INEFFECTIVE ATTEMPT ANALYSIS

NETWORK OPERATIONS

NO. 3 ELECTRONIC SWITCHING SYSTEM

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1. GENERAL

1.01 This section presents recommended procedures for the identification and analysis of ineffective attempts (IA) in a No. 3 Electronic Switching System (ESS) office.

1.02 When this section is reissued, this paragraph will contain the reason for reissue.

1.03 IAs are a possible indication of poor customer service and wasted machine capacity. Regenerated attempts caused by IAs like those attempts caused by equipment irregularities and overflow use network capacity and in heavy load periods, can adversely affect service.

1.04 Analysis of switching machine data allows the network administrator to place the IAs into the ineffective machine attempt (IMA) or other IA category, identify the probable source of the problem, and take steps to eliminate the condition.

1.05 The procedure begins first by determining that an IA problem exists. The ***final*** analysis is the joint responsibility of Network Administration and Network Maintenance, and a closely coordinated effort is required to maintain IAs at acceptable levels.

Definitions

1.06 ***IA:*** A customer-originated call that does not complete.

1.07 ***IMA:*** A customer-originated call that does not complete due to an overload condition or a switching machine trouble.

1.08 ***Completed call:*** A call that receives answer supervision.

2. IA RATES

A. Types

2.01 Figure 1 lists the No. 3 ESS IAs by call type and provides a matrix representation of the office total data collection requirement. Each stage of call processing is indicated on the matrix for each call type.

2.02 The call types used for IA rates are shown below.

- Tandem Ineffective Attempt (TDM IA)
- Terminating Ineffective Attempt (TERM IA)
- Originating Ineffective Attempt (ORIG IA)

B. Establishing IA Busy Hours

2.03 One important caution is that the network busy hour is not always the same as the trunk usage busy hour. The busy hour for each of the call types could be different because the

stages of call processing are not the same. The TDM IA busy hour is the hour during which the highest TDM IAs are normally recorded each week. The TERM IA busy hour would be the highest TERM IAs recorded. The ORIG IA busy hour would be the highest ORIG IAs recorded.

2.04 The busy hour for a working office is established by reviewing 3 to 5 consecutive hours of IA data on H schedules which historically occur during the busiest part of the busiest day of the week. The hour with the highest IA rate is then selected as the time consistent busy hour.

C. Analysis Periods

2.05 After the busy hours have been established, the collected IA data is used to determine the period for calculating the IA rate. The guidelines in 2.06 and 2.07 should be followed.

2.06 If the IA rate is low (less than 1 percent), a check of IA data will only be necessary every two or three weeks.

2.07 If the IA rate is significant (1 percent or greater), a weekly check of the IA data should be made.

3. IA MEASUREMENTS

3.01 The network administrator is notified of possible data ***invalidation*** due to an emergency action (EA) (system initialization). This notification is by an EA counter that will appear in the heading of a measurement schedule. The EA counter is a counter that keeps a record of EAs that occur during the measurement period of the schedule. The counter contains the identity of the level of EA and the time it occurred during the measurement period.

3.02 The EA counter will identify only one level of EA occurring during the measurement period. If more than one level takes place during the measurement period, the ESS will use the following procedure to determine which level is reported.

- If the level of action ***does not clear measurement registers*** and is equal to or greater than any previously occurring level, then it is reported on the EA counter (highest level to occur is reported).
- If the level of action ***clears measurement registers,*** it is reported on the EA counter whether it is the highest level to occur or not (most recent level to occur is reported).

3.03 The network administrator, in association with the network design engineer, should be suspect of any busy hour data if the level of action clears the measurement register. If the cycle count is less than 36, and if the EA is 5, then the measurement registers were cleared. Data for this period should be used only if it could possibly be the high-day, or ten-high-day, data and local policies warrant. For further information pertaining to the effects of EAs, see Dial Facilities Management Practices (DFMP), Division H, Section 11c(3) (Section 233-020-252), System Initialization Procedures.

3.04 The chart in Fig. 2 lists all the IAs and indicates their relationship to each other. This chart should be helpful in making the analysis to identify the source of the problem, if any. See DFMP, Division H, Section 11h (Section 233-020-020) for a description of these measurements.

3.05 As shown in Fig. 1, the No. 3 ESS IAs are listed as to call type. The IAs are further separated as IMA and Other IAs. The Other IAs are clearly ineffective from the customers viewpoint and should be recorded. However, for a switching machine IA analysis, the Other IAs are excluded from the total IMA.

3.06 For the Originating Outgoing and Intraoffice type call, OFT 52 (Originating Signaling) appears under the Other IA column. The OFT 52 peg count in most cases is customer generated and is therefore excluded from the IMA column.

3.07 For all type calls, OFT 73 (Translation Errors) appears under the Other IA column. This count is pegged for each tandem, incoming terminating, originating outgoing, or intraoffice (IAO) call that cannot be completed because the ESS is unable (for any reason) to successfully complete the translation routine. Since it cannot be determined if this peg count is customer generated, Network Maintenance should be notified of an unusual amount of translation errors.

4. IA REPORTING CHART

4.01 Weekly data from each of the three IA busy hours is reported. One completed chart is maintained for each week in which an IA check is made. To find the percentage of IMA for each call type, the following steps are made.

(a) From a ***valid*** Busy Hour H schedule, enter onto Fig. 1 the OFT measurements indicated.

(b) From Fig. 1, add all the OFT measurements appearing under the IMA columns for specific call type.

(c) Divide the total from (b) by call type peg count; eg, Tandem (OFT 42), or Incoming Terminating (OFT 24—OFT 25), or Originating Outgoing and Intraoffice [OFT 17—(OFT 23 + OFT 52)].

(d) Multiply by 100.

(e) Enter percentage calculated, date, and time in upper right hand corner of reporting chart (Fig. 1).

4.02 The procedure described above is shown in the following equations:

$$\text{(a)}\quad \%\ \text{TDM IMA} = \frac{\text{OFT 55} + \text{OFT 58} + \text{OFT 61} + \text{OFT 63} + \text{OFT 66}}{\text{OFT 42}} \times 100$$

$$\text{(b)}\quad \%\ \text{TERM IMA} = \frac{\text{OFT 53} + \text{OFT 56} + \text{OFT 59} + \text{OFT 64} + \text{OFT 68}}{\text{OFT 24} - \text{OFT 25}} \times 100$$

$$\text{(c)}\quad \%\ \text{ORIG IMA} = \frac{\text{OFT 54} + \text{OFT 57} + \text{OFT 60} + \text{OFT 62} + \text{OFT 65} + \text{OFT 67}}{\text{OFT 17} - (\text{OFT 23} + \text{OFT 52})} \times 100$$

4.03 The percentage IMAs described above will be available from PATROL for office busy hour to network administrators with PATROL accounts. For further information pertaining to establishing a PATROL account, see Section 233-020-210, Data Management.

OFFICE_____

	%IMA	DATE	BUSY HOUR
TDM			
TERM			
ORIG			

CALL TYPES		INEFFECTIVE MACHINE ATTEMPTS							OTHER INEFFECTIVE ATTEMPTS				
		TERMINATING SIGNALING	CONNECTING				OUTGOING SIGNALING	INCOMING SIGNALING	ORIGINATING SIGNALING	LINES FOUND BUSY	ORIGINATING PARTIAL DIAL ABANDONS	OTHER ABANDONS	TRANSLATION ERRORS
			BLOCKAGES			TROUBLES							OFT73
			NO PATH	NO SVC	NO TRUNK								
TANDEM	OFT42		OFT55	OFT58	OFT61	OFT63	OFT66					OFT70	
INCOMING TERMINATING	OFT24-OFT25	OFT53	OFT56	OFT59		OFT64		OFT68		OFT69		OFT71	
ORIGINATING OUTGOING & INTRAOFFICE	OFT17-(OFT23+OFT52)	OFT54	OFT57	OFT60	OFT62	OFT65	OFT67		OFT52	OFT26	OFT23	OFT72	

Fig. 1—IA Reporting Chart

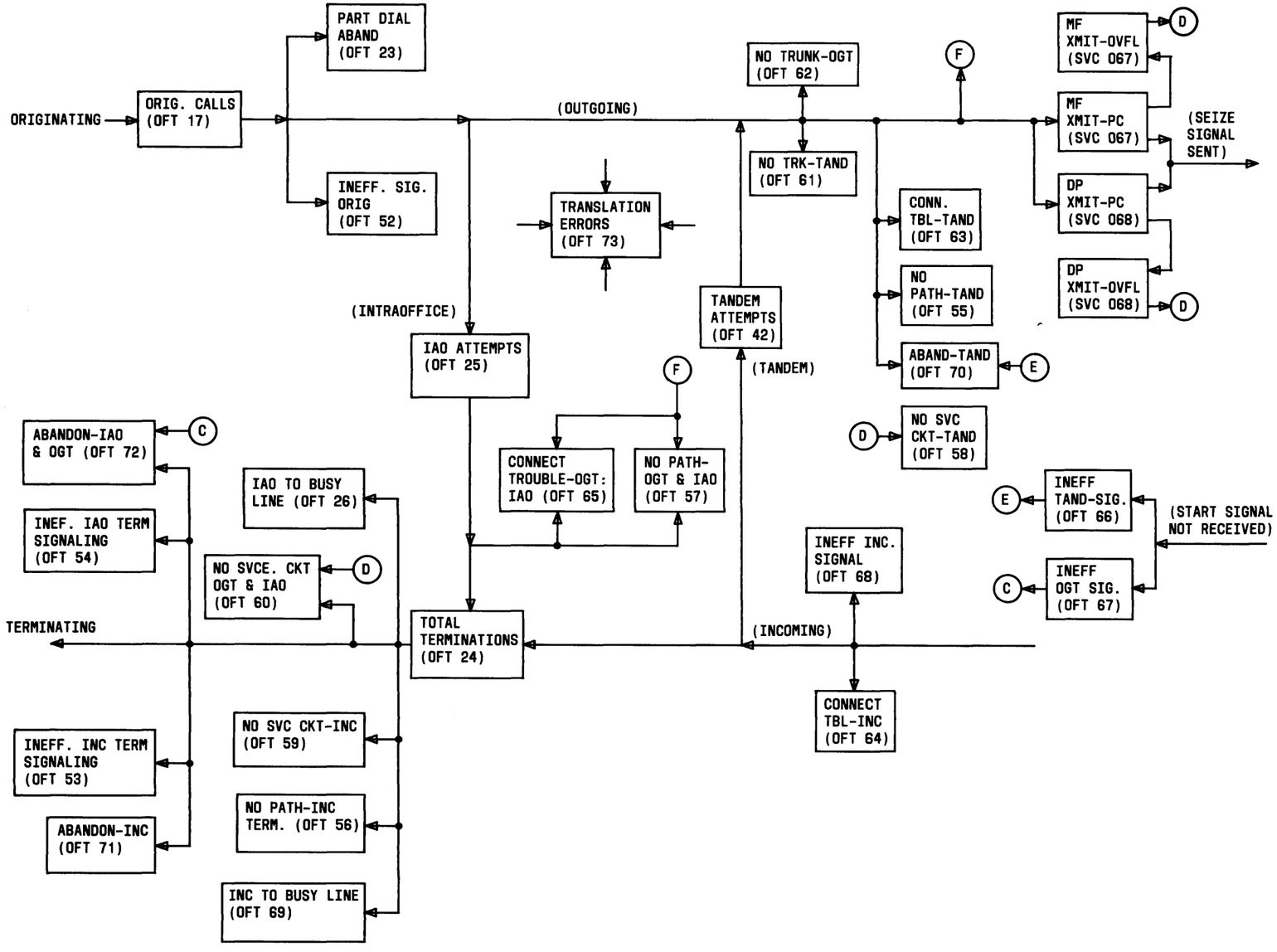

Fig. 2—No. 3 ESS Ineffective Attempts