 70-11-061, dated November 13, 1970, announced the availability of Incoming First Failure to Match (IFFM) registers for crossbar offices. As part of this development, registers were also provided to count the total incoming calls encountering a line busy condition. It is recommended that these registers (if not already done) be installed as soon as possible in order to identify those offices with high percent busy.

1.6 Through the use and analysis of the Called Line Reports, individual line numbers or customers are identified as poor completors. After identification of the customer who has a high level of ineffective attempts, the causes for the non-completions must be determined.

1.6.1 Call Disposition devices as well as service observations (discussed in Section 7) may be used to identify lines with high BY-DA rates. ATB and LTB register readings and trunk usage data, which are regularly obtained on PBX/CTX and ACD trunk groups, indicate trunk group adequacy. The adequacy of these trunks and the accessibility of all trunks must be determined. Subscriber line overflow and usage studies are taken on PBX/CTX and ACD trunk groups and on other business and resident lines. These data indicate customers who are causing BY problems.

1.6.2 Service Advisor records of methods of operation of customers in the problem NNX's should be reviewed. Attention should be focused on those businesses who have caused BY/DA's in the past due to poor methods of operation; these customers need to be looked at by the service advisor to see if past action has produced good call handling procedures or if more work is needed to correct a continuing poor situation. This may involve gathering additional data which will show the customer what he is doing to his own subscribers; that is, the poor service he is providing. The first step to improvement is convincing the customer it is to his advantage to provide good telecommunications service for his customers.

1.6.3 In analyzing a customer's service, after determining that the Central Office or customer equipment malfunctions are not the cause of ineffective attempts, but that the problem lies within the customer system or its operation, several considerations must be made:

1. Determine whether the attendant is involved in other activities besides operating, causing slow answering of incoming calls.
2. Determine whether attendants place calls for station users who have the ability to dial their own calls. This takes the attendant away from the primary job of handling incoming traffic and creates slow answers.
3. Determine whether the customer has enough personnel to handle the volume of incoming calls.
4. Determine whether there are sufficient lines in all departments.
5. Determine whether there are sufficient lines but insufficient answering points. Each line may appear at only one location without a back-up answering point. Multiple answering points allow for more completions.
6. Determine whether the station users have poor calling habits.
7. Determine whether station users receive

Reorder signals or no ring conditions when attempting to place a call. This could mean the customer has a balancing problem or lack of adequate switching equipment.

8. Determine if the customer is using proper force procedures and well trained people to man the switchboards, consoles, ACD's or key telephones.
9. Determine whether there are sufficient incoming trunks.
10. Determine whether there are any adverse conditions at the PBX locations or in the equipment room which could be service affecting.
11. Determine whether the customer is having an inflated volume of incoming traffic due to advertising campaigns. G.L. 73-09-201, dated September 26, 1973, discusses policy objectives for handling these mass calling situations.
12. In the case of CTX or multiple locations in the same service area, check directory listings (White and Yellow Pages) for proper identification by organization and/or department. Also, check Directory Services Frequently Called Number listings to determine if all locations and/or major departments which receive large volumes of incoming traffic are listed.
13. If Customer Calling Features are available, examine possible use of Call Waiting and/or Call Forwarding to reduce Busy or Don't Answer failures.

1.6.4 Once the problem has been identified, and sufficient statistical data is gathered to convince the customer that improvement is needed, a course of corrective action can be planned. Division B, Section 11 of the Business Service Management Practice describes some recommendations which, if implemented by the customer, will improve their service as well as Network Completion.

2. Originating Analysis

2.1 The Network Call Completion Study is based on total NPA originating data. Data

for individual originating AMA recorder groups are not identified in the NCR and CLR reports, but as described in Appendix C, it is recommended that each company have available, originating data by recorder group or recording locations and that these recorder groups also be summarized by toll center and primary center. In addition, data on originating recorder group completion by terminating NPA-NNX for each home company NPA and HNPA plus certain high volume adjacent NPA's should be available. These data are essential for an originating analysis.

2.1.1 Network Completion Studies include only those attempts that have an initial entry on AMA tapes. This point is important to note in making an originating analysis. These studies measure customer network service from the point of reaching the recording location and obtaining an outgoing trunk from this recording location. Thus, there are differences between offices with LAMA and those which must switch to a CAMA location (Exhibit 1). With CAMA, the initial tape entries (indicating an attempt) are not made until an outgoing trunk is obtained. It must be realized that Network Completion Studies do not reflect unsuccessful attempts to get a trunk or LAMA junctor out of a Class 5 Office and in the case of CAMA, to also get a trunk out of the recording tandem.

2.2 Report 2, which gives originating Region completion rates to each Region by NPA, and Report 3, which gives System Completion to Regions by NPA should be analyzed and significant differences between Region completion rates should be investigated, particularly trunking and routing patterns.

2.3 Report 1 of the NCR reports gives completion data from an originating NPA to all other Regions by NPA. These originating data should be examined to determine which Regions and NPA's are the most difficult to reach. First, the total percent completion to FNPA's is compared with the System originating FNPA data. Second, completion to each Network Region is examined and compared with System Completion to that Region. Next, completion to each NPA within each Region is compared. The suggested procedures described in 1.2 of this section (6c) may be beneficial in this analysis.

2.4 In analyzing high volume adjacent NPA or HNPA completion results, data should be

gathered on originating NPA to terminating NPA-NNX. This type of information is available on NCR Report 16 upon request (Appendix E-4). If the recorder groups, toll centers and primary centers in the originating NPA have different routes to the high volume adjacent NPA, separate NPA-NNX summaries by levels of the switching hierarchy are required (Appendix C describes this type of intra-company data as Report 20).

(d) Additional Approaches to Network Completion Improvement.

In addition to the terminating and originating techniques described above, special analysis of other factors involved in the Network Completion Study must be made. These include INWATS completion; Independent Company NNX completion; completion to Special Area Codes; and completion on special study days.

1. INWATS Completion

1.1 The System completion rate to each Interstate and Intrastate INWATS NNX is obtained from NCR Report 12 for NPA 800. These NNX's are grouped by Terminating Company for Interstate INWATS calls and under one heading, "INTRASTATE", for Intrastate INWATS calls. It must be noted that Intrastate NNX's can be repeated in more than one Company while an Interstate NNX is unique to a Company. Total System INWATS results are also given.

CLR Reports 32 through 35 give detailed attempt and message information on all INWATS line numbers and data on originating NPA completion to INWATS NNX's. (Described in Appendix B.)

These reports should be compared and analyzed. Where there is a low completion rate from an originating NPA to a terminating INWATS NNX (CLR Report 33), trunking, routing and switching checks should be made. When an individual line number is identified as a poor completer (CLR Reports 32 and 34), customer investigation is required.

1.2 In addition to the NCR and CLR Reports, the WATS-ATS (WATS Analysis and Tracking System) report is furnished monthly to each Company. G.L. 72-10-110, dated January 24, 1972 requested the installation of registers on all Interstate Inward WATS lines to record usage,

completed messages and overflows. The WATS-ATS report gives the readings of these registers and can be analyzed to identify those customers with poor completion rates. G.L. 73-05-165, dated May 22, 1973, suggests several Inward WATS completion improvement and sales recommendations.

2. Independent Company NNX Completion

2.1 As discussed in Section 5, one of the major factors affecting Network Completion is Independent Company problems. Each Bell company must undertake activities to obtain full support and participation from the Independent Companies to improve network service and completion.

2.2 G.L. 73-09-127, dated September 17, 1973, describes an Independent Company Network Completion Program as presented and utilized by Illinois Bell. The major considerations of this program are noteworthy:

- (1) Commitment to the Program from Independent Company top management. This may be the key to obtaining an industry-wide program to improve network service and completion as well as laying the ground work for cooperation and participation from the personnel in all of the companies.
- (2) Establishment of an Independent Company DDD Task Force. This may be needed to develop and implement a DDD service improvement program.
- (3) Establishment of a Bell-Independent DDD Steering Committee. The primary function of this committee is to allow each company representative to report on his DDD service improvement program. It also provides the opportunity to relate experiences, exchange ideas, talk out problems, and recognize each Company's efforts to improve DDD service in the industry.
- (4) Assignment of an Independent Company representative to the Bell Company's DDD service Bureau. This strengthens the Bureau by providing industry participation as well as providing the representative with additional experience and

knowledge to carry back to his respective company. It provides Bureau personnel with much needed technical terminology regarding equipment used by other companies, and it opens up additional communication channels among field people in all companies.

- (5) Provide Monthly Results to the Independent Company representatives. This should include both Network Completion results (NCR and CLR) and Incoming Trunk Service Observing Results.
- (6) Trunking Facilities Checks — The Bell Company should work with the Independents to insure that all trunk relief jobs are provided prior to busy season. This requires coordinated analysis of current usage data to identify changes in traffic volumes.
- (7) Independent Company Relations Participation. This is required for the continuation of a working liaison between the Independent and Bell System Companies.

3. Completion to Special Area Codes

3.1 Completion to Special Area Codes, such as TWX codes (510, 610, etc.) and non-Bell Canadian NPA codes, as well as NPA's 808, 809, 903, are included in the total System completion results and not in any Operating Company results. An NCR Report 12 will, however, be prepared for each of these NPA codes, and Company Network Completion Coordinators, in the case of TWX codes, can identify the NNX codes which are their responsibilities.

3.2 In addition to a terminating analysis of TWX codes, each Company has the responsibility of verifying its originating completion rate to the non-Bell NPA's. Comparative analysis should be undertaken, and where there are significant completion differences identified, trunking, routing and switching investigations should be made.

4. Completion on Special Study Days

4.1 Network Completion Studies are also obtained on peak traffic days such as

Christmas and Mother's Day. Analysis by individual originating recorder group and originating toll center on these days may provide valuable information. Studies in the past have indicated major differences in originating percent completion between recorder groups in the same toll center and between toll centers in the same primary center area. This is usually due to different trunking and routing configurations. With Network Completion results available, network managers will have a greater knowledge of the individual effect of their control actions which will enable them to better equalize the opportunities for completion. Network Completion results should be used also to help determine the priorities for peak day trunk augments. The attempt and message data indicate the relative call pressures on a point to point basis without as much bias from network management activities as trunk usage data. The two when used together will enable a better placement and utilization of peak day augments, and will also be valuable in both planning and then analyzing network control activities.

7. TOOLS OR AIDS TO NETWORK COMPLETION IMPROVEMENT

As stated in the Introduction, Network Completion data is utilized as a "bottom line" indicator of our success in maximizing the use of the network to generate revenue producing messages. These studies give data on the relationship between the number of completed messages to the number of total attempts made. They are capable of pinpointing low completing originating recorder groups, terminating NNX's and terminating line numbers.

The Network Completion Study is not capable of detailing the causes of ineffective attempts (as they are described in Section 5 of this practice on Factors Affecting Network Completion). In order for Network Completion Improvement activities to be effective, causes for ineffective attempts must be determined and corrective action taken.

Presently, there are numerous methods of obtaining call disposition information as well as the disposition of ineffective attempts. Some newly developed tools or aids to Network Completion Improvement may be categorized into four types:

1. Test Sets

2. Call Disposition Devices
3. Mechanized Performance Measurements
4. Special Computerized Data

The following is a brief description of some analysis tools being used:

1. Test Sets

1.1 SLOT SET (Simulated Load Operational Test Set). This is a set manufactured by Mutphy Laboratories, Houston, Texas, which has the capability to originate from one to twenty simultaneous calls directed to a test number. It can be used to originate a volume of attempts to test the ability of the equipment to handle calls during heavy traffic periods. The set can be used from toll switchboards (adaptable for use with MF pulsing) or from toll testboards. Access to the network is gained through tandem or direct trunks into a crossbar machine (4A, XBT, or No. 5).

The kinds of troubles which this test set detects include:

- (a) No Ring troubles.
- (b) False or Reversed Supervision.
 - (1) Charge on Busy.
 - (2) Charge on Reorder (120 IPM).
 - (3) No Charge on Answer.
- (c) Wrong Numbers or Misrouted Calls.
- (d) Transmission Problems.
- (e) Failure to Access Trunks.
- (f) Idle Indicator Troubles at Switchboards.

1.2 TTS 41 SAU-2 Service Analyzer Unit (SUZY SET). This test set is manufactured by the Northeast Electronics Corporation, Concord, New Hampshire. This unit repeatedly originates calls from one to ten different lines in sequence to a 1000 Hz or an assigned connector terminal and verifies that the call was completed. Peg count registers are provided for total calls, total busies, and total failures. The unit may be programmed to hold the connection when a failure

is encountered, or recycle on a failure and peg the failure register.

1.3 GOATS (Group Operational Access Test Set). This unit manufactured by Western Electric, is an automatic dialer which has been specifically designed to assist in performing Access and Route Verification tests of 4A switching machines. It does this by mechanizing the repetitive dialing sequence which must be done to perform these tests. Prior to using the GOATS set for testing, an entire completing field group layout should be obtained. This information should include both the direct and alternate routine configurations.

The GOATS testing sequence is as follows:

- (a) Seize an outgoing tandem trunk.
- (b) Key pulse the required test number.
- (c) Lock-out the trunks selected by the 4A.
- (d) Release the OGT.

This sequence is repeated the number of times required to Access each trunk group under test; or the sequence is repeated the number of times required to Route Verify a code with each decoder working in an office. The test code is then changed and the test sequence repeated.

2. Call Disposition Devices

2.1 UDR (Universal Data Recorder) — designed and built by Porta Systems, Inc. of Syosett, New York. This device is primarily used as a "hidden trouble" locating set; i.e., "hidden trouble" meaning trouble that does not show up on existing test frames or trouble indicators.

The UDR has the capabilities of monitoring up to 96 test points on senders, markers, etc., for changes of state, that is, battery or ground applied or removed from these test points. In addition to these 96 data leads, there are 24 start leads and 10 trigger leads which are set to initiate a printout when a change of state occurs on these trigger points. The data is summarized either manually or input to a computer for identification of trouble conditions.

2.2 Alston Service Monitor Recorder — manufactured by Conrac — Alston Corp.,

Azusa, California. This device consists of a Call Selector, Magnetic Recorder and Service Monitor. The Call Selector will monitor 25 trunks, senders, registers, etc., and transfer the data to a tape recorder. Each dial pulse is registered by tones on the tape as well as the disposition of the attempt. The Tape Recorder is attached to the Service Monitor which converts the pulses into NNX and line number. The disposition data must be compiled manually.

2.3 CDA (Call Disposition Analyzer) — manufactured by Northeast Electronics Corporation, Concord, New Hampshire. This device used in conjunction with the TTS 76 SET provides in readable hard copy, the disposition of calls through incoming or outgoing trunk equipment. The device will monitor two or four wire circuits using loop, E&M or MF signaling. The maximum number of trunks that may be monitored is ninety (with 3 access Units used in tandem). Calls are monitored one at a time on a first come, first serve basis.

The Model 2765 system provides clock circuits to determine time of seizure, identification circuits to determine the circuits under tests, off hook supervision detectors (originating and terminating), number dialed or pulsed, busy, reorder and ringing detectors plus an adjustable timing circuit for controlling the CDA reset interval. All of this information is converted for either local printout or as input to a data terminal.

Typical printouts of call dispositions will contain the following information:

- (a) Time of seizure.
- (b) Circuit identification.
- (c) Off-hook Supervision.
- (d) Number dialed or pulsed (MF or DP).
- (e) Call Disposition.
 - (1) Call Complete (ringing detected, ringing stopped, answer supervision).
 - (2) Busy (60 IPM).
 - (3) Reorder (120 IPM).

- (4) Ring, No Answer (ringing detected, no answer supervision).
- (5) False Supervision (ringing detected, ringing stopped, no answer supervision).
- (6) No Ring, No Answer (high & dry).
- (7) Answer, No Ring (no ring detected, receipt of answer supervision).
- (8) Calling Party Release (release at originating end before ringing, busy, reorder or answer supervision detected).
- * (9) Computer Answered (Answer supervision with echo suppressor disabling tone detected).
- *(10) Electrical Busy (Overseas feature, electrical busy received).
- (11) Other (All other dispositions).

The data is summarized either manually or input to a computer for identification of trouble conditions.

2.4 ACA (Automatic Call Analyzer) manufactured by Applied Data Research, Princeton, New Jersey. This device is capable of monitoring up to 64 two wire or 32 four wire (can be expanded to 256 two wire or 128 four wire) originating or terminating trunk equipments to gather call disposition data; and incorporates internal software through the use of a DEC mini-computer (PDP 8). The major features of the ACA include:

- (a) Multi-plexing — allows the simultaneous monitoring of up to 10 calls.
- (b) Instant Analysis — provides real-time output of all call failures on local teletypewriter as determined by the operators.
- (c) Hourly Sorts — summary of call completion results for the past hour by percent disposition.

* *Optional Features*

- (d) Time of Disposition — includes the ability of the computer to measure and record the time from receipt of "Start Pulse" to the actual occurrence of one of the dispositions. This provides average speed of answer information.
- (e) Special Daily Sorts — includes by disposition, by NNX, by trunk.
- (f) Cassette Tape — Cassette tape units can be plugged directly into the machine if complete details of all calls are required, and will automatically be processed by the internal PDP 8 computer.

The detected disposition of calls include:

- (a) Completed call — battery reversal for three seconds or more.
- (b) Busy (60 IPM).
- (c) Reorder (120 IPM).
- (d) No Answer — ringing and originating release.
- (e) High and Dry — no ring and originating release.
- (f) Abort — no ring for a minimum time interval and originating release.
- (g) Recorded Message — ringing followed by absence of any battery state.
- (h) No charge — ringing, then stops and no battery reversal.

The Automatic Call Analyzer prototype is now fully operational and is in use in the New York Telephone Company.

3. Mechanized Performance Measurements

3.1 HERO (Headquarters Reorder System) — developed by AT&T Long Lines to collect, process, analyze and output Ineffective Attempt data and CAMA Automatic Number Identification (ANI) failures in real-time. An exception report printout is provided by trouble type exceeding a pre-set threshold on a teletype terminal in the maintenance center. The trouble record data is

accessed by interfacing the computer to the Auxiliary Recording Control Circuit at the Trouble Recorder.

The System includes a Digital Equipment Corporation (DEC) model PDP 11/45 processor. This hardware is ordered through Western Electric on a furnish-only basis. The installation and cabling of HERO can be completed in approximately one week, requiring no office or equipment modifications to implement the system. HERO has been used for a number of AT&T administered and maintained offices throughout the System.

3.2 COMAS (Computerized Maintenance and Administration System) is designed to be utilized in a Crossbar Tandem equipped with a Trouble Recorder and Record Stuck Sender feature, to mechanize the trouble records that are received by the Central Office Maintenance forces. In lieu of producing a trouble card on Stuck Senders, Unexpected Stops, Trunk Guard Failures and Reorders, the on-site COMAS Computer will receive the data, store it temporarily, determine if a given NNX code or piece of equipment has exceeded a pre-set threshold and then provide the Maintenance Center with an error message via a teletypewriter.

In summary, the COMAS Computer System replaces manual card sorting and provides the Central Offices with information that has high reliability of resulting in found troubles. COMAS can, therefore, be referred to as a "real-time" trouble identification system that will pinpoint Ineffective attempts and extreme terminating office congestion.

3.3 MNA (Mechanized Network Analyzer) utilizes a centralized mini-computer to collect data via a private line data link from various tandems simultaneously. The data received is a record of all the details of calls progressing through the tandem on up to three senders. The information obtained includes the called number, marker delays, marker route advancing, office frame delays, trunk guard testing, terminating delays and outpulsing. Any troubles occurring during any phases of the tandem sender call handling process will be identified by incoming and outgoing sources.

MNA is a 24-hour turnaround system that has the ability to identify failures that are undetectable by other means. It can also identify trends in in-

creasing delays throughout the network before they become major blockages.

3.4 ICUP (Individual Circuit Usage and Peg Count) is a computerized system designed to gather peg count and usage data on equipment through the use of portable TE-300's (manufactured by Telesciences Corporation, Princeton, New Jersey) as data gathering devices. Peg count and usage data is collected on a single lead, utilizing the standard TUR sleeve lead to collect the usage, but at the same time, constantly monitoring the lead to count each time it changes state.

An ICUP trial was initiated resulting in four overall aspects, providing:

- (a) The ability to quickly identify and remove from service defective or "killer" trunks. "Killer" trunks are those frequently selected (high choice) to complete calls but which fail resulting in reattempts. These are characterized by high peg counts with extremely low usage.
- (b) The ability to insure and maintain 100% accurate data.
- (c) The ability to save plant investment (facility gain) because of improved data.
- (d) The ability to reduce central office craft trouble shooting time.

Temporary hook-up onto assigned equipment rather than being hard wired to every terminal in a Central Office is referred to as "MINI-ICUP." This system allows data collection on all exception reports of off-normal, not seized or "killer" trunks directly back to maintenance centers via teletypewriter. The emphasis of "MINI-ICUP" is on maintenance rather than data validity and facility recovery.

Presently, there are several full scale ICUP and MINI-ICUP systems in operation.

4. Special Computerized Data

4.1 Originating Recorder Group AMA information is available to each associated company through the first Wednesday Network

Completion Study tape data. As discussed in Appendix C, it is recommended that each company develop a Report 20 type printout to summarize each originating Recorder Group's completion rates.

4.1.1 COAT (Company-Originating and Terminating) is a computer program designed by the New York Telephone Company to give supplemental data on originating Recorder Group performances. Based on the Network Completion Study accounting tape, the COAT printout includes point to point information by originating NPA to terminating NPA and NNX on an hourly basis giving originating recorder group number, number of attempts, completions, percent completion, and the duration of the completed calls.

This data is used primarily to obtain the originating NNX information as well as percent completion by hour of the day which is not included in the AT&T reports. Routing, trunking, and equipment checks are made when the results show poor completion from one NNX to another. Some types of troubles that have been uncovered through the use of COAT are defective trunks, markers wired incorrectly causing misrouting, and carrier system problems.

4.1.2 AMA Tape Analysis (EBAC — Equipment Billing and Accuracy) is another tool to check recorder group and trunk performance. Computer printouts include all the billing data for calls made by subscribers, for example:

- (a) Date.
- (b) Recorder number which will include 100 trunks.
- (c) Call Identity Index or individual trunk in the 100 series of the recorder.
- (d) The number of calls offered to a particular trunk.
- (e) The number of completed messages.
- (f) The times release disconnect or the number of times the trunk release by having the called subscriber disconnect before the calling subscriber disconnected.

- (g) Single timing line entries — each call should have two such timing entries.

This type of AMA tape analysis should facilitate maintenance as well as billing trouble identification.

4.2 Completion Trend Analysis — Long Lines, South Central and Southern Bell have collaborated to design and produce completion results trend reports. Based on the Network Completion Study data obtained from mag tapes furnished by AT&T Comptrollers, a computerized report is prepared comparing current months results with the previous month's and the same month last year. The NNX's are listed in order of most negative completion change which speeds the identifying and analyzing process. A percent change is computed for attempts, completions and non-completions.

AT&T is planning to implement these reports on a System-wide basis as part of the Network Completion Study.

4.3 NOTIS (Network Operations Trouble Information System) is designed to standardize analysis methods for investigation and clearing trouble conditions reported by Traffic Service Position System (TSPS) and Manual Cord Board Operators. NOTIS provides classification and patterning of troubles through the use of a centralized computer. Through this process, network troubles are identified, isolated and cleared much quicker, thereby reducing the number of ineffective attempts and increasing revenue producing calls. The type of trouble conditions identified include:

- (a) Wrong number or reached intercept improperly.
- (b) No ring, no answer.
- (c) Noisy, crosstalk or garble.
- (d) Can't hear or can't be heard.
- (e) Improper (false) supervision.
- (f) Cut off.
- (g) Reorder or announcement.
- (h) Ring, no answer or no operator answer.

4.4 WATS-ATS (WATS Analysis and Tracking System) is a computerized program giving usage data on all Interstate INWATS lines. As discussed in Section 6(d) of this practice, the WATS-ATS report aids in the analysis of poor completing INWATS customers.

WATS-ATS can be a useful completion analysis tool. Comparison of CLR and ATS data can be utilized to:

- (a) Verify ATS data.
- (b) Determine if the problem is network or customer oriented.
- (c) Used in conjunction with previously developed call distribution data (Busy Day, Busy Hour distribution), to develop and support Traffic-Engineering service recommendations.

8. ROLE OF NETWORK SERVICE CENTERS IN NETWORK COMPLETION IMPROVEMENT

The Bell System Practice, Section 010-401-000, discusses the Network Service Improvement Plan on Building an effective Network Service Center. These Centers were organized to provide a specialized maintenance force to coordinate efforts to reduce Network troubles by receiving, analyzing, detecting, and referring trouble conditions for correction.

The Network Service Centers are composed of two groups dedicated to the improvement of Network Service:

1. Network Service Center personnel have the responsibility of collecting and integrating trouble reports for its control area. The Center analyzes these reports and then assists the field in the correction of the trouble condition.
2. The NSC Task Force is a group of representatives from various departments involved in Network performance, including Engineering, Independent Relations, Network Administration, Operator Services, C.O. Maintenance, Comptrollers/Accounting, Public Relations, Marketing, and Long Lines. The primary responsibility of the Task Force members is to make sure that

the Center is receiving the appropriate interdepartmental support in its Network improvement activities.

A fully operational Network Service Center has a number of responsibilities, including:

1. Collection, integration and analysis of data from various sources — Call Completion Results, Service Observations, Operator and Customer trouble reports, Credit Requests, Billing Tapes (AMA), etc.
2. Referral of trouble patterns to the appropriate field forces and follow up to assure the faulty conditions are corrected.
3. Identification of "weak spots" from available indicators and concentration of efforts to improve.
4. Scheduling and coordination of programs requiring supplemental observations, special tests, or selective hold and trace operations to correct chronic or marginal trouble conditions.
5. Advising the Task Force members, Service Improvement Committee and higher management of situations where assistance is required.

Although many of the data sources used by the NSC and much of their efforts are more directly aimed at specific trouble identification and correction, the use of Call Completion Results can not be slighted. Patterns of low completion in Regions, NPA's, NNX's, Toll Centers, or Recorder Groups should be highlighted in conjunction with other trouble detection programs and Task Force Activities.

Communication and cooperation between the Network Service Center and the Network Service Improvement Committee is needed in the evaluation of Call Completion data to insure a coordination of effort in correcting conditions contributing to poor completion. (Exhibit 3 shows the interface between the groups involved.)

9. ROLE OF THE LONG LINES AREA NETWORK SERVICE CENTERS IN NETWORK COMPLETION IMPROVEMENT

The Bell System Practices, Issue 2, Section

010-401-020, discusses the organization and responsibilities of the Long Lines Area Network Service Centers. The objectives of these centers are to improve DDD service through the detection and correction of network problems using FNPA trouble data from all locations.

A fully operational Area Network Service Center will have the following responsibilities:

1. Collection, Analysis, Detection and Correction of network troubles.
2. Detection of deficiencies in Planning, Operations, Maintenance, and Administration of the network.
3. Improve the ability to measure network service.
4. Provide an interface with the Associated Companies' Network Service Centers.
5. Interface with other Area Network Service Centers.
6. Analyze interstate customer trouble reports.
7. Provide assistance and direction to Switching Center groups.
8. Coordinate Network Improvement Activities.

The responsibilities listed above directly involve Network Completion results as a measurement of the effectiveness of improvement activities. Item 8 is specifically concerned with the analysis of Network Completion data which furnishes weak-spot information used to coordinate DDD improvement activities.

Each of the Area Network Service Centers receives the Network Completion Reports for its area from the National Network Service Center located in the Long Lines Headquarters, Network Operations Department. Section 19 of the Bell System Practices cited above discusses the responsibilities of Long Lines in Network Completion Improvement activities (also described in Section 6(b) of this practice), and states that the Area Network Service Centers will function as the Long Lines Area Call Completion Coordinators. As such, the

Area Network Service Centers will undertake the analysis and evaluation of the Network Completion and Called Line Reports as well as other service indicators, e.g., NOTIS. They will aid in the development of analysis tools and interface with the Associated Companies' Network Completion Committee and Network Analysis Centers, and AT&T in Network Completion improvement activities. Exhibit 3 is a description of the coordinated

analysis to be made by each participating service center and improvement committee.

In addition, the Long Lines Headquarters Call Completion Committee has issued a Handbook, entitled "Network Call Completion," which describes in detail each Area's and/or Organization's activities in service improvement.

SYSTEM NETWORK COMPLETION STUDY

NETWORK COMPLETION REPORTS

(NCR)

REPORT 1

PERCENT COMPLETION ORIGINATING NPA TO REGIONS BY NPA

Description:

This report lists completion data from an individual NPA to all other NPA's with the terminating NPA's grouped by Network Regions. When an NPA is served by more than one company, a separate report is made for each originating NPA - Company combination.

Each NPA has been assigned to a specific Network Region. There are cases where an NPA is served by two Network Regions. For instance, Idaho (208) is split between Denver and Sacramento Regions. The largest part of this NPA is in the Denver Region. Therefore 208 has been assigned to Denver Region.

"555" attempts are listed separately and are shown both included and excluded in the total attempts to each NPA.

HNPA data are shown on page 3 of Report 1 and includes all home area toll calls originating within an NPA - Company without regard to the terminating company.

Total Completion includes all attempts to special NPA codes such as 800, 808, 510, etc., as well as Regina Region even though Regina is not Bell System. All calls for codes "Other NPA" (800, 510, etc.), are computed as FNPA even though some may be HNPA.

Page 2 of Report 1 for NPA 315 served by New York is illustrated on Page 2. It should be noted that there are no data shown for 315 in the listing of the White Plains Region data. These data are shown in the totals on Page 3 of Report 1 as HNPA.

Principal Use:

Report 1 is used to determine a specific NPA's percent completion to all other NPA's. A comparative analysis should be made; where low completion exists, routing, trunking and switching checks are necessary.

Report 1 of NCR should be compared to the Associated Company's supplemental Report 1 data (Appendix C) for accuracy of Originating NPA information.

PERCENT COMPLETION ORIGINATING NPA TO REGIONS BY NPA

COMPANY NEW YORK

02/06/74 TOTAL DAY

REGION WHITE PLAINS

TO REGION

TERMINATING FNPA

TO REGION	TOTAL	314	316	417	501	502	618	816	901	913	
ST. LOUIS	TOTAL	314	316	417	501	502	618	816	901	913	
	ATTS	1171	298	83	23	87	212	71	153	159	85
	COMPL	792	229	42	17	56	152	51	91	103	51
	% COMPL	67.6	76.8	50.6	73.9	64.4	71.7	71.8	59.5	64.8	60.0
	555 ATTS	90	19	6	1	6	14	2	19	10	13
	ATTS-EX. 555	1081	279	77	22	81	208	69	134	149	72
	% COMPL-EX.555	73.3	82.1	54.5	77.3	69.1	76/8	73/9	67.9	69.1	70.8
SAN BRNDO	TOTAL	213	602	714	805						
	ATTS	1791	827	398	454	112					
	COMPL	1098	553	207	265	73					
	% COMPL	61.3	66.9	52.0	58.4	65.2					
	555 ATTS	119	51	36	30	2					
	ATTS-EX. 555	1672	776	362	424	110					
	% COMPL-EX.555	65.7	71.3	57.2	62.5	66.4					
WAYNE	TOTAL	202	215	301	302	609	703	717	804		
	ATTS	9731	677	2697	1286	253	966	748	2566	538	
	COMPL	6240	397	1839	776	142	671	420	1678	317	
	% COMPL	64.1	58.6	68.2	60.3	56.1	69.5	56.1	65.4	58.9	
	555 ATTS	535	77	124	71	14	43	49	126	31	
	ATTS-EX. 555	9196	600	2573	1215	239	926	699	2440	507	
	% COMPL-EX.555	67.9	66.2	71.5	63.9	59.4	72.7	60.1	68.8	62.5	
WHITE PLAINS	TOTAL	201	203	207	212	315	401	413	516	518	
	ATTS	83613	4237	2432	462	7602	422	865	2208	14393	
	COMPL	55703	2849	1723	299	4985	281	567	1367	9281	
	% COMPL	66.6	67.2	70.8	64.7	65.6	66.6	65.5	61.9	64.5	
	555 ATTS	4492	228	126	50	451	30	50	138	784	
	ATTS-EX. 555	79121	4009	2306	412	7151	392	815	2070	13609	
	% COMPL-EX.555	70.4	71.1	74.7	72.6	69.7	71.7	69.6	66.0	68.2	

REPORT 2

PERCENT COMPLETION ORIGINATING REGION TO REGIONS BY NPA

Description:

This report is a summary of all the originating NPA - Company combinations within each Network Region to all Network Regions by terminating NPA.

HNPA is a total of all HNPA traffic within the home region. There are FNPA attempts within the home region.

All remarks applying to Report 1 also apply to this report.

The example on Page 4 illustrates Page 2 of the Report 2 for White Plains Region.

Principal Use:

Report 2 is used to determine a specific Regions Originating percent completion to all other Regions. A comparative analysis should be made by the Regional Centers; where low completion exists, trunking, routing and switching checks are necessary.

PERCENT COMPLETION ORIGINATING REGION TO REGIONS BY NPA

02/06/74 TOTAL DAY

TO REGION

TERMINATING FNPA

SACRAMENTO	TOTAL	206	209	408	415	503	509	702	707	916
ATTS	69961	9067	2824	7464	34141	6292	1592	3525	1545	3511
COMPL	43213	5692	1557	4586	21925	3998	901	1917	784	1853
% COMP	61.8	62.8	55.1	61.4	64.2	63.5	56.6	54.4	50.7	52.8
555 ATTS	5982	824	298	516	2595	554	142	480	181	392
% COMP-EX 555	67.5	69.1	61.6	66.0	69.5	69.7	62.1	63.0	57.5	59.4
ST. LOUIS	TOTAL	314	316	417	501	502	618	816	901	913
ATTS	61050	18197	3381	1305	4967	8589	2758	9073	7649	5131
COMPL	40194	12660	1907	757	3093	5444	1754	6255	5170	3154
% COMP	65.8	69.6	56.4	58.0	62.3	63.4	63.6	68.9	67.6	61.6
555 ATTS	4561	1225	300	133	448	620	227	618	538	452
% COMP-EX 555	71.2	74.6	61.9	64.6	68.4	68.3	69.3	74.0	72.7	67.4
SAN BRNDO	TOTAL	213	602	714	805					
ATTS	106849	69287	12203	20970	4389					
COMPL	66086	44449	6976	12197	2464					
% COMP	61.8	64.2	57.2	58.2	56.1					
555 ATTS	7786	4701	993	1770	322					
% COMP-EX 555	66.7	68.8	62.2	63.5	60.6					
WAYNE	TOTAL	202	215	301	302	609	703	717	804	
ATTS	633553	56657	171053	74325	15397	170616	34346	80092	31067	
COMPL	390916	34930	109750	46394	9013	105746	18038	47928	19117	
% COMP	61.7	61.7	64.2	62.4	58.5	62.0	52.5	59.8	61.5	
555 ATTS	37884	4581	10556	4124	942	8463	2813	5040	1365	
% COMP-EX 555	65.6	67.1	68.4	66.1	62.4	65.2	57.2	63.9	64.4	

REPORT 3

SYSTEM COMPLETION TO REGIONS BY NPA

Description:

This report is a summary of Report 2 showing System Completion from all Regions to each Region by NPA.

All remarks applying to Reports 1 and 2 also apply to this report.

Page 6 illustrates Page 1 of Report 3.

Principal Use:

Report 3 is used to determine a specific Regions Terminating percent completion from all other Regions. Together with Report 2, a comparative analysis should be made by the Regional Centers; where low completion exists, trunking, routing and switching checks are necessary.

SYSTEM COMPLETION TO REGIONS BY NPA

02/06/74 TOTAL DAY

TO REGION

TERMINATING FNPA

TO REGION		TOTAL	214	405	512	713	806	817	915	918	
DALLAS	ATTS	1221991	260534	126058	161705	270184	55321	151556	101050	95583	
	COMPL	707608	163123	72558	89075	157716	32323	85589	48890	58334	
	% COMP	57.9	62.6	57.6	55.1	58.4	58.4	56.5	48.4	61.0	
	555 ATTS	92183	19158	9667	14539	17001	4339	12183	7742	7554	
	% COMP-EX 555	62.6	67.6	62.3	60.5	62.3	63.4	61.4	52.4	66.3	
DENVER	TOTAL		208	303	307	406	505	801			
	ATTS	447407	62265	180885	30920	41001	65485	66851			
	COMPL	263221	36750	107438	17751	23061	37579	40642			
	% COMP	58.8	59.0	59.4	57.4	56.2	57.4	50.8			
	555 ATTS	33831	4790	13576	2641	3670	5021	4133			
	% COMP-EX 555	63.6	63.9	64.2	62.8	61.8	62.2	64.8			
NORWAY	TOTAL		217	218	219	308	309	312	317	319	402
	ATTS	2708007	102189	56458	188533	21586	77675	626712	142578	83265	92191
	COMPL	1731519	62053	33172	116831	12395	46332	432806	88049	53524	58139
	% COMP	63.9	60.7	58.8	62.0	57.4	59.6	69.1	61.8	64.3	63.1
	555 ATTS	178291	7587	4964	10201	2092	5671	30989	10376	6184	6553
	% COMP-EX 555	68.4	65.6	64.4	65.5	63.6	64.3	72.7	66.6	69.4	67.9
NORWAY (CONT.)			414	507	515	605	608	612	616	701	712
	ATTS		194933	63739	101274	42382	86604	186636	163758	37923	49660
	COMPL		130998	38362	61512	25244	53348	125498	101967	22811	30892
	% COMP		67.2	60.2	60.7	59.6	61.6	67.2	62.3	60.2	62.2
	555 ATTS		12872	6277	8509	3793	6922	11953	11148	3353	3854
	% COMP-EX 555		72.0	66.8	66.3	65.4	67.0	71.8	66.8	66.0	67.4

REPORT 4

SYSTEM COMPLETION TO COMPANIES BY NPA

Description:

This report summarizes the total System completion to each Company by NPA. Where an NPA is served by more than one Company, only the attempts to offices served by that Company are shown. The report is compiled from the Report 12 data.

The entire 813 NPA is charged to Southern.

Where an NPA is served by more than one Company, vacant codes and "555" attempts are charged to the Company furnishing the "555" service.

"555" attempts are listed separately and are shown both included and excluded in the total attempts to each NPA.

Regina Region NPA's will be listed with a company titled "OTHER CANADA NPA".

OTHER NPA and TOTAL COMPL. data are also listed on Report 4.

Page 4 of Report 4 is illustrated on Page 8.

Principal Use:

Report 4 is used to determine Company terminating percent completion from the total System. A comparative analysis of completion rates and attempt volumes to each NPA within the company listing should be made.

NETWORK COMPLETION
SYSTEM COMPLETION TO COMPANIES BY NPA

02/06/74 TOTAL DAY

TO COMPANY

TERMINATING FNPA

PAC. N.W.

	TOTAL	206	208	406	503	509	916
ATTS	363843	145389	14644	555	139591	63664	0
COMPL	233554	93388	9204	363	91003	39596	0
% COMP	64.2	64.2	62.9	65.4	65.2	62.2	
555 ATTS	24016	10400	0	0	9025	4591	0
ATTS-EX.555	339827	134989	14644	555	130566	59073	
% COMP-EX 555	68.7	69.2	62.9	65.4	69.7	67.0	

PACIFIC

	TOTAL	208	209	213	408	415	503	602	702	707
ATTS	2496851	1	122725	813592	139266	399743	0	1544	65621	101183
COMPL	1559286	0	77581	513144	82053	260102	0	742	38754	60765
% COMP	62.5		63.2	63.1	58.9	65.1		48.1	59.1	60.1
555 ATTS	179844	0	8531	53836	15821	28848	0	0	7476	6815
ATTS-EX.555	2317007		114194	759756	123445	370895		1544	58145	94368
% COMP-EX 555	67.3		67.9	67.5	66.5	70.1		48.1	66.7	64.4

PACIFIC
(CONT.)

		714	805	916
ATTS	531018	162352	159806	
COMPL	333924	98224	93997	
% COMP	62.9	60.5	58.8	
555 ATTS	35390	11233	11894	
ATT-EX.555	495628	151119	147912	
% COMP-EX 555	67.4	65.0	63.5	

SO. NEW ENG.

	TOTAL	203	516
ATTS	354567	354331	236
COMPL	227138	227002	136
% COMP	64.1	64.1	57.6
555 ATTS	20437	20437	0
ATTS-EX.555	334130	333894	236
% COMP-EX 555	68.0	68.0	57.6

REPORT 5

PERCENT COMPLETION OF CALLS FROM FNPA (-555) - COMPANY RANK

Description:

This report lists the Companies in descending order based on percent completion of attempts from FNPA's excluding 555 attempts. This report uses data from Report 4.

Page 10 illustrates Report 5.

Principal Use:

Report 5 is used to determine each Company's and the System's rank of terminating FNPA percent completion for comparative purposes.

REPORT 5

NETWORK COMPLETION
 PERCENT COMPLETION OF CALLS FROM FNPA - COMPANY RANK
 02/06/74 TOTAL DAY

EXCLUDING 555

CINCINNATI	72.2
CANADA	71.9
ILLINOIS	70.2
NORTHWESTERN	70.1
PAC. N.W.	68.7
INDIANA	68.3
SO. NEW ENG.	68.0
OHIO	67.8
WISCONSIN	67.7
PACIFIC	67.3
NEW JERSEY	67.1
MICHIGAN	67.1
*SYSTEM	66.9
NEW ENGLAND	66.9
PENNSYLVANIA	66.8
SOUTHWESTERN	66.6
NEW YORK	66.3
MOUNTAIN	65.3
SO. CENTRAL	65.3
CHES. & POT.	64.9
SOUTHERN	63.8

REPORT 6

AREAS WITH LOWEST PERCENT COMPLETION OF HNPA CALLS (-555)

Description:

This report lists the 20 NPA's with the lowest percent completion of HNPA attempts excluding 555. Where an NPA is served by more than one company, each Company is charged with HNPA calls that originate in the portion of the NPA served. All Home Area Toll Calls are included regardless of the Company in which the calls terminated. This report uses data from Report 1.

NPA - Company combinations with less than 2500 (variable) attempts are excluded from this report.

Page 12 illustrates Report 6.

Principal Use:

Report 6 is used as an exception report of the twenty worst completing NPA's based on HNPA completion rates. An overall completion analysis, utilizing Reports 13 and 15 as an indicator for specific NNX investigation, of poor performing NPA's continually appearing on this report is necessary.

NETWORK COMPLETION
 AREAS WITH LOWEST PERCENT COMPLETION OF HNPA CALLS
 02/06/74 TOTAL DAY

NPA	COMPANY	PERCENT COMPLETION - EX. 555
713	SOUTHWESTERN	58.5
412	PENNSYLVANIA	59.2
203	NEW YORK	59.2
404	SO. CENTRAL	59.9
914	NEW YORK	60.1
216	OHIO	60.3
812	SO. CENTRAL	60.4
614	OHIO	60.8
817	SOUTHWESTERN	61.0
214	SOUTHWESTERN	61.3
606	SO. CENTRAL	61.4
404	SOUTHERN	61.5
617	NEW ENGLAND	61.5
606	CINCINNATI	61.5
904	SOUTHERN	62.0
501	SOUTHWESTERN	62.0
213	PACIFIC	62.1
413	NEW ENGLAND	62.3
304	CHES. & POT.	62.3
405	SOUTHWESTERN	62.4
*SYSTEM		65.0

REPORT 7

AREAS WITH LOWEST PERCENT COMPLETION OF CALLS TO FNPA (-555)

Description:

This report lists the 20 NPA's with the lowest percent completion of originating calls to FNPA's excluding 555. Where an NPA is served by more than one Company, each may be listed for only the calls that originated in that company. This report uses data from Report 1.

NPA-Company combinations with less than 2500 (variable) attempts to FNPA's are excluded.

Page 14 illustrates Report 7.

Principal Use:

Report 7 is used as an exception report of the 20 worst completing NPA's based on originating FNPA completion rates. A thorough analysis of continuing poor completing areas, utilizing the supplemental associated company Report 20 (Appendix C) as an indicator of low completing originating Recorder groups; is required.

NETWORK COMPLETION

AREAS WITH LOWEST PERCENT COMPLETION OF CALLS TO FNPA

02/06/74 TOTAL DAY

NPA	COMPANY	PERCENT COMPLETION - EX.555
915	MOUNTAIN	57.0
305	SOUTHERN	62.3
808	PACIFIC	62.5
516	NEW YORK	62.5
904	SOUTHERN	62.9
512	SOUTHWESTERN	62.9
219	ILLINOIS	63.1
401	NEW ENGLAND	63.4
703	CHES. & POT.	63.4
301	CHES. & POT.	63.5
914	NEW YORK	63.6
813	SOUTHERN	63.7
412	PENNSYLVANIA	63.8
304	CHES. & POT.	63.8
817	SOUTHWESTERN	64.0
202	CHES. & POT.	64.0
405	SOUTHWESTERN	64.0
501	SOUTHWESTERN	64.1
404	SO. CENTRAL	64.4
806	SOUTHWESTERN	64.7
	*SYSTEM	66.5

REPORT 8

AREAS WITH LOWEST PERCENT COMPLETION OF CALLS FROM FNPA (-555)

Description:

This report lists the 20 NPA-Company combinations with the lowest percent completion of calls incoming from FNPA's excluding 555 attempts.

This Report uses data from Report 12.

NPA-Company combination with less than 2500 (variable) incoming calls from FNPA's are excluded.

Page 16 illustrates Report 8.

Principal Use:

Report 8 is used as an exception report of the twenty worst completing NPA's based on terminating FNPA completion rates. A thorough analysis of continuing poor completing areas, utilizing Reports 12 and 14 as an indicator for NNX investigation, is necessary.

NETWORK COMPLETION

AREAS WITH LOWEST PERCENT COMPLETION OF CALLS FROM FNPA

02/06/74 TOTAL DAY

NPA	COMPANY	PERCENT COMPLETION - EX.555
614	CHES. & POT.	59.2
205	SOUTHERN	59.5
606	SO. CENTRAL	59.6
813	SOUTHERN	59.9
717	NEW YORK	61.3
904	SOUTHERN	62.1
814	PENNSYLVANIA	62.1
919	SOUTHERN	62.5
703	CHES. & POT.	62.5
305	SOUTHERN	62.6
318	SO. CENTRAL	62.7
304	CHES. & POT.	62.8
208	PAC. N.W.	62.9
817	SOUTHWESTERN	63.1
816	SOUTHWESTERN	63.1
914	NEW YORK	63.1
505	MOUNTAIN	63.1
512	SOUTHWESTERN	63.5
803	SOUTHERN	63.5
916	PACIFIC	63.5
*SYSTEM		66.5

REPORT 9

HNPA PERCENT COMPLETION (-555) - HISTORY BY NPA

Description:

This report lists by months for each year the HNPA percent completion for each Company by originating HNPA-Company combination. No HNPA-Company combinations are excluded. The TOTAL is a weighted average of all HNPA data submitted excluding 555 attempts.

This Report uses data from Report 1.

Page 18 illustrates Report 9.

Principal Use:

Report 9 is used as a history of each Area's and Company's HNPA completion rates to determine seasonal trends and to facilitate comparison of NPA/Company performances. This report should be studied in conjunction with Reports 6, 13 and 15.

NETWORK COMPLETION
 HMPA PERCENT COMPLETION - HISTORY

EXCLUDING 555

YEAR - 1974

COMPANY	NPA	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
NEW ENGLAND	207	68.6	69.7										
	401	59.4	63.0										
	413	65.4	62.3										
	506												
	518												
	603	67.1	67.5										
	617	59.6	61.5										
	802	66.0	66.8										
	TOTAL	61.5	63.1										
NEW YORK	201												
	203	59.9	59.2										
	212	58.4	78.8										
	315	67.8	68.5										
	413												
	516	54.6	63.7										
	518	66.5	65.9										
	607	67.0	65.0										
	716	69.3	67.3										
	717	65.6	63.1										
	802	67.1	71.1										
	914	58.1	60.1										
	TOTAL	65.0	65.5										
NEW JERSEY	201	64.7	65.1										
	215												
	609	66.0	64.7										
	TOTAL	64.9	65.0										
PENNSYLVANIA	201												
	215	67.0	66.3										
	216	65.0	60.6										
	301												
	302	67.7	65.3										
	304												
	412	63.2	59.2										

REPORT 10

PERCENT COMPLETION OF CALLS TO FNPA (-555) - HISTORY

Description:

This report is a record by months for each year of total originating percent completion to FNPA's for each originating NPA-Company combination. No NPA-Company combinations are excluded. The TOTAL's are a weighted average of all FNPA data submitted excluding 555 attempts.

This Report uses data from Report 1.

Page 20 illustrates Report 10.

Principal Use:

Report 10 is used as a history of each Area's and Company's Originating FNPA completion rates to determine seasonal trends and to facilitate comparison of NPA/Company performances. This report should be studied in conjunction with Reports 1,7, and the supplemental associated company Report 20 (Appendix C).

NETWORK COMPLETION

PERCENT COMPLETION OF CALLS TO FNPA - HISTORY

EXCLUDING 555

YEAR - 1974

COMPANY	NPA	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
NEW ENGLAND	207	66.9	69.6										
	401	62.4	63.4										
	413	65.8	66.9										
	506												
	518												
	603	64.6	66.5										
	617	64.7	65.6										
	802	66.8	66.9										
	TOTAL	64.9	66.0										
NEW YORK	201												
	203	66.3	68.4										
	212	64.8	66.0										
	315	68.0	69.1										
	413												
	516	61.4	62.5										
	518	67.1	66.5										
	607	67.9	67.1										
	716	68.7	68.3										
	717	70.2	66.7										
	802	67.4	57.0										
	914	63.2	63.6										
	TOTAL	64.6	65.4										
NEW JERSEY	201	63.8	65.2										
	215												
	609	64.4	64.9										
	TOTAL	64.0	65.1										
PENNSYLVANIA	201												
	215	67.0	67.0										
	216	68.0	62.8										
	301												
	302	70.2	66.4										

REPORT 11

PERCENT COMPLETION OF CALLS FROM FNPA (-555) - HISTORY

Description:

This report is a record by months for each year of total terminating percent completion of calls from FNPA's to each NPA - Company combination excluding 555 attempts. No NPA - Company combinations are excluded. This Report uses data from Report 12.

Page 22 illustrates Report 11.

Principal Use:

Report 11 is used as a history of each Area's and Company's Terminating FNPA completion rates to determine seasonal trends and to facilitate comparison of NPA/Company performances. This report should be studied in conjunction with Reports 4, 8, 12, 14, and 17.

PERCENT COMPLETION OF LLS FROM FNPA - HISTORY

EXCLUDING 555

YEAR - 1974

COMPANY	NPA	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
NEW ENGLAND	207	65.5	67.1										
	401	64.7	68.3										
	413	65.9	65.3										
	506	0.0	0.0										
	518	0.0	0.0										
	603	64.9	66.3										
	617	65.0	67.4										
	802	62.8	64.1										
	TOTAL	65.0	66.9										
NEW YORK	201	49.5	46.5										
	203	68.9	72.7										
	212	64.6	66.2										
	315	68.7	69.0										
	413	0.0	0.0										
	516	62.5	66.7										
	518	66.5	66.5										
	607	67.8	66.0										
	716	70.4	71.3										
	717	61.4	61.3										
	802	65.6	51.3										
	914	62.8	63.1										
	TOTAL	64.7	66.3										
NEW JERSEY	201	65.8	67.2										
	215	60.1	62.2										
	609	67.8	66.9										
	TOTAL	66.3	67.1										
PENNSYLVANIA	201	67.1	63.9										
	215	68.2	68.4										
	216	78.8	77.1										
	301	58.7	39.6										
	302	65.3	64.1										

REPORT 12

SYSTEM COMPLETION TO COMPANIES BY NPA - NNX

Description:

This report lists the total System attempts, messages, and percent completion from FNPA's to each NPA-Company combination by toll center and by NNX. Toll center totals are computed. Major metropolitan areas may have their NNX's grouped by sector tandem or any other desired network hierarchy arrangement.

"555" attempts are summarized by the Company which furnishes the "555" service.

Vacant codes are grouped and not printed as individual codes. In NPA's served by more than one Company, vacant codes are charged to the Company furnishing the "555" service.

There are no separate independent company toll center and NNX summaries.

This report will be made for all working NPA codes including 800, 808, 809, and Special Area Codes 510, 610, etc. NPA 900 will not have a report 12. NNX's will be listed by assigned city or area per the Traffic Routing Guide. These NPA's are not assigned to any Company.

Non-working NNX data for any NPA can be obtained on request. This is part of the edit process

Report 12 for NPA 800 will place all NNX's that end in the digit 2 (NN2) in a toll center titled "INTRA-STATE". Thus a System average completion of HNPA traffic to 800 can be computed. However, Report 12 does not allow analysis of any one state's 800 HNPA completion.

Page 24 illustrates the format of Report 12.

Principal Use:

Report 12 is used as the only indicator of individual Toll Center and NNX terminating FNPA completion rates. Working NNX performances should be analyzed in conjunction with CLR reports (Appendix B) to pinpoint the causes of low completion results; whether Busy - Don't Answer problems or Equipment, Blockage and Failure troubles.

NETWORK COMPLETION

SYSTEM COMPLETION TO COMPANIES BY NPA--NNX

02/06/74 TOTAL DAY

SYSTEM TOTALS

TO NPA 515

COMPANY NEW YORK

TO TOLL CENTER

TERMINATING NNX

ADAMS		232	583	TOTAL							
	ATTS	81	58	139							
	COMPL	49	48	97							
	% COMP	60.5	82.8	69.8							
AUBURN		252	253	255	364	496	497	626	685	689	784
	ATTS	903	1395	37	395	60	474	65	551	200	35
	COMPL	574	1091	23	214	36	322	37	394	120	16
	% COMP	63.6	78.2	62.2	54.2	60.0	67.9	56.9	71.5	60.0	45.7
AUBURN		834	889	967	TOTAL						
(CONT.)	ATTS	120	100	179	4514						
	COMPL	87	79	65	3058						
	% COMP	72.5	79.0	36.3	67.7						
BOONVILLE		346	348	354	357	369	376	392	397	942	TOTAL
	ATTS	114	111	19	88	168	351	15	21	228	1115
	COMPL	89	86	6	56	110	230	7	12	144	740
	% COMP	78.1	77.5	31.6	63.6	65.5	65.5	46.7	57.1	63.2	66.4
CANANDAIGUA		289	374	394	398	657	TOTAL				
	ATTS	125	187	872	91	127	1402				
	COMPL	78	112	632	70	86	978				
	% COMP	62.4	59.9	72.5	76.9	67.7	69.8				
FULTON		592	593	695	TOTAL						
	ATTS	400	418	171	989						
	COMPL	314	288	93	695						
	% COMP	78.5	68.9	54.4	70.3						

REPORT 13

PERCENT COMPLETION OF HNPA CALL BY NNX

Description:

Report 13 will list all the working NNX's for one NPA by Toll Center (or Toll Point) serving the NNX. HNPA completion data consists of all attempts and messages to each NNX, in the NPA from all other NNX's in the same NPA regardless of originating company.

Percent completion for each NNX is computed. Totals are computed for each Toll Center and total NPA.

Data for NNX 555 and non-working NNX's are placed in "Toll Center" OTHER. Non-working NNX's are not listed separately. Rather the data for these NNX's are printed under a NNX "VACANT". Only the company providing 555 service for the NPA will have toll center OTHER.

There will be a Report 13 for each NPA-Company combination listing the NNX's served.

Page 26 illustrates the format of Report 13.

Principal Use:

Report 13 is used as the only indicator of individual Toll Center and NNX terminating HNPA completion rates. Similar to Report 12, working NNX performances should be analyzed in conjunction with CLR reports (Appendix B) to pinpoint the causes of low completion results.

NETWORK COMPLETION

PERCENT COMPLETION OF HNPA CALLS BY NNX

HNPA 31

COMPANY NEW YORK

02/06/74 TOTAL DAY

TO TOLL CENTER

TERMINATING NNX

	232	583	TOTAL								
ADAMS											
	804	410	1214								
	508	256	764								
	63.2	62.4	62.9								
AUBURN	252	253	255	364	496	497	626	685	689	784	
	1651	2135	76	201	45	221	888	248	239	48	
	1145	1563	45	120	26	152	569	166	152	35	
	69.4	73.2	59.2	59.7	57.8	68.8	64.1	66.9	63.6	72.9	
AUBURN	834	889	967	TOTAL							
(CONT.)	476	153	507	6888							
	338	110	294	4715							
	71.0	71.9	58.0	68.5							
BOONVILLE	346	348	354	357	369	376	392	397	942	TOTAL	
	221	262	16	79	194	895	161	49	854	2731	
	123	187	7	51	130	611	99	37	604	1849	
	55.7	71.4	43.8	64.6	67.0	68.3	61.5	75.5	70.7	67.7	
CANANDAIGUA	289	374	394	398	657	TOTAL					
	695	201	2326	142	153	3517					
	396	115	1709	98	108	2426					
	57.0	57.2	73.5	69.0	70.6	69.0					
FULTON	592	593	695	TOTAL							
	2577	2214	383	5174							
	1685	1297	194	3176							
	65.4	58.6	50.7	61.4							

REPORT 14

EXCEPTION REPORT - SYSTEM COMPLETION TO COMPANIES BY NPA - NNX

Description:

Report 14 lists by Toll Center, the NNX's and their data if the computed percent completion is less than the percent specified in the title of the report. These data are brought forward from the Report 12 of the NPA-Company combination. Totals are not printed on Report 14.

Page 28 illustrates the format of Report 14.

Principal Use:

Report 14 is used as an exception report of all NNX's having a terminating FNPA percent completion rate less than a predetermined threshold. This report highlights those NNX's requiring immediate investigations for improvement.

NETWORK COMPLETION
EXCEPTION REPORT - SYSTEM COMPLETION TO COMPANIES BY NNX
LESS THAN 50% COMPLETION

ITEM TOTALS
TO NPA 317
COMPANY NEW YORK

02/06/74 TOTAL DAY

TO TOLL CENTER

TERMINATING NNX

AUBURN	784	967
ATTS	35	179
COMPL	16	65
% COMP	45.7	36.3
BOONVILLE	354	392
ATTS	19	15
COMPL	6	7
% COMP	31.6	46.7
NEWARK	365	
ATTS	55	
COMPL	24	
% COMP	43.6	
OGENSBURG	324	
ATTS	44	
COMPL	20	
% COMP	45.5	
ONEIDA	843	
ATTS	12	
COMPL	5	
% COMP	4.17	
OSWEGO	564	963
ATTS	81	120
COMPL	38	58
% COMP	46.9	48.3

REPORT 15

EXCEPTION REPORT - HNPA COMPLETION BY NNX

Description:

Report 15 lists by Toll Center the NNX's and their data with computed completion less than the percent specified in the title. These data are brought forward from the Report 13 of the NPA-Company combination. Totals are not printed on Report 15.

Page 30 illustrates the format of Report 15.

Principal Use:

Report 15 is used as an exception report of all NNX's having a terminating HNPA percent completion rate less than a predetermined threshold. Similar to Report 14, this report highlights those NNX's requiring immediate investigations for improvement.

NETWORK COMPLETION

EXCEPTION REPORT - HNPA COMPLETION BY NNX

NPA 315

COMPANY NEW YORK

LESS THAN 50% COMPLETION

02/06/74 TOTAL DAY

TO TOLL CENTER

TERMINATING NNX

BOONVILLE		354	
	ATTS	16	
	COMPL	7	
	% COMP	43.8	
GENEVA		595	
	ATTS	64	
	COMPL	26	
	% COMP	40.6	
POTSDAM		328	379
	ATTS	197	331
	COMPL	95	152
	% COMP	48.2	45.9
SEELY		852	
	ATTS	141	
	COMPL	62	
	% COMP	44.0	
SYRACUSE		455	970
	ATTS	455	22
	COMPL	226	1
	% COMP	49.7	4.5
WATERTOWN		562	786
	ATTS	428	1
	COMPL	181	0
	% COMP	42.3	.0

REPORT 16

PERCENT COMPLETION NPA TO NPA BY NNX

Description:

Report 16 is available on request. It lists data on attempts from a specified NPA-Company combination to a specified NPA-Company combination. The terminating data are listed by NNX by Toll Center. Percent Completion, Toll Center totals and NPA totals are computed. This report is available if the requested NPA -Company submitted data to the NPA-Company specified.

Page 32 illustrates the format of Report 16.

Principal Use:

Report 16 is used to determine a specific NPA's completion rate to each NNX within another NPA. Upon identifying a poor NPA to NPA completion rate or to analyze high volume adjacent NPA traffic, Report 16 should be requested to facilitate trunking, routing and switching investigations.

NETWORK COMPLETION

PERCENT COMPLETION NPA TO NPA BY NNX

FROM 914 NEW YORK

02/06/74 TOTAL DAY

TO 212 NEW YORK

TO TOLL CENTER

TERMINATING NNX

		892	893	920	923	926	927	928	931	933	942
TREMONT (SEC)		892	893	920	923	926	927	928	931	933	942
(CONT.)	ATTS	459	101	309	254	110	258	222	440	537	297
	COMPL	306	82	211	141	59	162	114	254	339	172
	% COMP	66.7	81.2	68.3	55.5	53.6	62.8	51.4	57.7	63.1	57.9
TREMONT (SEC)		991	992	993	994	TOTAL					
(CONT.)	ATTS	166	159	190	414	25100					
	COMPL	113	90	134	230	15391					
	% COMP	68.1	56.6	70.5	55.6	61.3					
AMSTERDAM 2 (TAN)		551	561	573	576	578	598	TOTAL			
	ATTS	105	50	104	106	161	352	878			
	COMPL	74	23	78	69	87	179	510			
	% COMP	70.5	46.0	75.0	65.1	54.0	50.9	58.1			
LEXINGTON (TAN)		334	350	360	559	572	579	750	TOTAL		
	ATTS	72	105	300	178	71	637	90	1453		
	COMPL	4	81	98	122	52	416	71	844		
	% COMP	5.6	77.1	32.7	68.5	73.2	65.3	78.9	58.1		
RICHMOND HILL (SEC)		224	225	229	261	263	268	271	275	276	291
	ATTS	133	96	120	170	177	155	141	207	73	81
	COMPL	91	65	75	87	105	86	60	84	36	57
	% COMP	68.4	67.7	62.5	51.2	59.3	55.5	42.6	40.6	49.3	70.4
RICHMOND HILL (SEC)		297	321	322	327	337	341	347	352	357	423
(CONT.)	ATTS	73	47	43	106	53	41	145	120	84	218
	COMPL	53	30	21	59	22	20	91	59	51	121
	% COMP	72.6	63.8	48.8	55.7	41.5	48.8	62.8	49.2	60.7	55.5

REPORT 17

PERCENT COMPLETION TO EACH NPA FROM ALL OTHER NPA

Description:

Report 17 will list data from each NPA to the NPA listed in the title. The FROM NPA's will be listed by Network Region. These data will be brought forward from Report 1. Region and System totals to the NPA will be computed.

Page 34 illustrates the format of Report 17.

Principal Use:

Report 17 is used to determine a specific NPA's percent completion from all other NPA's. A comparative analysis should be made; where low completion exists, routing, trunking and switching checks are necessary.

PERCENT COMPLETION TO EACH NPA FROM ALL OTHER NPA

COMPANY NEW YORK

02/06/74 TOTAL DAY

REGION WHITE PLAINS

FROM REGION

ORIGINATING FNPA

WHITE PLAINS	TOTAL	201	203	207	212	315	401	413	516	518
ATTS	66542	5315	3239	474	7987		483	1113	3339	11638
COMPL	43788	3367	2185	318	5084		276	696	1941	7933
% COMP	65.8	63.3	66.4	67.1	63.7		57.1	62.5	58.1	68.2
555 ATTS	3775	306	192	35	582		22	73	215	639
ATTS-EX.555	62767	5009	3047	439	7405		461	1040	3124	10999
% COMP-EX 555	69.8	67.2	70.5	72.4	68.7		59.9	66.9	62.1	72.1
WHITE PLAINS		603	607	617	716	802	914			
(CONT.)										
ATTS		518	15262	4716	7790	774	3840			
COMPL		342	10360	3018	5414	485	2369			
% COMP		66.0	67.9	64.0	69.5	62.7	61.7			
555 ATTS		33	725	282	374	62	235			
ATTS-EX.555		485	14537	4434	7416	712	3605			
% COMP-EX 555		70.5	71.3	68.1	73.0	68.1	65.7			
MONTREAL	TOTAL	416	418	506	514	519	613	705	807	819
ATTS	2087	482	8		556	107	843	41	6	44
COMPL	1358	336	4		350	71	545	25	3	24
% COMP	65.1	69.7	50.0		62.9	66.4	64.7	61.0	50.0	54.5
555 ATTS	138	32	1		26	7	67	2	0	3
ATTS-EX.555	1949	450	7		530	100	776	39	6	41
% COMP-EX 555	69.7	74.7	57.1		66.0	71.0	70.2	64.1	50.0	58.5
OTHER NPA	TOTAL	808								
ATTS	22	22								
COMPL	7	7								
% COMP	31.8	31.8								
555 ATTS	2	2								
ATTS-EX.555	20	20								
% COMP-EX 555	35.0	35.0								

REPORT 18

NNX COMPLETION BY PERCENTAGE BANDS

Description:

Report 18 lists in percentage bands of 10%, the number and percent of total working NNX's per NPA which fall in each terminating FNPA percent completion range. This data is obtained from Report 12.

"555" attempts, Vacant Codes and all other codes listed in Toll Center "OTHER" are excluded from this report.

Page 36 illustrates the format of Report 18.

Principal Use:

Report 18 is used as a barometer of terminating FNPA results for the NNX's in each NPA. It determines the completion spread of NNX's as well as highlighting the number of very good or very bad performers. This report should be analyzed in conjunction with Reports 12 and 14.

NETWORK COMPLETION
 NNX COMPLETION PERCENTAGE BAND

315
 COMPANY NEW YORK

02/06/74 TOTAL DAY

COMPLETION BAND	FNPA COMPLETION		HNPA COMPLETION	
	NUMBER OF NNX	PERCENT OF TOTAL	NUMBER OF NNX	PERCENT OF TOTAL
0 - 10%	5	2.2	2	.9
10 - 20%				
20 - 30%	1	.4		
30 - 40%	6	2.7		
40 - 50%	16	7.1	7	3.2
50 - 60%	46	20.4	37	16.7
60 - 70%	80	35.6	98	44.1
70 - 80%	56	24.9	73	32.9
80 - 90%	13	5.8	5	2.3
90 - 100%	2	.9		
TOTAL	225	100.0	222	100.0

REPORT 19

ACHIEVEMENT OF ANNUAL COMPLETION OBJECTIVES BY COMPANY AND SYSTEM

Description:

Report 19 ranks and lists each Associated Company's terminating FNPA cumulative completion rate excluding 555 attempts as obtained from Report 4; the annual completion objective per Company; and the cumulative percentage of this objective.

There is no Report 19 for Christmas, Mother's Day or other special study days.

Report 19 does not include "OTHER NPA".

Page 38 illustrates the format of Report 19.

Principal Use:

Report 19 is used as an indicator of each Company's FNPA performance as compared to its annual objective. Report 19 facilitates Company comparisons and should be analyzed in conjunction with Reports 4 and 11.

COMPANY FNPA COMPLETION OBJECTIVES

CUMULATIVE JAN, 1974 THRU FEB, 1974

COMPANY	CUMULATIVE FNPA COMPL. EX. 555	1974 COMPL. OBJ.	CUMULATIVE PERCENT OF OBJ.
CANADA	72.0	72.3	99.6
CINCINNATI	71.9	71.4	100.7
ILLINOIS	70.5	71.1	99.2
NORTHWESTERN	70.0	69.7	100.4
WISCONSIN	69.1	70.9	97.5
PAC. N. W.	68.7	69.4	99.0
INDIANA	68.1	68.7	99.1
OHIO	68.0	69.4	98.0
MICHIGAN	67.7	67.9	99.7
PACIFIC	67.4	68.3	98.7
PENNSYLVANIA	67.2	68.4	98.2
SO. NEW ENG.	67.2	69.2	97.1
NEW JERSEY	66.7	68.9	96.8
SOUTHWESTERN	66.0	66.3	99.5
NEW ENGLAND	65.9	68.5	96.2
NEW YORK	65.5	67.2	97.5
CHES. & POT.	65.1	66.0	98.6
SO. CENTRAL	65.0	66.6	97.6
OTHER CANADA	64.9	65.3	99.4
MOUNTAIN	64.8	65.6	98.8
SOUTHERN	63.9	65.5	97.6
SYSTEM	66.3	68.1	97.4

SYSTEM NETWORK COMPLETION STUDY

CALLED LINE REPORTS

(CLR)

REPORT 31

System Completion to Terminating NON-INWATS Numbers

Report 31 details attempts from the System (FNPA and HNPA) to a terminating line number. Certain attempts are excluded from the data base for this report using the following criteria:

- Single attempts from an Originating NPA to a terminating line number are deleted by the Associated Companies.
- All attempts to 555 are deleted.
- All IDDD attempts are deleted.
- Those line numbers not meeting NPA parameters are excluded.

Attempts to INWATS numbers (NPA 800) are not included on this report but appear on other CLR reports for INWATS exclusively. Attempts to Other Canada (Company 21) and Other NPA (Company 22) are included in Report 31.

As cited above, NPA parameters will determine the line numbers to be reported on. Each terminating NPA will have from one to four attempt-percent completion parameters. When applying the NPA parameters, attempts will always be a specific number, or greater and percent completion a specific percent or less. (For example, a parameter of 100 attempts, 80% completion would be applied as 100 attempts or greater and 80% completion or less.)

Where less than 24 hours are studied the number of hours studied is shown. For example, if 2 hours were studied it would be shown as "2 HOURS" instead of "TOTAL DAY" in the heading.

Toll centers not having line numbers exceeding the NPA parameters will nevertheless appear on the report on a separate page with this message: "No Called Line Numbers Exceeded NPA Parameters". This type of positive reporting will only be done for Toll Centers. If no data is submitted for a Toll Center, a page with the message "No Called Line Data Received" will appear.

Vacant Codes are included in Report 31. They are shown under Toll Center "OTHER" which is the last Toll Center under each NPA. Only those vacant NNX-Line numbers meeting the NPA parameters are reported on.

There are three Report 31 formats. One format shows line number data, totals for each NNX and totals for each Toll Center. The second format shows totals for each Toll Center within the NPA. The third format shows totals for each NPA within the Company.

01/09/74 TOTAL DAY

NPA - 214

NPA - 214 ATTS 25 (OR MORE) 50 (OR MORE) 100 (OR MORE)
 PARAMETERS % COMPL 75% (OR LESS) 85% (OR LESS) 100% (OR LESS)

TO TOLL CENTER - 07	CLD NUMBER	ATTS	MSGS	% COMPL	INEFF	ATTS
DALLAS #1	226-XXXX	27	0	.0%		27
	226-TOTAL	27	0	.0%		27
	231-XXXX	246	224	91.1%		22
	231-TOTAL	246	224	91.1%		22
	233-XXXX	112	108	96.4%		4
	XXXX	56	42	75.0%		14
	XXXX	49	16	32.7%		33
	233-TOTAL	217	166	76.5%		51
	234-XXXX	26	11	42.3%		15
	234-TOTAL	26	11	42.3%		15
	235-XXXX	25	7	28.0%		18
	XXXX	29	9	31.0%		20
	XXXX	269	252	93.7%		17
	235-TOTAL	323	268	83.0%		55
	238-XXXX	165	114	69.1%		51
	XXXX	32	21	65.6%		11
	XXXX	31	18	58.1%		13
	XXXX	30	11	36.7%		19
	238-TOTAL	258	164	63.6%		94
	241-XXXX	25	18	72.0%		7
	XXXX	30	11	36.7%		19
	XXXX	34	25	73.5%		9
	XXXX	44	31	70.5%		13
	241-TOTAL	133	85	63.9%		48
	242-XXXX	64	50	78.1%		14
	XXXX	50	25	50.0%		25
	XXXX	271	48	17.7%		223
	XXXX	25	18	72.0%		7
	XXXX	29	0	.0%		29
	XXXX	39	29	74.4%		10
	XXXX	31	7	22.6%		24
	XXXX	61	32	52.5%		29
	XXXX	37	24	64.9%		13
	XXXX	64	48	75.0%		16
	XXXX	65	44	67.7%		21
	XXXX	162	131	80.9%		31
	XXXX	74	34	45.9%		40
	XXXX	58	25	43.1%		33
	XXXX	77	62	80.5%		15
	242-TOTAL	1107	577	52.1%		530

07/03/74 TOTAL DAY

NPA - 914

NPA - 914	ATTS	25 (OR MORE)	200 (OR MORE)			
	% COMPL	65% (OR LESS)	85% (OR LESS)			
	<u>CLD NUMBER</u>	<u>ATTS</u>	<u>MSGS</u>	<u>%COMPL</u>	<u>INEFF ATTS</u>	
KINGSTON	TOTAL	1230	266	21.6%	964	
MIDDLETOWN	TOTAL	1486	423	28.5%	1063	
MONROE	TOTAL	1428	568	39.8%	860	
MONFICELLO	TOTAL	2274	521	22.9%	1753	
MOUNT KISCO	TOTAL	1415	374	26.4%	1041	
MOUNT VERNON	TOTAL	739	166	22.5%	573	
NEWBURGH	TOTAL	965	402	41.7%	563	
NYACK	TOTAL	2790	1112	39.9%	1678	
PEEKSKILL	TOTAL	1667	559	33.5%	1108	
PORT SARVIS	TOTAL	0	0	0%	0	
POUGHKEEPSIE	TOTAL	2544	913	35.9%	1631	
RHINEBECK	TOTAL	1650	439	26.6%	1211	
WALDEN	TOTAL	716	302	42.2%	414	
WARWICK	TOTAL	136	39	28.7%	97	
WHITE PLAINS	TOTAL	3483	1108	31.8%	2375	
OTHER	TOTAL	1961	1525	77.8%	436	
914	TOTAL	24484	8717	35.6%	15767	

07/03/74 TOTAL DAY

	<u>CLD NUMBER</u>	<u>ATTS</u>	<u>MSGS</u>	<u>% COMPL</u>	<u>INEFF ATTS</u>
201	TOTAL	192	81	42.2%	111
203	TOTAL	1236	725	58.7%	511
212	TOTAL	83668	25449	30.4%	58219
315	TOTAL	16891	5991	35.5%	10900
516	TOTAL	11472	4107	35.8%	7365
518	TOTAL	19896	6843	34.4%	13053
607	TOTAL	4398	1889	43.0%	2509
716	TOTAL	11042	4207	38.1%	6835
717	TOTAL	752	438	58.2%	314
914	TOTAL	24484	8717	35.6%	15767
NEW YORK	TOTAL	174031	58447	33.6%	115584

REPORT 32

System Completion to Interstate INWATS Numbers

Report 32 details attempts to Interstate INWATS line numbers. All System Interstate INWATS attempts (this excludes Intrastate INWATS attempts) are included in the report results; no screening of INWATS attempts is done by companies. Parameters are not used in relation to Interstate INWATS numbers.

Special provisions must be made to associate an Interstate INWATS NNX with the appropriate terminating company, NON-INWATS NPA, and State. Interstate INWATS identification is provided by showing the 800 NPA code in parenthesis as part of the NNX report heading. The NON-INWATS NPA is shown as part of the NPA report heading. For Interstate INWATS NNX's the toll center provides the state identification.

There are two report 32 formats. One format shows line number data and a total for the NNX. The second format shows the state and company totals.

When a total company's data has been reported on, a separate summary page giving Company and state totals is printed. Where the company and state coincide, both company and state totals are printed even though the figures are the same.

NNX totals for attempts, messages and Ineffective attempts are the sum of these items for each line number within the NNX.

Percent Completion for the total NNX is computed by dividing total NNX attempts into total NNX messages and multiplying the result by a hundred.

State totals for attempts, messages and Ineffective attempts are the sum of the NNX totals for these items.

Percent Completion for the total state is computed by dividing total messages by total attempts and multiplying the result by a hundred.

Company totals for attempts messages and Ineffective attempts are the sum of the state totals for these items.

Percent Completion for the total company is computed by dividing total messages by total attempts and multiplying the result by a hundred.

If data is not submitted (no terminating calls to an NNX), the NNX will not appear on the report.

Attempts to vacant code INWATS NNX's are not included on this report.

Where less than 24 hours are studied, the number of hours studied is shown. For example, if 2 hours were studied it would be shown as "2 HOURS" instead of "TOTAL DAY" in the heading.

"Other Canada" and "Other NPA" are not included as terminating companies in Report 32.

SYSTEM CALLED LINE REPORTS

SYSTEM COMPLETION TO INTERSTATE INWATS NUMBERS

01/09/74 TOTAL DAY

SYSTEM TO

COMPANY PACIFIC N.W.

NPA - 503

STATE OREGON

NNX - (800) 547

PARAMETER - INCLUDES ALL INTERSTATE INWATS ATTEMPTS

TO STATE - 45	CLD NUMBER	ATTS	MSGs	% COMPL	INEFF ATTS
OREGON	547-XXXX	12	10	83.3%	2
	XXXX	3	0	.0%	3
	XXXX	1	1	100.0%	0
	XXXX	1	0	.0%	1
	XXXX	20	17	85.0%	3
	XXXX	110	67	60.9%	43
	XXXX	1	0	.0%	1
	XXXX	1	1	100.0%	0
	XXXX	5	5	100.0%	0
	XXXX	2	2	100.0%	0
	XXXX	1	0	.0%	1
	XXXX	2	0	.0%	2
	XXXX	39	36	92.3%	3
	XXXX	25	20	80.0%	5
	XXXX	13	11	84.6%	2
	XXXX	3	1	33.3%	2
	XXXX	6	6	100.0%	0
	XXXX	3	2	66.7%	1
	XXXX	53	50	94.3%	3
	XXXX	17	16	94.1%	1
	XXXX	1	0	.0%	1
	XXXX	1	0	.0%	1
	XXXX	1	0	.0%	1
	XXXX	205	22	10.7%	183
	XXXX	3	0	.0%	3
	547-TOTAL	529	267	50.5%	262

REPORT 32

SYSTEM CALLED LINE REPORTS

SYSTEM TO

PAGE 30

INTERSTATE INWATS SUMMARY BY STATE AND COMPANY

COMPANY NEW ENGLAND

01/09/74

TOTAL DAY

BY STATE

PARAMETER - INCLUDES ALL INTERSTATE INWATS ATTEMPTS

<u>STATE</u>	<u>ATTS</u>	<u>MSGS</u>	<u>% COMPL</u>	<u>INEFF ATTS</u>
MASSACHUSETTS	19722	12146	61.6%	7576
MAINE	450	281	62.4%	169
NEW HANPSHIRE	869	523	60.2%	346
RHODE ISLAND	1026	539	52.5%	487
VERMONT	503	210	41.7%	293
COMPANY				
NEW ENGLAND	22570	13699	60.7%	8871

REPORT 33

All Originating NPA's to Interstate INWATS NNX's

Report 33 details attempts by originating company - NPA to all Interstate INWATS NNX's. All System Interstate INWATS attempts (this excludes Intrastate INWATS attempts) are included in the report results; no parameters are used in relation to Interstate INWATS numbers.

Special provisions must be made to associate an Interstate INWATS NNX with the appropriate terminating company, NON-INWATS NPA and State. Interstate INWATS identification is provided by showing the "800" NPA code in parenthesis as part of the NNX report heading. The NON-INWATS NPA is shown as part of the NPA report heading. For Interstate INWATS NNX's, the toll center provides the state identification.

Where less than 24 hours are studied, the number of hours studied is shown. For example, if 2 hours were studied, it would be shown as "2 HOURS" instead of "TOTAL DAY" in the heading.

Originating companies are listed in ascending company code order (Appendix E-1b) and originating NPA's are shown in ascending numerical order within their company grouping.

Company totals are derived by adding the originating NPA data for messages, attempts and ineffective attempts. The percent completion is computed by dividing total NPA messages by total NPA attempts times one-hundred.

A system total to each terminating Interstate INWATS NNX is required. These summary figures are shown after all originating company - NPA data is printed.

System totals to a terminating NNX are derived by adding the originating companies data for messages, attempts and ineffective attempts. The percent completion is computed by dividing total Co. messages by total Co. attempts times one-hundred.

In cases where there are no originating attempts from a company - NPA to the terminating NNX reported on, the company - NPA designation does not appear.

"Other Canada" and "Other NPA" are not shown as terminating companies on this report.

Attempts to vacant code INWATS NNX's are not included on this report.

PARAMETER - INCLUDES ALL INTERSTATE INWATS ATTEMPTS BY ORIGINATING NPA TO NNX

ORIG. COMPANY	ORIGINATING NPAS						
NEW ENGLAND	TOTAL	207	401	413	603	617	
	ATTS	409	26	59	42	5	271
	MSGS	238	15	45	32	3	140
	% COMPL	58.2%	57.7%	76.3%	76.2%	60.2%	51.7%
	INEFF ATTS	171	11	14	10	2	131
			802				
	ATTS		6				
	MSGS		3				
	% COMPL		50.0%				
	INEFF ATTS		3				
NEW YORK	TOTAL	212	315	516	518	607	
	ATTS	921	457	15	266	46	42
	MSGS	378	238	6	83	8	4
	% COMPL	41.0%	52.1%	40.0%	31.2%	17.4%	9.5%
	INEFF ATTS	543	219	9	183	38	38
			716	914			
	ATTS		28	67			
	MSGS		14	25			
	% COMPL		50.0%	37.3%			
	INEFF ATTS		14	42			
NEW JERSEY	TOTAL	201	609				
	ATTS	239	187	52			
	MSGS	155	121	34			
	% COMPL	64.9%	64.7%	65.4%			
	INEFF ATTS	84	66	18			

REPORT 34

Completion to Intrastate INWATS Numbers

Report 34 details attempts to all Intrastate INWATS NNX's. All System Intrastate INWATS attempts (excludes Interstate attempts) are included in the report results; no parameters are used in relation to Intrastate INWATS numbers.

Special provisions must be made to associate an Intrastate INWATS NNX with the appropriate terminating company, NON-INWATS NPA, and State. Intrastate INWATS identification is provided by showing the "800" NPA Code in parenthesis as part of the NNX report heading. The NON-INWATS NPA is shown as part of the NPA report heading. For Intrastate INWATS NNX's, the toll center provides the state identification.

There are two Report 34 formats. One format shows NNX line number data and a total for the NNX. The second shows the state and company totals.

When a total Company's data has been reported on, a separate summary page giving company and state totals is printed. Where the company and state coincide both the company and state totals are printed even though they are the same.

If data is not submitted for an NNX (no terminating calls) the NNX will not appear on the report.

Attempts to vacant code Intrastate INWATS NNX's are not included on this report.

NNX totals for attempts, messages and Ineffective attempts are the sum of these items for each line number within the NNX.

Percent Completion for the total NNX is computed by dividing total NNX attempts into total NNX messages and multiplying the result by a hundred.

State totals for attempts, messages and ineffective attempts are the sum of the NNX totals for these items.

Percent Completion for the total state is computed by dividing total messages by total attempts and multiplying the result by a hundred.

Company totals for attempts messages and Ineffective attempts are the sum of the state totals for these items.

Percent Completion for the total company is computed by dividing total messages by total attempts and multiplying the result by a hundred.

Where less than 24 hours are studied, the number of hours studied is shown. For example, if 2 hours were studied it would be shown as "2 HOURS" not as "TOTAL DAY" in the heading.

"Other Canada", "Canada" and "Other NPA" are not included as terminating companies in this report.

REPORT 34

PAGE 1

SYSTEM CALLED LINE REPORTS.

SYSTEM COMPLETION TO INTRASTATE INWATS NUMBERS

01/09/74 TOTAL DAY

SYSTEM TO

COMPANY PACIFIC

NPA - 213

STATE CALIFORNIA

NNX - (800) 222

PARAMETER - INCLUDES ALL INTRASTATE INWATS ATTEMPTS

TO STATE - 47

CALIFORNIA

CLD NUMBER	ATTS	MSGS	% COMPL	INEFF ATTS
222-XXXX	1	0	.0%	1
XXXX	1	0	.0%	1
XXXX	1	0	.0%	1
XXXX	1	0	.0%	1
XXXX	1	0	.0%	1
XXXX	2	0	.0%	2
XXXX	1	0	.0%	1
XXXX	161	137	85.1%	24
XXXX	249	222	89.2%	27
XXXX	1	0	.0%	1
XXXX	1	0	.0%	1
XXXX	1	0	.0%	1
XXXX	1	0	.0%	1
222-TOTAL	423	359	84.9%	64

REPORT 34

SYSTEM CALLED LINE REPORTS

SYSTEM TO

PAGE 38

INTRASTATE INWATS COMPLETION BY STATE AND COMPANY

COMPANY NEW ENGLAND

01/09/74

Total Day

BY STATE

PARAMETER - INCLUDES ALL INTRASTATE INWATS ATTEMPTS

<u>STATE</u>	<u>ATTS</u>	<u>MSGS</u>	<u>% COMPL</u>	<u>INEFF ATTS</u>
MASSACHUSETTS	1860	1411	75.9	449
MAINE	947	793	83.7	154
NEW HAMPSHIRE	1463	567	38.7	896
RHODE ISLAND	381	246	64.6	135
VERMONT	794	693	87.3	101
COMPANY				
NEW ENGLAND	5445	3710	68.1%	1735

REPORT 35

Originating NPA Completion to Interstate INWATS Numbers Exception Report

Report 35 details attempts from an originating NPA to selected Interstate INWATS numbers. This report expands on the information appearing in Report 33 (Originating NPA to NNX). The NNX's selected to appear on Report 35 are determined by the use of a variable parameter. The parameter consists of a percent completion and a specified number of attempts from an originating NPA to an Interstate INWATS NNX. The parameters in this report are used to pinpoint Interstate INWATS Customers with high attempt volumes and less than optimum completion from a particular NPA.

Special provisions must be made to associate an Interstate INWATS NNX with the appropriate terminating company, non-INWATS NPA and State. Interstate INWATS identification is provided by showing the "800" NPA code in parenthesis as part of the NNX report heading. The NON-INWATS NPA is shown as part of the NPA report heading. For Interstate INWATS NNX's, the Toll Center provides the state identification.

Originating Companies are listed in ascending company code order (Appendix E-1b) and originating NPA's are shown in ascending numerical order within their company grouping.

At the end of each NPA's data to an NNX, a total of attempts, messages, ineffective attempts and percent completion is given.

NNX totals are derived by adding the NNX's line number data for messages, attempts, and ineffective attempts. The percent Completion is computed by dividing total NNX messages by total NNX attempts and multiplying the result by a hundred.

There are no totals or summaries other than an NNX total from an originating NPA on Report 35.

The parameters for Report 35 are applied to a terminating NNX from an originating NPA. The parameters are variable and are submitted on the varidata card into the edit. "195" Traffic is responsible for furnishing and updating Report 35 parameters.

Initially the Report 35 parameter is set at 100 attempts or greater and 60% completion or less from every originating NPA to a terminating NNX. (Attempts will always be a specific number or greater; and percent completion a specific percent or less.)

In cases where there are no attempts from an originating company NPA, or the originating NPA to NNX combination does not meet the parameters, the company-NPA designation does not appear on the report. The same applies to an NNX designation, it also will not be shown on the report under these circumstances.

"Other Canada" and "Other NPA" are not shown as terminating Companies on this report. Data for "Canada" will be reported on.

Attempts to vacant code INWATS NNX's are not included on this report.

If no interstate INWATS numbers exceed the parameters, a message will appear with this indication.

REPORT 35

SYSTEM CALLED LINE REPORTS

TO

PAGE 1028

SELECTED NPA COMPLETION TO INTERSTATE INWATS NOS.

COMPANY PACIFIC

EXCEPTION REPORT

NPA - 702

01/09/74 TOTAL DAY

STATE NEVADA

NNX - (800) 648

PARAMETER - REPORT PROVIDES A PRINTOUT OF ALL INWATS NUMBERS TO AN NNX HAVING LESS THAN 60% COMPLETION AND 100 ATTEMPTS OR MORE FROM AN ORIGINATING NPA

FROM COMPANY WISCONSIN

	CLD NUMBER	ATTS	MSGS	% COMPL	INEFF ATTS
NPA - 414	648-XXXX	1	0	0.0%	1
	XXXX	4	1	25.0%	3
	XXXX	1	0	0.0%	1
	XXXX	2	0	0.0%	2
	XXXX	1	0	0.0%	1
	XXXX	1	0	0.0%	1
	XXXX	12	1	8.3%	11
	XXXX	10	10	100.0%	0
	XXXX	15	5	33.3%	10
	XXXX	2	2	100.0%	0
	XXXX	1	1	100.0%	0
	XXXX	1	1	100.0%	0
	XXXX	1	0	0.0%	1
	XXXX	16	5	31.3%	11
	XXXX	10	7	70.0%	3
	XXXX	1	1	100.0%	0
	XXXX	7	7	100.0%	0
	XXXX	10	10	100.0%	0
	XXXX	2	2	100.0%	0
	XXXX	1	0	0.0%	1
	XXXX	3	3	100.0%	0
TOTAL - NPA 414 TO NNX 648		102	56	54.9%	46

REPORT 36

Completion to Terminating Called Numbers by Originating NPA

Report 36 details all originating Company-NPA attempts to selected NNX line numbers. Both Intrastate and Interstate INWATS line numbers and NON-INWATS line numbers can be studied. This report is done on a special request basis. Requests to study specific line numbers are submitted by the Operating Companies and "195" Traffic. Special forms will be developed and furnished as appropriate for use in requesting this report. There is no limit to the number of terminating lines that can be selected for study. Only data for the last six CLR study dates (excluding special studies) can be requested for this report.

Report 31, Report 32 and Report 34 provide the data base for this Report. Individual line numbers on these reports (31, 32, 34) may be selected by the Companies for a more detailed study. It is important to note that only those line numbers meeting the terminating NPA parameter requirements for Report 31 can be studied. All INWATS lines can be studied.

The Report Headings for NON-INWATS line numbers studied reflect terminating Company, NPA, and called number. Special provisions must be made to associate an INWATS NNX line number with its appropriate terminating Company, NON-INWATS NPA and State. INWATS identification is provided by showing the "800" NPA Code in parenthesis after the NON-INWATS NPA in the heading. The Toll Center provides the state identification for INWATS line numbers.

Where less than 24 hours are studied, the number of hours studied is shown. For example, if 2 hours were studied it would be shown as "2 HOURS" instead of "TOTAL DAY" in the heading.

Originating Companies are listed in ascending Company Code order (Appendix E-1b) and originating NPA's are shown in ascending number order within their Company grouping.

A system total to each terminating line number studied is required. These summary figures are shown after all originating Company-NPA data is printed.

System totals are derived by adding the originating NPA's attempts, messages, and Ineffective attempts to a terminating line number.

The percent completion is computed by dividing total NPA messages by total NPA attempts and multiplying the result by a hundred.

In cases where there are no originating attempts from a Company-NPA to the requested terminating line number, the Company-NPA designation does not appear.

"Other Canada" and "Other NPA" will be shown as terminating Companies for NON-INWATS line numbers only.

NON-INWATS vacant code called numbers which appear on Report 31 can be studied. However, it should be noted that only those line numbers meeting the NPA parameters are included on Report 31.

REPORT 36

SYSTEM CALLED LINE REPORTS

TO

PAGE 1

COMPLETION TO TERMINATING NUMBERS ON ORIGINATING NPA

COMPANY PA.
NPA 215 (800)
CLD NO. 823-XXXX

SPECIAL REQUEST

01/09/74 TOTAL DAY

PARAMETER: INCLUDES ALL ORIGINATING ATTEMPTS TO
SELECTED NUMBERS BY REQUEST

ORIG. COMPANY	ORIG. NPA	ATTS.	MSGS.	% COMPL.	INEFF. ATTS.
NEW ENGLAND	413	40	9	23%	31
	617	100	81	81%	19
	802	12	4	33%	8
NEW JERSEY	201	30	26	87%	4
	609	65	12	19%	53
SYSTEM TOTAL TO	823-XXXX	347	132	38%	115

REPORT 37

Completion to Terminating Numbers Exceeding a Specified Number of Attempts

Report 37 details all system attempts to terminating line numbers exceeding a designated number of attempts. This report will highlight large volume terminating numbers and enable the companies and "195" to determine completion rates for these customers. All line numbers (NON-INWATS, INTERSTATE INWATS, and INTRASTATE INWATS) will appear on this report if the selected attempt parameter is exceeded.

Special provisions must be made to designate and associate an INWATS line number (INTERSTATE or INTRASTATE) with the appropriate terminating Company and NON-INWATS NPA. INWATS identification is provided by showing the "800" NPA code in parenthesis immediately after the NON-INWATS NPA.

Where less than 24 hours are studied the number of hours studied is shown. For example, if 2 hours were studied it would be shown as "2 HOURS" instead of "TOTAL DAY" in the heading.

The NON-INWATS category of line numbers is reported on before the INWATS line numbers.

In order to group INWATS calls by Company, the Toll Center-State INWATS designations are assigned in ascending Company Code order.

Terminating Companies are listed in ascending Company Code order (Appendix E-1b). Terminating NPA's are shown in ascending numerical order within their Company grouping.

No totals or summaries are shown for this report.

In cases where the number of attempts to a line number within a Company or NPA do not exceed the attempt parameter the Company and/or NPA's are not shown on the report.

The NNX designation is shown with every line number.

The parameters for Report 37 are set at 150 attempts to a Terminating line number. The parameters may be varied by the terminating Company by submitting the special request form described in Appendix E-4.

"Other Canada" and "Other NPA" will be shown as terminating Companies only for NON-INWATS numbers.

NON-INWATS Vacant Code NNX-line numbers can be studied and will appear on the report if they meet the attempts parameter.

01/09/74 TOTAL DAY

PARAMETER: INCLUDES ALL SYSTEM ATTEMPTS TO SELECTED
LINE NUMBERS EXCEEDING 150 ATTEMPTS
(VARIABLE)

TERMINATING NPA	CLD NUMBER	ATTS	MSGS	% COMPL.	INEFF. ATTS.
215 (800)	438-XXXX	350	170	48%	180
	622-XXXX	400	340	85%	60
	844-XXXX	550	500	90%	50
412	266-XXXX	450	375	76%	75
(800)	433-XXXX	500	400	80%	100

Suggested Intra-Company Network Completion Reports

Those responsible for Network service should analyze Network Completion on a network hierarchy basis. This type of data permits the Traffic Administrator to determine the point at which attempts on the network may be blocked.

The monthly Network Completion Study produced by A.T. & T. Comptrollers allows analysis down to individual NNX - line number for terminating data. The originating data submitted from the companies do not permit analysis below an entire NPA. Those charged with network completion improvement require certain reports in addition to those available from A.T. & T. Comptrollers. These reports should be produced by the individual companies for the day or days selected for study.

The following illustrations show recommended formats of the reports required, giving detailed explanations of each. The report numbers are not required but are used for reference purposes.

REPORT 1

PERCENT COMPLETION ORIGINATING NPA TO REGIONS BY NPA

A report, similar in format to the NCR Report 1, is required monthly and is produced from the data submitted to A.T.& T. Comptrollers for system Network Completion Reports. The individual company must use this report to determine the accuracy of the data being submitted to A.T.& T. Comptrollers. This validation precludes gross errors from being made while it also gives the associated company the advantage of spotting serious originating problems, allowing immediate action and correction to take place.

The report lists each NPA by Network Region together with the number of attempts, number of messages and the number of 555 attempts to the NPA from the originating NPA. Portions of some NPA's may be served by more than one Network Region (e.g., 208 by Denver and Sacramento). The data is only listed once under the Region serving the major portion of the NPA.

555 Attempts, although shown separately, are included in total attempts. A percent completion is computed for each Terminating NPA. Total are computed for each Region and a total completion is computed for the Originating NPA.

The example of Report 1 given illustrates originating NPA 315 served by New York Company. The first page of the report lists the NPA's served by the White Plains Region/ No data are shown under NPA 315; these data appear on Page 3 of the report under the HNPA portion of Total Completion. HNPA consists of all subscriber dialed Home Area toll calls. In some cases, more than one company may serve NNX's within the HNPA. For this report, a call is HNPA regardless of the company providing service to the terminating NNX.

All the data for OTHER NPA (Page 3 of Report 1) are considered as FNPA even though in fact some of the traffic may complete in the HNPA territory.

All attempts to working NPA's should be included for this report. There will be a Report 1 for each NPA served by the Company. Report 1 is for a single originating NPA - NPA's should not be combined; e.g., 201 and 609 would be two different reports for New Jersey Bell.

TWX originating NPA's e.g., 510, 610, etc., are treated differently; the data from these NPA's are combined with data from message telephones recorded on the same AMA tape and given the NPA assigned to this message telephone service. Programming should also include the ability to produce a Report 1 containing only TWX originating data.

NETWORK COMPLETION RATE STUDY
 NEW YORK TELEPHONE COMPANY
 02/06/74

PAGE 1

FIRST WEDNESDAY

ORIG NPA 315

WHITE PLAINS	TOTAL	201	203	207	212	315	401	413	516	518
ATTMPS	79121	4009	2306	412	7151		392	815	2070	13609
COMPL	55703	2849	1723	299	4985		281	567	1367	9281
% COMPL	70.4	71.0	74.7	72.5	69.7		71.6	69.5	66.0	68.1
555 ATTS	4492	228	126	50	451		30	50	138	784
555 COMPL	1212	15	6	50					8	1
% COMPL 555	28.9	6.5	4.7	100.0					5.7	.1

WHITE PLAINS	TOTAL	603	607	617	716	802	914			
CONT. ATTMPS		514	16147	3765	23997	690	3294			
COMPL		345	11245	2585	17546	453	2177			
% COMPL		67.1	69.6	68.6	73.2	65.6	66.0			
555 ATTS		34	1021	209	1129	68	174			
555 COMPL		33		1	1023	66				
% COMPL 555		97.0		.4	91.4	97.0				

WAYNE	TOTAL	202	215	301	302	609	703	717	804	
ATTMPS	9196	600	2573	1215	239	923	699	2440	507	
COMPL	6240	397	1839	776	142	671	420	1678	317	
% COMPL	67.8	66.1	71.4	63.8	59.4	72.6	60.0	68.7	62.5	
555 ATTS	535	77	124	71	14	43	49	126	31	
555 COMPL	147	76	2	68		1				
% COMPL 555	27.4	98.7	1.6	95.7		2.3				

PITTSBURG	TOTAL	216	304	313	412	419	513	517	606	614
ATTMPS	7372	1591	218	1057	1373	482	764	223	156	459
COMPL	5244	1168	133	740	973	345	591	154	90	318
% COMPL	71.1	73.4	61.0	70.0	70.8	71.5	77.3	69.0	57.6	69.8
555 ATTS	379	90	13	71	56	27	22	13	11	31
555 COMPL	29		13				1	13		2
% COMPL 555	7.6		100.0					100.0		6.4

REPORT 20

RECORDER GROUP COMPLETION TO NPA-NNX BY TOLL CENTER

This report is produced as required by each individual company. It summarizes the data from one recorder group or groups to the terminating NPA by NNX by Toll Center. The originating NPA may be the same NPA (HNPA) or a different NPA (FNPA). Vacant Codes and those codes not assigned to a Toll Center (e.g., certain Plant Test Codes) are listed in a Toll Center "OTHER" along with NNX 555. Totals should be computed for each Toll Center and for the complete terminating NPA. To obtain a sufficient volume of data, it may be necessary to combine data from several study dates.

Report 20 may be for terminating NPA's served by the company or for selected NPA's outside the company. Examples of these might be high volume adjacent NPA's or special NPA's such as 800 or 810. Report 20 should be available with originating data from: an individual recorder group, all recorder groups in a toll center or primary center; and entire NPA; and the total company. The total company report to an NPA served by the company should not contain HNPA data.

NETWORK COMPLETION

FROM NPA: 516 TC:01 HEMPSTEAD

RECORDER GROUP COMPLETION TO NPA-NNX BY TOLL CENTER

FROM RCDR GRP: 401 FREEPORT

02/06/74 TOTAL DAY

TO NPA: 315

TO TOLL CENTER

TERMINATING NNX

TO COMPANY: NEW YORK

ADAMS	232	583	TOTAL							
ATTS	4	3	7							
COMP	2	1	3							
% COMP	50.0	33.3	42.9							
AUBURN	252	253	364	496	497	626	685	689	834	889
ATTS	40	83	10	5	16	6	28	10	14	13
COMP	26	40	8	4	10	4	14	6	8	12
% COMP	65.0	48.2	80.0	80.0	62.5	66.7	50.0	60.0	57.1	92.3
AUBURN	967	TOTAL								
(CONT.)	ATTS	6	231							
	COMP	6	138							
	% COMP	100.0	59.7							
BOONVILLE	346	348	369	376	942	TOTAL				
ATTS	18	19	23	30	43	133				
COMP	14	10	14	16	35	89				
% COMP	77.8	52.6	60.9	53.3	81.4	66.9				
CANANDAIGUA	289	374	394	657	TOTAL					
ATTS	10	14	83	25	132					
COMP	9	10	64	15	98					
% COMP	90.0	71.4	77.1	60.0	74.2					

Procedure for Determining the
1974 FNPA Completion Objectives

The method for setting 1974 Company and System FNPA Completion objectives is as follows:

1. Determine the cumulative FNPA Completion performance for each Company and the System during 1973 excluding 555 Attempts. (Column 1)
2. Average the EB&F performance from ITSO for each Company for the previous year. (Column 2)
3. Indicate the System EB&F objective for ITSO of 1.0%. (Column 3)
4. The EB&F improvement required by each Company is obtained by subtracting Column 3 from Column 2 and showing the result in Column 4. Companies already achieving the 1.0% ITSO objective are shown as .0% improvement required.
5. A goal of 1.0% improvement in FNPA Completion performance is established resulting from an improvement of Busy-Don't characteristics of line numbers. (Column 5)
6. The total Company completion objective (Column 6) is a composite of the:
 - 1973 cumulative completion, excluding 555 attempts
 - EB&F improvement required to reach a 1.0% performance level
 - A 1.0% improvement in FNPA Completion by improving BY-DA performance

1974 FNPA NETWORK COMPLETION OBJECTIVES

COMPANY	(1) 1973 FNPA Compl. (Excl. 555 ATTS.)	(2) 1973 EB&F Avg.	(3) System EB&F Obj.	(4) EB&F Improv. Req'd	BY-DA Improv. Req'd	(6) ² 1974 ² Compl. Obj.
BELL CANADA	70.9%	1.4	1.0%	.4%	1.0%	72.3%
CINCINNATI	70.3	1.1		.1		71.4
ILLINOIS	69.8	1.3		.3		71.1
WISCONSIN	69.7	1.2		.2		70.9
NORTHWESTERN	68.2	1.5		.5		69.7
PNB	68.1	1.3		.3		69.4
OHIO	67.1	2.3		1.3		69.4
SO. NEW ENG.	67.7	1.5		.5		69.2
NEW JERSEY	67.9	.8		.0		68.9
INDIANA	66.8	1.9		.9		68.7
*SYSTEM	66.4	1.7		.7		68.1
NEW ENGLAND	65.9	2.6		1.6		68.5
PENNSYLVANIA	67.1	1.3		.3		68.4
PACIFIC	66.9	1.4		.4		68.3
MICHIGAN	66.9	.9		.0		67.9
NEW YORK	65.8	1.4		.4		67.2
S. CENTRAL	64.6	2.0		1.0		66.6
SOUTHWESTERN	64.5	1.8		.8		66.3
C & P	64.9	1.1		.1		66.0
MOUNTAIN	63.8	1.8		.8		65.6
SOUTHERN	63.1	2.4		1.4		65.5
OTHER CANADA ¹	63.9	-		.4		65.3

NOTES:

1. "OTHER CANADA" EB&F improvement is set to equal that of "BELL CANADA".
2. Actual 1974 results will be accumulated and compared with the annual 1974 objective on a monthly basis in Report 19 of the Network Completion Reports.

REGIONS

NUMBER	NAME
01	Dallas
02	Denver
03	Norway
04	Pittsburg
05	Rockdale
06	Sacramento
07	St. Louis
08	San Brndo
09	Wayne
10	White Plains
11	Montreal
12	Regina
13	Other NPA

COMPANY CODE FILE CODES

CODE FILE CODE	BELL SYSTEM CODE	NAME
01	02	New England
02	04	New York
03	06	New Jersey
04	08	Pennsylvania
05	16	Ches. & Pot.
06	17	Southern
07	19	So. Central
08	21	Ohio
09	23	Michigan
10	25	Indiana
11	27	Wisconsin
12	29	Illinois
13	31	Northwestern
14	33	Southwestern
15	36	Mountain
16	38	Pacific North West
17	40	Pacific
18	47	So. New England
19	48	Cincinnati
20	50	Canada
21		Other Canada ¹
22		Other NPA ²

NOTES: Other Canada and Other NPA designate categories for terminating data only. Originating data for these is submitted by the 20 operating companies.

1. "Other Canada" includes terminating data only for those NPA's administered by Independent Companies in Canada
2. "Other NPA" includes terminating data only for 510, 610, 710, 810, 910, the Western Union TWX NPA's; Hawaii (808), Alaska (907), Mexico (903,905) and the Caribbean Islands (809).

Toll Center Codes for INWATS NNX - Toll Centers

<u>COMPANY CODE</u>	<u>COMPANY</u>	<u>STATE</u>	<u>TOLL CENTER CODE</u>
01	New England	Massachusetts	01
		Maine	02
		New Hampshire	03
		Rhode Island	04
		Vermont	05
02	New York	New York	06
03	New Jersey	New Jersey	07
04	Pennsylvania	Delaware	08
		Pennsylvania	09
05	C & P	Maryland	10
		Virginia	11
		Washington DC	12
		West Virginia	13
		Florida	14
06	Southern	Georgia	15
		North Carolina	16
		South Carolina	17
		Alabama	18
07	South Central	Kentucky	19
		Louisiana	20
		Mississippi	21
		Tennessee	22
		Ohio	23
08	Ohio	Ohio	23
09	Michigan	Michigan	24
10	Indiana	Indiana	25
11	Wisconsin	Wisconsin	26
12	Illinois	Illinois	27
13	Northwestern	Iowa	28
		Minnesota	29
		Nebraska	30
		North Dakota	31
		South Dakota	32
		Arkansas	33
		Kansas	34
		Missouri	35
		Oklahoma	36
		Texas	37
14	Southwestern	Arizona	38
		Colorado	39
		Idaho	40
		Montana	41
		New Mexico	42
		Utah	43
		Wyoming	44
		15	Mountain

<u>COMPANY CODE</u>	<u>COMPANY</u>	<u>STATE</u>	<u>TOLL CENTER CODE</u>
16	Pacific North West	Oregon	45
		Washington	46
17	Pacific	California	47
		Nevada	48
18	Southern New Eng.	Connecticut	49
19	Cincinnati	None	
20	Canada	Ontario	50
		Quebec	51
		New Brunswick	52
		Manitoba	53
		Saskatchewan	54
22	Other NPA	Special	70
		Other	90

INSTRUCTIONS FOR UPDATING THE NETWORK COMPLETION CODE FILE

TYPE 1

This code file contains the detailed records identifying originating NPA's

Column 1	Contains a pre-printed "1" to designate the type of record to be updated.
Column 2	Contains an "A" if a record is added to the code file; "C" if a record is changed; and "D" if a record is deleted.
Column 3	Blank
Columns 4 - 5	Contains the Bell System company code (02-50) for the originating company (Appendix E-1b)
Columns 6 - 8	Contains the originating NPA
Columns 9 - 10	Blank
Columns 11 - 12	Contains for an add or change card, a number from 01 to 13 to indicate the originating region (Appendix E-1a); for a delete card, blank.
Columns 13 - 14	Contains for an add or change card, a number from 01 to 22 (Appendix E-1b) to indicate the originating company; for a delete card, blank.
Columns 15 - 80	Blank

TYPE 2

This code file contains all records identifying the terminating NPA's.

Column 1	Contains a pre-printed "2" to designate the type of record to be updated.
Column 2	Contains an "A" if a record is added to the code file; "C" if a record is changed; and "D" if a record is deleted.
Columns 3 - 5	Contains the terminating NPA.
Columns 6 - 10	Blank
Columns 11 - 12	Contains for an add or change card, a number from 01 to 13 to indicate the terminating region (Appendix E-1a); for a delete card, blank.
Columns 13 - 14	Contains for an add or change card a number from 01 to 22 (Appendix E-1b) to indicate the major terminating company (the company to be assigned 555 and vacant codes); for a delete card, blank.
Columns 15 - 20	Contains for an add or change card, blank or up to three additional company numbers; for a delete card, blank.
Columns 21 - 80	Blank

TYPE 3

This code file contains all records with codes for a terminating NPA-NNX.

Column 1	Contains a pre-printed "3" to designate the type of record to be updated.
Column 2	Contains an "A" if a record is added; "C" if a record is changed; and "D" if a record is deleted.
Columns 3 - 5	Contains the terminating NPA.
Columns 6 - 8	Contains the terminating NNX.
Columns 9 - 10	Blank
Columns 11 - 12	Contains for an add or change card, a number from 01 to 22 (Appendix E-1b) to indicate the terminating company; for a delete card, blank.
Columns 13 - 14	Contains for an add or change card, the toll center code (Toll Center Names and Code File Codes can be obtained from CLR Report 31); for a delete card, blank.
Columns 15 - 80	Blank

From:

Company _____
Name _____
Address _____
Tel. No. _____
Month _____ Yr. _____

**TERMINATING NPA - NNX
CODE FILE UPDATE (NCR)
(CHANGE TYPE 3)**

Mail To:

I/O Coordinator (SCLR)
Room LO 1, Cent. II
P.O. Box 2122
New Brunswick, N.J. 08903

SHEET NO. _____ OF _____

PUNCHED VERIFIED	TYPE	A C O R D	NPA			NNX			B L A N K	FOR A or C CO D E		FOR A or C TC D E		BLANK		80
			3	4	5	6	7	8		9	10	11	12	13	14	
CARD COLUMNS →	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	80
1	3															1
2	3															2
3	3															3
4	3															4
5	3															5
6	3															6
7	3															7
8	3															8
9	3															9
10	3															10
11	3															11
12	3															12
13	3															13
CARD COLUMNS →	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	80
14	3															14
15	3															15
16	3															16
17	3															17
18	3															18
19	3															19
20	3															20
21	3															21
22	3															22
23	3															23
24	3															24
CARD COLUMNS →	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	80

TYPE 4

This code file contains all records with the names of the toll centers.

Column 1	Contains a pre-printed "4" to designate the type of record to be updated.
Column 2	Contains an "A" if a record is added; "C" if a record is changed; and "D" if a record is deleted.
Columns 3 - 5	Contains a pre-printed "999".
Columns 6 - 8	Contains the NPA.
Columns 9 - 10	Contains a number assigned to the toll center (Toll Center Names and Code File Codes can be obtained from CLR Report 31).
Columns 11 - 30	Contains for an add or change card, the name of the toll center; for a delete card, blank.
Columns 31 - 32	Contains for an add or change card, a number from 01 to 22 (Appendix E-1b) to indicate the company; for a delete card, blank.

From:

Company _____
Name _____
Address _____
Tel. No. _____
Month _____ Yr. _____

**TOLL CENTER
CODE FILE UPDATE (NCR)
(CHANGE TYPE 4)**

Mail To:

I/O Coordinator (SCLR)
Room LO 1, Cent. II
P.O. Box 2122
New Brunswick, N.J. 08903

SHEET NO. _____ OF _____

PUNCHED ORIFIED	TYPE	A C or D	CON- STANT	NPA	TC NO.	FOR A OR C TOLL CENTER NAME FOR D BLANK																												FOR A or C CO FOR D BLANK	BLANK		
						11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33									
CARD COLUMNS →		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	80		
1		4		9	9	9																															
2		4		9	9	9																															
3		4		9	9	9																															
4		4		9	9	9																															
5		4		9	9	9																															
6		4		9	9	9																															
7		4		9	9	9																															
8		4		9	9	9																															
9		4		9	9	9																															
10		4		9	9	9																															
11		4		9	9	9																															
12		4		9	9	9																															
13		4		9	9	9																															
CARD COLUMNS →		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	80		
14		4		9	9	9																															
15		4		9	9	9																															
16		4		9	9	9																															
17		4		9	9	9																															
18		4		9	9	9																															
19		4		9	9	9																															
20		4		9	9	9																															
21		4		9	9	9																															
22		4		9	9	9																															
23		4		9	9	9																															
24		4		9	9	9																															
CARD COLUMNS →		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	80		

Additional guidelines for preparing update for Type 5 are:

1. From one to four attempt completion parameters can be established for each terminating company - NPA.
2. The first attempt completion parameter must be entered beginning with Columns 9 - 14. If additional parameters are used, the remaining Columns are filled in from left-to-right on the update form. If less than four parameters are selected, Columns not used must be left blank.
3. Where multiple parameters are established, the lowest attempt value should appear in Columns 9 - 11; higher attempt values will appear in ascending order in Columns 15 - 17, 21-23, 27 - 29.
4. For a parameter to be valid, there must be both an attempt and percent completion paired entry in the designated columns.
5. When one or more parameters are changed, all attempt - completion pairs must be entered on the code file change form.
6. Note that it is unnecessary and incorrect to use the same attempt figure with two or more different completion rates. Similarly, two or more attempt rates should not be used with the same completion rate.
7. Updating Type 5 requests will only be accepted from Company Completion Coordinators.

TYPE 5

This code file record details the terminating NPA attempt and percent completion parameters established by the operating companies for each of their NPA's. Initially, these NPA parameters were furnished by the Company Completion Coordinators for preparing the first System CLR Reports. Subsequent parameter changes will be made by updating the code file using change Type 5 code file updating form.

Column 1	Contains a pre-printed "5" to designate the type of record to be updated.
Column 2	Contains an "A" if a record is to be added; a "C" if a record is to be changed; and a "D" if a record is to be deleted.
Columns 3 - 5	Contains the terminating NPA.
Column 6	Blank
Columns 7 - 8	Contains the company code numbered 01 - 22 (Appendix E-1b).
Columns 9 - 11	Contains for an add or change card the number of attempts, for example, 50 attempts is written 050, etc.; for a delete card, blank.
Columns 12 - 14	Contains for an add or change card, the percent completion as a whole number, for example, 50% completion is written 050, etc.; for a delete card, blank.
Columns 15 - 17	Same as Columns 9 - 11
Columns 18 - 20	Same as Columns 12 - 14
Columns 21 - 23	Same as Columns 9 - 11
Columns 24 - 26	Same as Columns 12 - 14
Columns 27 - 29	Same as Columns 9 - 11
Columns 30 - 32	Same as Columns 12 - 14
Columns 33 - 80	Blank

From:

Company _____
Name _____
Address _____
Tel. No _____
Month _____ Yr. _____

**NPA PARAMETERS
CODE FILE UPDATE (CLR)
(CHANGE TYPE 5)**

Mail To:

I/O Coordinator (SCLR)
Room LO 1, Cent. II
P.O. Box 2122
New Brunswick, N.J. 08903

SHEET NO. _____ OF _____

PUNCHED VERIFIED	TYPE	A C or D	NPA					BLANK	Co.	For A or C Atts.		For A or C % Comp.		For A or C Atts.		For A or C % Comp.		For A or C Atts.		For A or C % Comp.		For A or C Atts.		For A or C % Comp.													
			1	2	3	4	5			D Blank	D Blank	D Blank	D Blank	D Blank	D Blank	D Blank	D Blank	D Blank	D Blank	D Blank	D Blank	D Blank	D Blank	D Blank	D Blank												
			1	2	3	4	5			6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	80
CARD COLUMNS →	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	80				
1	5																																				
2	5																																				
3	5																																				
4	5																																				
5	5																																				
6	5																																				
7	5																																				
8	5																																				
9	5																																				
10	5																																				
11	5																																				
12	5																																				
13	5																																				
CARD COLUMNS →	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	80				
14	5																																				
15	5																																				
16	5																																				
17																																					
18	5																																				
19	5																																				
20	5																																				
21	5																																				
22	5																																				
23	5																																				
24	5																																				
CARD COLUMNS →	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	80				

TYPE 6

This code file record details the INWATS Toll Center - NNX's and their associated company - NPA's. This information enables us to associate an interstate or an intrastate INWATS NNX with its respective non-800 company NPA and State.

Column 1	Contains a pre-printed "6" to designate the type of record to be updated.
Column 2	Contains an "A" if the record is added; a "C" if the record is changed; and a "D" if the record is deleted.
Columns 3 - 5	Contains a pre-printed "995".
Columns 6 - 7	Contains the designated toll center code. In the case of INWATS, the toll center is that state in which the NNX is working (Appendix E-2).
Columns 8 - 10	Contains the terminating INWATS NNX.
Columns 11 - 12	Blank
Columns 13 - 14	Contains for an add or change card, the Company Code numbered 01 - 22 (Appendix E-1b); for a delete card, blank.
Columns 15 - 17	Contains for an add or change card, the non-800 NPA; for a delete card, blank.
Columns 18 - 80	Blank

INSTRUCTIONS FOR REQUESTING SPECIAL NCR AND CLR REPORTS

NCR - REPORT 16

Report 16 details attempts to the requested terminating company - NPA from a specified originating company - NPA.

Columns 1 - 2	Contains the terminating company code 01-22 (Appendix E-1b).
Columns 3 - 5	Contains the terminating NPA.
Columns 6 - 8	Contains the originating NPA.
Columns 9 - 10	Contains the originating company code 01-22 (Appendix E-1b).
Columns 11 - 16	Contains the study date being requested.
	11 - 12 Year (e.g., 73)
	13 - 14 Month (e.g., 12)
	15 - 16 Day (e.g., 05)

Additional guidelines for preparing Report 16 Special Request forms are:

1. For each study date requested, submit a separate form.
2. All columns (1-16) must be completed.
3. Data for the last 12 study periods are available.
4. Submit request forms to A.T. & T. Comptrollers using the address shown on the request form.

CLR - REPORT 36

Report 36 details all originating company NPA attempts to specifically requested Called numbers.

Columns	1 - 2	Contains the terminating company code 01-22 (Appendix E-1b); when requesting an INWATS number (NPA 800) for study, use company code 23.
Columns	3 - 5	Contains the terminating NPA; for INWATS numbers, use NPA 800.
Columns	6 - 7	Contains the toll center code. For Non-INWATS line numbers, use the assigned toll center code which can be obtained from Report 31; the toll center code is shown as part of the toll center heading on this report. For INWATS line numbers, the toll center code represents a state as shown in Appendix E-2.
Columns	8 - 10	Contains the terminating NNX.
Columns	11 - 14	Contains the terminating line number.
Columns	15 - 20	Contains the study date being requested. 15 - 16 Year (e.g., 73) 17 - 18 Month (e.g., 12) 19 - 20 Day (e.g., 05)

Additional guidelines for preparing Requests for Report 36 are:

1. There is no limit to the number of called numbers selected for study. Only data for the previous six CLR study dates (excluding special study days) can be requested for this report.
2. For each study date requested, submit a separate form.
3. All columns (1-20) must be completed.
4. Submit requests to A.T. & T. Comptrollers using the address shown on the request form.

CLR - REPORT 37

Report 37 gives attempt and completion information to called numbers exceeding a selected attempt parameter and is used to highlight large volume terminating numbers.

Columns 1 - 6 Contains the study date being requested.

1 - 2	Year	(e.g., 73)
3 - 4	Month	(e.g., 12)
5 - 6	Day	(e.g., 05)

Columns 7 - 8 Contains the terminating Company Code 01-22
(Appendix E-1b).

Columns 9 - 12 Contains the attempt parameter. For example, by selecting a parameter of 100 attempts, all called numbers with 100 attempts or more are reported on. Columns 9 - 12 must have a numeric value; e.g., 100 attempts is written 0100; 50 attempts is written 0050, etc. The maximum attempt parameter is 9999.

Additional guidelines for preparing Report 37 Special Requests are:

1. Only data for the last six CLR study dates (excluding specialstudy days) can be requested.
2. The attempt parameter is variable and is determined by the group requesting the report. A series of parameters can be submitted to obtain reports on line numbers at various attempt levels. For example, a report on all numbers receiving 1000 attempts or more; and a report on all numbers receiving 500 attempts or more could be obtained.
3. For each study date requested, submit a separate form. Forms may be submitted in advance for future study days.
4. Studies can be requested for individual companies or the total system.
5. Submit requests to A.T. & T. Comptrollers using the address shown on the request form.

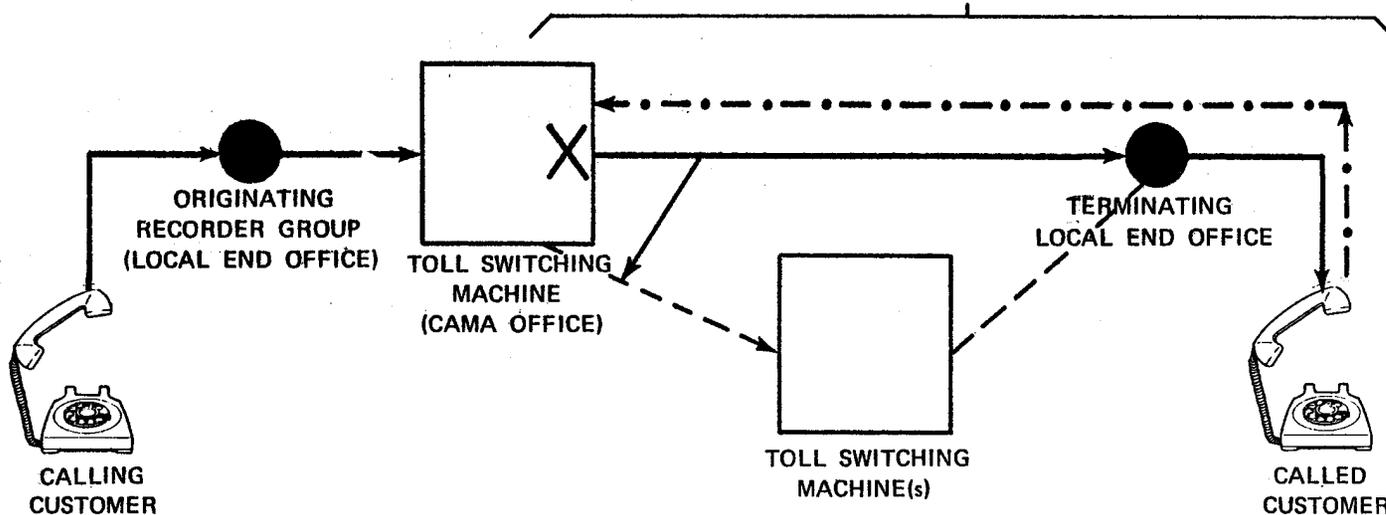
NETWORK CALL COMPLETIONCOMPANY COORDINATORS

<u>Company</u>	<u>Coordinator</u>	<u>Telephone</u>	<u>Address</u>
New England Telephone Co.	James Ryder	(617) 743-7454	99 High Street Room 1006 Boston, Mass. 02107
New York Telephone Co.	Call Completion Coordinator	(212) 370-2700	1633 Broadway, 38th Floor Room 3836 New York, N.Y.
New Jersey Bell	Robert Smith	(201) 674-3465	50 So. Clinton Street East Orange, N.J.
Bell of Pennsylvania	Lynn Shadle	(215) 466-2247	One Parkway 8th Floor Philadelphia, Pa. 19102
Ches. & Pot.	Ron Woodsum	(301) 565-7848	Room 110 Traf. Dist. 8630 Fenton Street Silver Springs, Md. 20910
Southern Bell	Billy Mack	(404) 529-8413	Hurt Building Room 1338 Atlanta, Georgia 30303
South Central Bell	Ed Nichols	(205) 321-8339	Headquarters Building 22nd Floor P.O. Box 771 Birmingham, Alabama 35203
Ohio Bell	Call Completion Coordinator	(216) 822-2863	75 Erieview Plaza Room 659 Cleveland, Ohio 44114
Michigan Bell	Al Boucher	(313) 223-6080	444 Michigan Avenue Room 510 Detroit, Michigan 48225
Indiana Bell	"Van" Van Cleave	(317) 630-2989	240 N. Meridian Street Indianapolis, Ind. 46204
Wisconsin Telephone	Eugene Neyhart	(414) 678-2390	918 N. 26th Street Room 214B Milwaukee, Wis. 53233

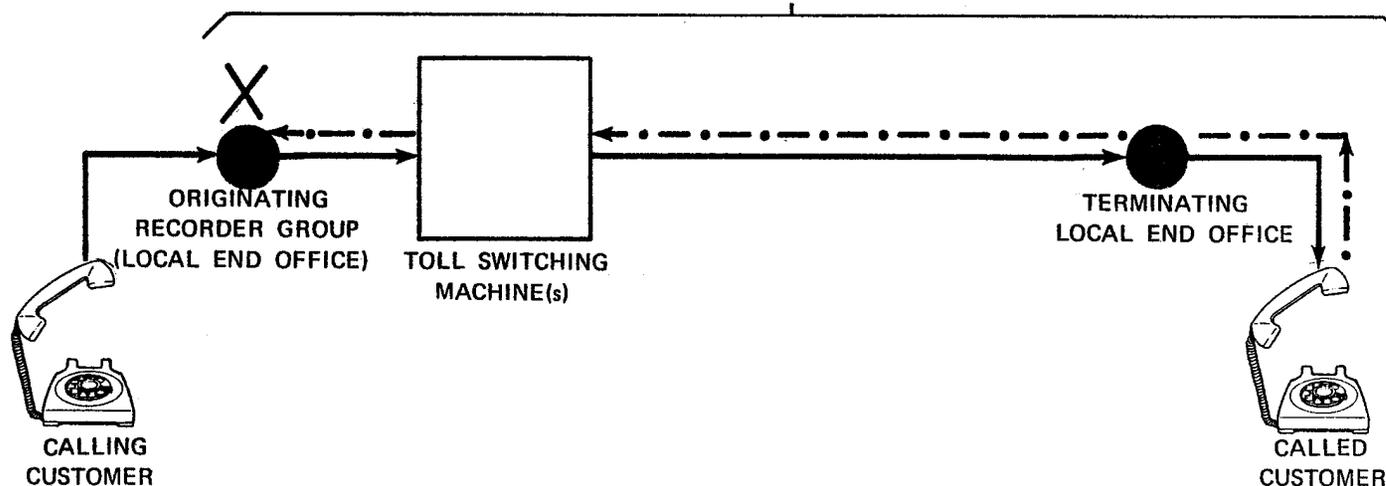
<u>Company</u>	<u>Coordinator</u>	<u>Telephone</u>	<u>Address</u>
Illinois Bell	R. S. Schulz	(312) 386-4786	225 W. Randolph Street Room 23C Chicago, Illinois 60606
Northwestern Bell	R. W. Olson	(402) 422-2787	100 S. 19th Street Room 1080 Omaha, Nebraska 68102
Southwestern Bell	Leigh Ewing	(314) 247-5212	1010 Pine Street Room 908 St. Louis, Missouri 63101
Mountain Bell	Earl King	(303) 624-7649	931 14th Street Room 1110 Denver, Colorado 80202
Pacific Northwest Bell	Ted Thompson	(206) 345-6930	United Pacific Building Room 2001 1000 Second Avenue Seattle, Washington 98104
Pacific Telephone	Wilma Wetzel	(415) 542-4194	116 New Montgomery Street Room 828 San Francisco, Calif. 94105
Long Lines	Jerry Feldberg	(201) 885-5600 Ext. 308	110 Belmont Drive Somerset, New Jersey 08873
Southern New England	Ernie Brodeur	(203) 771-3337	310 Orange Street Room 910 New Haven, Connecticut 06506
Cincinnati Bell, Inc.	Jerry Forbes	(513) 397-2463	307 East 4th Street Room 315 Cincinnati, Ohio 45202
Bell Canada	Walter F. Bradford	(613) 239-4466	10th Floor 160 Elgin Street Ottawa, Canada
Long Lines-Overseas	Dick Cunard	(212) 966-7077	32 Avenue of the Americas Room 460 New York, New York 10013
A.T.& T. Network Administration	Herb Power, Jr.	(212) 393-3200	195 Broadway Room 1832D New York City, New York

HOW COMPLETION DATA IS OBTAINED

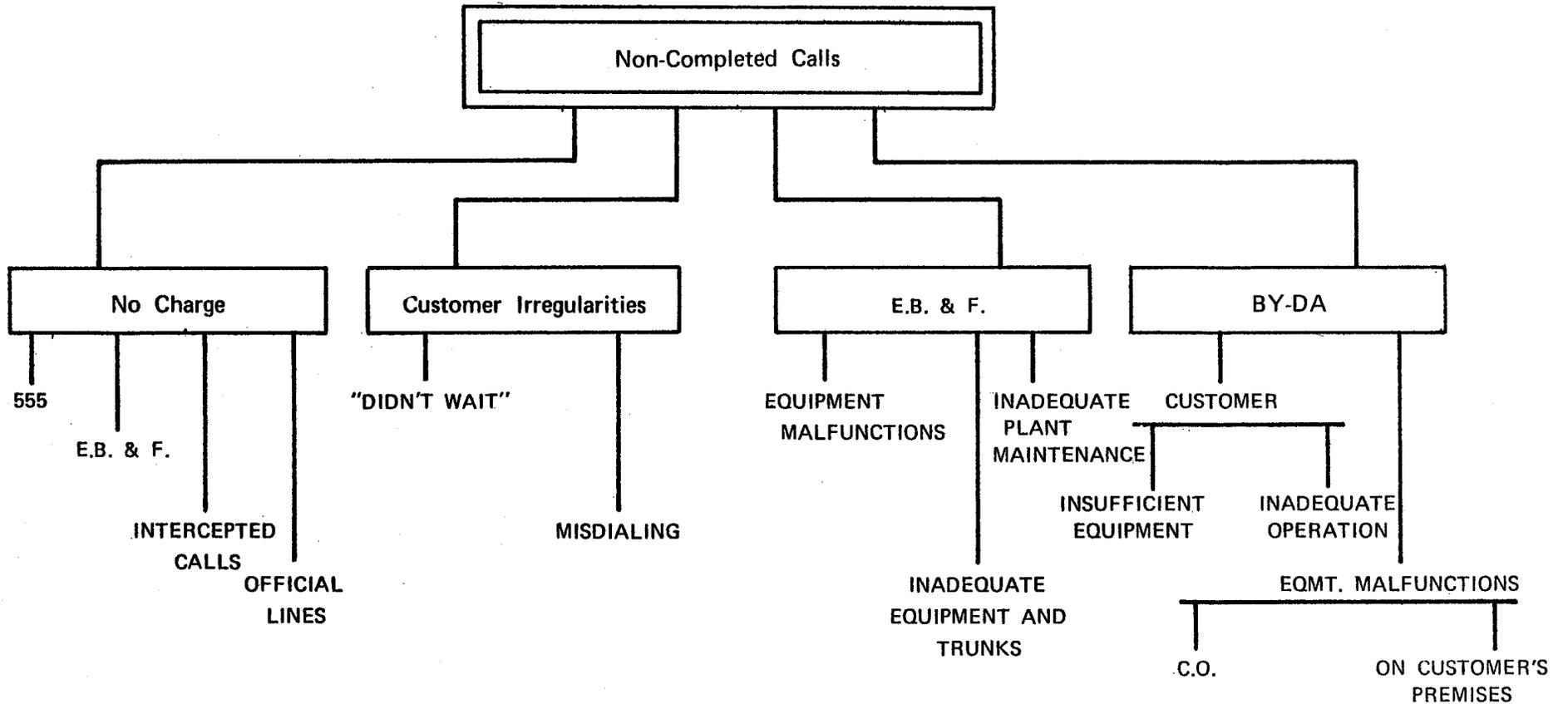
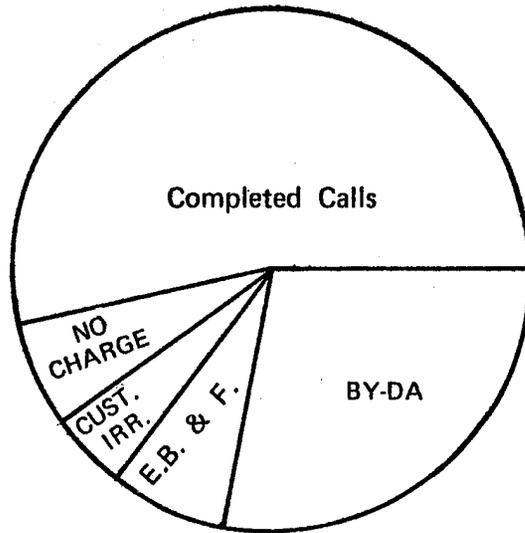
CAMA CALL



LAMA CALL

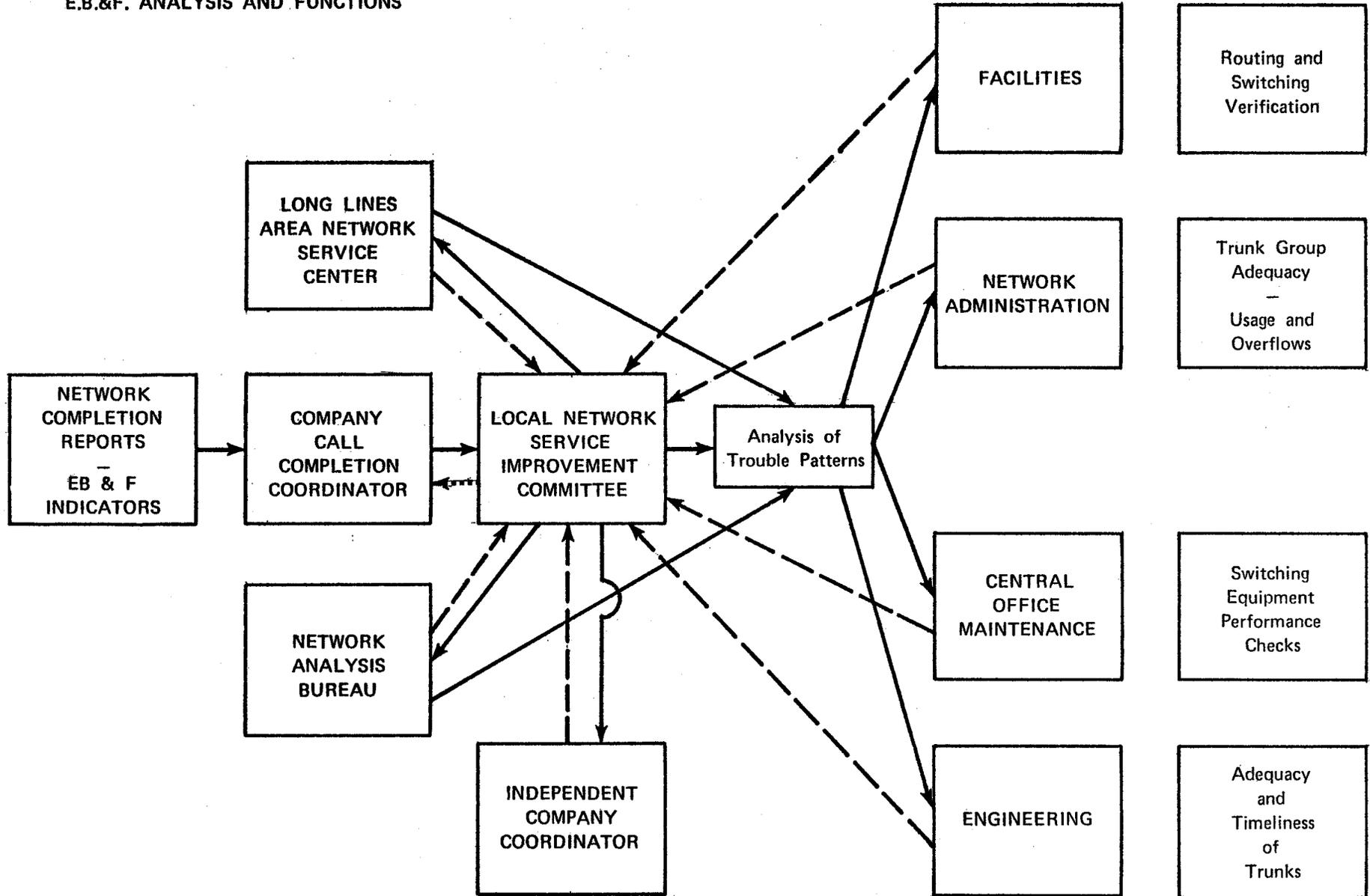


LEGEND: X = OUTGOING TOLL TRUNK OBTAINED AND ATTEMPT ENTRY MADE ON RECORDING DEVICE
 ——— = SPAN OF MEASUREMENT
 ····· = PROPERLY SUPERVISED AND CHARGED MESSAGE



E.B.&F. ANALYSIS AND FUNCTIONS

EXHIBIT 3

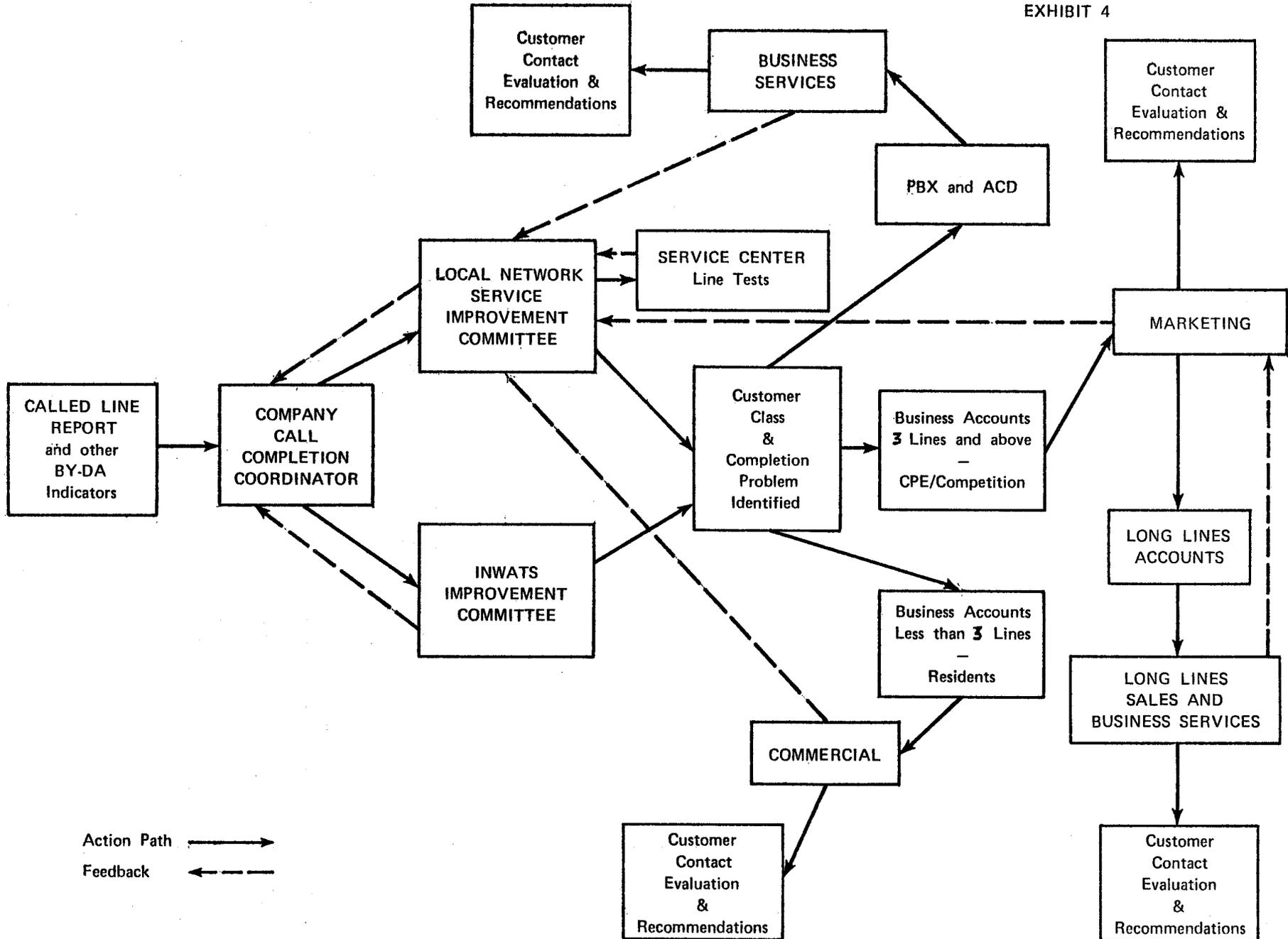


Action Path

Feedback

BY-DA ANALYSIS AND FUNCTIONS

EXHIBIT 4



Action Path →

Feedback ←

INSTRUCTIONS FOR PREPARING THE TOLL MACHINE PROFILE

In making a terminating analysis of network completion results, one of the first items to be studied is the Toll Machine or Machines involved with the NPA, Sectional, Primary or Toll Center. To facilitate this analysis, the suggested form may be used to gather all pertinent service indications:

Column 1	Contains the name of the Toll Machine being studied.
Column 2	Contains the dates of the study period, or the service month being monitored.
Columns 3 - 10	Contains the measured Ineffective attempt rate for the study period as seen by the Toll Machine Ineffective Attempt Indicators.
Column 3	Contains the percentage of total attempts monitored receiving a Reorder Announcement (ROA).
Column 4	Contains the percentage of attempts monitored receiving a Sender Overload Announcement (SOA).
Column 5	Contains the percentage of total attempts monitored which failed due to a Toll Completing Group No Circuit Condition (NCTC).
Column 6	Contains the percentage of total attempts monitored which failed due to an Intertoll Group No Circuit Condition (NCIT).
Column 7	Contains the total percentage of total attempts monitored which failed due to an Equipment Blockage or Failure (Sum of Columns 3, 4, 5, 6).
Column 8	Contains the percentage of total attempts monitored receiving a Vacant Code Announcement.
Column 9	Contains the percentage of total attempts monitored which failed due to a Second Trial Failure to Match (2FTM). These failures are contained in the Reorder Announcement failures (ROA - Column 3) and in the Total Ineffective Attempts (IA - Column 7).
Column 10	Contains the percentage of total attempts monitored which experienced a Sender Delay condition over three seconds.
Columns 11 - 14	Contains additional information pertinent to Toll Machine performance rates.

Column 11	Contains the status of any equipment shortages and the action being taken towards relief.
Column 12	Contains the status of any routing verifications being made.
Column 13	Contains the use and status of Vacant Code and Reorder Traps to determine trouble conditions.
Column 14	Contains the status of "Screening Vacant Codes at the Source."

INSTRUCTIONS FOR PREPARING THE NNX PROFILE

As discussed in Section 6, Paragraph 1.4, the key to completion improvement is the detailed analysis of individual terminating NNX's. The suggested form contains the items characterizing each entity which may facilitate this analysis.

Column 1	Contains the NNX being studied.
Column 2	Contains the dates of the study period, or the service month being monitored.
Column 3	Contains the type of switching equipment involved.
Columns 4 - 9	Contains Main Station data.
Column 4	Contains the total number of main stations in the NNX.
Column 5	Contains the total percentage of main stations which are business stations. Column 5 should be greater than or equal to the sum of Columns 6, 7, 8.
Column 6	Contains the percentage of main stations which are PBX stations.
Column 7	Contains the percentage of main stations which are ACD stations.
Column 8	Contains the percentage of main stations which are CENTREX stations.
Column 9	Contains the total percentage of main stations which are Resident stations. Columns 5 plus 9 should equal 100%.
Column 10	Contains the status of any known equipment shortages.
Columns 11 - 21	Contains Measured Results data.
Columns 11 - 16	Contains Network Completion results data, FNPA & HNPA.
Column 11	Contains the number of terminating FNPA attempts.
Column 12	Contains the number of terminating FNPA messages.
Column 13	Contains the percent completion of FNPA attempts.

Column 14	Contains the number of terminating HNPA attempts.
Column 15	Contains the number of terminating HNPA messages.
Column 16	Contains the percent completion of HNPA attempts.
Columns 17 - 21	Contains Incoming Trunk Service observing results data.
Column 17	Contains the percentage of total observed attempts which failed due to an Equipment Blockage or Failure.
Column 18	Contains the percentage of total observed attempts which failed due to a Busy condition.
Column 19	Contains the percentage of total observed attempts which failed due to a Don't Answer condition.
Column 20	Contains the percentage of total observed attempts which failed due to a Didn't Wait condition.
Column 21	Contains the percentage of total observed attempts which reached Vacant Code Announcement.