DIAL CENTRAL OFFICE SERVICE INDEX PLAN
GENERAL

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1. GENERAL

1.01 This section is reissued to include information on first selector peg count.

1.02 How well do our dial central offices serve our customers? How can we find this out? It's impractical to go out and ask each customer. But, we can get a pretty good idea about customer satisfaction from the complaints they make. And we can add to this, equipment irregularities picked up by Traffic when they do their local dial service observing.

This section tells how to use customers' trouble reports and Traffic dial service observing data to measure dial central office service.

1.03 The customer trouble reports we're talking about are explained in a local test room operating practice titled Customer Trouble Report Analysis Plan. We're interested in three groups of them, Code 5's — trouble reports coded to central office, Code 8's — Found OK's-In, and Code 7's — Test OK's.

Code 5's are central office troubles — in the line equipment, or in common equipment that did or could have caused the report. Code 8's are trouble reports that the test center people dispatched to the central office forces on which no trouble was found. There can be little doubt that Central Office Codes (Code 5's) are good indicators of the trouble customers are running into in central office equipment. But Found OK's-In (Code 8's) are good indicators too. Just because no trouble was found doesn't mean the customer didn't have any. Maybe the trouble came clear or for some other reason the central office people didn't find it — but something affected service and caused a report. So this plan gives equal importance to Code 5's and Code 8's by combining them in one component.

One more code has a bearing on central office performance. It's Code 7 — Test OK's. Of course, not all trouble reports that get tested OK were caused by central office trouble. But central office troubles — particularly transient troubles — do account for a good many of them. Also, temporary overloads, for example, will cause no dial tone reports that get tested OK. We can't separate the Test OK's caused by central office from those caused by trouble outside, so we use them all. But we give Code 7's a little less weight in our plan than we give Code 5's and Code 8's.

1.04 Just counting the number of Codes 5, 7, and 8 each month doesn't mean much until we consider the number of originating calls an office handles. So this plan relates these codes to 100,000 originating calls.

Relating troubles to call volumes does something else too. It lets us compare the performance in one office or group of offices with performance in another office or group of offices. But offices vary in design, location, and age so watch out when you make comparisons.

1.05 We also talked about using equipment irregularities picked up by Traffic observers to help measure central office performance. This, too, is a good indicator of our central office service. But, to make sense out of this measure, we must relate it to the number of calls observed.

Of course, Traffic does not observe on every originating call. They use a statistical sampling method. Usually this means observing on about 900 calls per entity each quarter. With

a sample this small — though it's statistically significant — the number of equipment irregularities will be relatively small. So they usually express these irregularities as a percentage of the number of observations made.

There will be offices where Traffic service observations are ***not*** made. But this plan can still be used in these offices by using average figures for the type of dial system being measured. Use Division, Area, Company, or System averages, but — do not include the results for these offices in your Area, State, or Company reports to the AT&TCo.

1.06 Now let's talk about the make-up of the plan. There are three components — each has a value in points.

COMPONENT	COMPONENT INDEX POINTS
Customer Trouble Reports	
Code 5 (Central Office Codes) plus Code 8 (Found OK-In) per 100,000 Originating Calls	40
Code 7 (Test OK) per 100,000 Originating Calls	30
Service Observing Results	
Equipment Irregularities per Initial Attempts — Dial to Dial	30

1.07 Section 201-102-002 has Index Point Tables for converting codes per 100,000 originating calls and service observing results into index points. These tables were developed from "S" curves. We plotted the curves from studies of different types of central offices. Here's how an "S" curve works. As results get better, an "S" curve slowly increases credit in the lower range — rapidly increases credit in the middle range — and slowly increases credit for near perfect results. The tables do the same thing. If your results are poor — you'll have to work hard to improve them. If you are in the middle range — and improving — a little extra work quickly improves index points.

1.08 To use the tables, you'll have to keep separate data by type of central office (#1X Bar, B.C.O. Panel, G.C.O. Panel and step-by-step). We did this when we made the studies to establish the tables. These studies proved to us that results vary with office type. Where this was significant, we gave the office types separate tables. This means that for a specific component index value, a given percentage change in the number of reports will show — for each system — an equal change in index points and component index values.

1.09 In this section, we use the term "entity." It's a ***group of lines*** using ***common originating*** equipment such as the same intermediate distributing frame in step-by-step, a common decoder group or translator arrangement in panel, or a common originating marker group in No. 1 crossbar.

2. USE OF PLAN

2.01 The Dial Central Office Index Plan is not intended to replace other measures of service (stuck senders, trouble indications, etc). You need them. But you need this one too — it will show you quickly and easily how your offices perform for your customers.

2.02 Like other index plans this one won't give you a ***complete*** picture of customer service. Underlying conditions vary widely in different places. The best way to apply it is to a single central office or entity. Compare present results with past results; trends are important. If you compare local results to Company or System results, keep in mind that age, design and environment of equipment can make a difference.

2.03 Here are some things to keep in mind when you look at results:

(a) To show over-all central office loading, the per cent of main station capacity will be published along with the index results. Individual circuit group loading won't be shown.

(b) We haven't tried to adjust this index for temporary overloads and outside plant troubles resulting from storms or other emergencies. These also may affect index results.

(c) Are your offices in a metropolitan area? Do they handle heavy tandem traffic? In these areas, a customer making a call sometimes uses complex routes and more equipment than elsewhere. His call is exposed to more

sources of trouble. Keep this in mind when you compare interarea results.

(d) Watch the trend of your index and long-term results. This will often tell more about the maintenance job than short-term results or comparisons with other areas. Long-term results help to level off the effects of a storm or local disaster.

2.04 There may be times when you'll want to know more about central office performance than you can learn from an office or entity index figure. So the plan shows results for each of its parts; in index points and a component index. This added tool helps to pinpoint weak spots.

2.05 It is harder to improve results in some systems than in others. We don't expect a ground cutoff panel office to give the same kind of performance as No. 1 crossbar. So we looked at ground cutoff panel equipment and determined its best performance. Then we looked at No. 1 equipment to see what its best performance was. Then we said, when they are giving their best performance, we will give them each 100 and when they are giving satisfactory results, we will give them each 97. We did the same thing for battery cutoff panel and step-by-step.

2.06 So far, what we've said about the Dial Central Office Service Index has been in general terms. What follows are the details needed to put the index together.

3. GETTING DATA

3.01 The Dial Central Office Service Index will be a quarterly measurement. To make up this report, summarize the trouble reports for the 3 months of the quarter. Relate them to the call volume for the quarter, to come up with the components of the index based on trouble reports. For the service observing part, use Traffic's figures for 3 months on equipment irregularities and apply them to total calls observed.

An office, District, Division or an Area will want to look at results month to month. Here's how to do this. The customer trouble reports, Codes 5, 7, and 8 offer no problem for monthly reports. But there's a problem with Traffic's service observing results. Their plan says they need about 900 (800 to 1000) observations to have a statistically correct sample. This may take up to 3 months to accumulate. But you can't very well take 1/3 of the 900 observations and call it a month's sample. It just won't work. Any sample less than 800 observations will not represent a true sample. But you can use a 3 months' running average. This means taking the current month's service observing figures and adding them to the results for the last two months. Then treat the sum of this data as though it were one month. Of course, to get the results for next month, add that month's results to the two months just before it. Traffic monthly closing dates for service observing do not have to agree with closing dates for customers' reports.

3.02 Arrange to have local Traffic people provide monthly originating call totals to the nearest 100,000 — by types of offices or entities. They may take each day's calls and total them for the month — but more often they get the total from a 2- to 5-day peg count they make each month. They arrive at an average business day peg count total that must be multiplied by a factor to expand it to a month. The factor will be less than the number of days in the month due to fewer weekend and holiday calls.

3.03 Does your building have more than one type of switching system? If it does, you'll need a count of calls by units or entities. And if you have a panel entity with both ground and battery cutoff units you'll need a count for each.

3.04 Traffic's count of originating calls is very important to this plan. It may help if you know how they go about getting it. So for now put yourself in the Traffic Department. Here's how you would count originating calls for Plant:

(a) For panel offices use ***decoder peg count.*** But first subtract calls made by operators. Get these from key pulse and dialing district peg count. ***Or*** if the panel office has no decoders use ***district selector peg count.*** If it's a panel entity with both battery and ground cutoff units using a common decoder group, Plant would ask for a total for each unit. You should get this by separate ***district selector peg counts.*** If a study shows that the division of

calls always follows the same pattern — for example, about 40% from the ground cutoff units and about 60% from the battery cutoff units — you could use these ***percentages of the decoder peg count*** minus the key pulse and dialing district peg counts. This is all right if the subscriber district selector peg counts are checked often enough to be sure this percentage reflects the approximate division of calls.

(b) No. 1 crossbar? Use ***district junctor peg count.*** But first ***subtract*** district junctor ***test frame*** peg count.

(c) For step-by-step offices use first selector peg count. If you use ***line finder (or line switch) peg count*** get total originating calls by adjusting this peg count for false starts (ineffective attempts). To do this, multiply the count by a ratio of line finder peg count to actual calls. This ratio should come from another count (of actual calls) made at least yearly — but preferably three to five times each year. At that time, count local, outgoing, "A" board toll, toll recording, information and other service code calls. Divide this total by the total line finder peg count registered during the same period as the special study. This ratio can then be applied each month.

Now come back to the Plant Department — we need you to finish compiling this index.

3.05 Besides total originating calls, have Traffic give you the number of "Initial Attempts Dial to Dial," and "Equipment Irregularities," from their Form E-2007A.

If you have a panel entity with both ground and battery cutoff units, Traffic has agreed to make the 900 (800 to 1000) call observing sample for each. It will cover one, two or three months.

3.06 Get Central Office Codes, Found OK's-In, and Test OK's from the Customer Trouble Report Summary Form E-2700. Have the local test center give you a copy for each office or entity.

3.07 Obtain from Traffic the number of working main stations (including PBX trunks) and main station capacity.

4. COMPUTING THE INDEX

4.01 Use Form E-3981A (Fig. 1) for recording office or entity index results. It can also be used for District, Division, Area, or Company reports.

4.02 The Columns A through E have double headings. Use the upper headings (Panel G.C.O., Panel B.C.O., SxS, #1X Bar) when reporting District, Division, and Area or Company results. Use the lower heading for office and entity results by writing in the central office or entity names and types of equipment.

4.03 Suppose you are making an office or entity report. Here's a summary of the data you need:

(a) Total originating calls. (From Traffic)

(b) Central Office Codes (Code 5) and Found OK-In (Code 8). (From Test Center E-2700)

(c) Test OK's (Code 7). (From Test Center E-2700)

(d) Number of Initial Attempts to Dial. (From Traffic E-2007A)

(e) Service Observing Equipment Irregularities. Number of Initial Attempts Affected. (From Traffic E-2007A)

(f) Main station capacity. (From Traffic)

(g) Working main stations. (From Traffic)

Use these data to fill in Form E-3981A for monthly, quarterly or yearly results. Most of the entries explain themselves but you'll need data from the Index Point tables. The tables you use will depend on equipment type.

For the time being skip Lines 2, 17, 22, 23 and 24. We'll get to them later. Now let's fill in the form.

4.04 Make these entries first:

Line 1: Total Originating Calls for each entity.

Line 3: Central Office Codes and Found OK-In (Codes 5 and 8).

Line 7: Test OK's (Code 7).

Line 11: No. Initial Attempts to Dial.

Line 12: No. Initial Attempts Affected by Equipment Irregularities.

Line 18: Type of Equipment.

Line 19: Main Station Capacity.

Line 20: Working Main Stations.

Now make the computations shown on Form E-3981A for:

Line 4: Line 3 divided by Line 1.

Line 8: Line 7 divided by Line 1.

Line 13: Line 12 divided by Line 11.

Line 21: Line 20 divided by Line 19.

Then apply these results as shown below to tables in Section 201-102-002 and enter Index Points and Component Index values.

Lines 5 & 6: Locate the Figure from Line 4 in Table 1A, 2A, 3A or 4A under "Reports." Then, write in the Index Points and Component Index.

Lines 9 & 10: In the same way as for Lines 5 & 6 apply Line 8 to Table 1B, 2B, 3B or 4B.

Lines 14 & 15: Locate the figure from Line 13 in Table 1C, 2C, 3C or 4C under "Per Cent." Then, write in the Index Points and Component Index.

Line 16: Add the Index Points for each Component. ***This is your Central Office Service Index.***

4.05 Summary reports may include several types of dial systems. When you make them, use the upper headings of Form E-3981A. Enter the report data for the offices of each type in Columns A through D. Compute each column as you did for an entity report.

Line 22: Stations in Service — Measured Locations — Enter the number of ***measured*** stations in service from the latest figures available for the Plant unit under report.

Line 23: Stations in Service — All Locations — Enter the ***total*** number of stations in service from the latest figures available for the Plant unit under report.

Line 24: Line 22 × 100 ÷ Line 23.

5. DISTRIBUTING DATA

5.01 For reports that you send to the AT&TCo, be sure to include only those offices where your local Traffic people make service observations. Once each quarter and once each year please send one copy of E-3981A for each Company and Operating Area or State to:

Plant Statistical Supervisor, Room 726
American Telephone and Telegraph Company
195 Broadway
New York, New York 10007

5.02 Please be sure your quarterly results reach New York no later than the 25th of the month after the close of the quarter and your yearly reports no later than February 15th of the next year. This, of course, is a deadline. If you can get them to New York sooner, it would be appreciated.

6. ORDERING FORMS

6.01 E-3981A forms are packaged 100 forms per package. They should be ordered in multiples of 100 forms. Word requisitions like this:

(Quantity) Form E-3981A

PRINTED IN U.S.A.

FORM E-3981 A
(1-63)

DIAL CENTRAL OFFICE SERVICE INDEX

			A	B	C	D	E	F
	USE THESE HEADINGS FOR SUMMARY FORMS →		PANEL G.C.O.	PANEL B.C.O.	SXS	#1X BAR	#5X BAR	
	FOR LOCAL USE DESIGNATE C.O. ENTITY AND TYPE OF C.O. →		C.O. OR ENT	C.O. OR ENT	C.O. OR ENT	C.O. OR ENT	C.O. OR ENT	TOTAL ALL SYSTEMS
	• ITEM	REFERENCE						
1	TOTAL ORIGINATING CALLS (00,000)	SEE INST						
2	% OF TOTAL ORIG. CALLS ALL SYSTEMS	COLS. A TO E, LINE 1 / COL. F, LINE 1 × 100						100
3	C.O. CODES & FOK – IN: CODE 5 & CODE 8	SEE INST						
4	C.O. CODES & FOK – IN: CODES PER 100,000 ORIGINATING CALLS	3 ÷ 1						
5	C.O. CODES & FOK – IN: INDEX POINTS (40)	TABLE 1A, 2A, 3A OR 4A						
6	C.O. CODES & FOK – IN: COMPONENT INDEX	TABLE 1A, 2A, 3A OR 4A						
7	TOK: CODE 7	SEE INST						
8	TOK: CODES PER 100,000 ORIGINATING CALLS	7 ÷ 1						
9	TOK: INDEX POINTS (30)	TABLE 1B, 2B, 3B OR 4B						
10	TOK: COMPONENT INDEX	TABLE 1B, 2B, 3B OR 4B						
11	NO. INITIAL ATTEMPTS TO DIAL	E-2007A						
12	EQUIP. IRREGS: NO. INITIAL ATTEMPTS AFFECTED BY EQUIP. IRREG.	E-2007A						
13	EQUIP. IRREGS: % EQUIP. IRREGS.	12 ÷ 11						
14	EQUIP. IRREGS: INDEX POINTS (30)	TABLE 1C, 2C, 3C OR 4C						
15	EQUIP. IRREGS: COMPONENT INDEX	TABLE 1C, 2C, 3C OR 4C						
16	C.O. SERVICE INDEX	5 + 9 + 14						
17	CONSOLIDATED INDEX	(LINE 2) X (LINE 16)						
18	SUPPLEMENT. INFO.: TYPE OF EQUIP.	SEE INST						
19	SUPPLEMENT. INFO.: MAIN STA. CAPACITY	TFFC DEPT						
20	SUPPLEMENT. INFO.: WORKING MAIN STA.	SEE INST						
21	SUPPLEMENT. INFO.: % M.S. CAPACITY	20 ÷ 19						
22	COVERAGE: STATIONS IN SERVICE	MEASURED LOCATIONS						
23	COVERAGE: STATIONS IN SERVICE	ALL LOCATIONS						
24	COVERAGE: % STATIONS MEASURED	LINE 22 X 100 ÷ LINE 23						

BLDG	DIST	CO. & AREA
CITY	DIV	PERIOD COVERED

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Fig 1