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Reroute Translations

A Comprehensive Guide to Translations and Applications

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Network Management Handbook

An SAIC Company

Reroute Translations

Prepared for Telcordia Technologies by: Network Performance and O, A & M Solutions (25844)

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1 General

This practice is a job aid for the use of Network Management Centers (NMCs) and those responsible for the writing and/or input of translations for reroutes. Different translations are required for different types of switching system and different types of reroutes. This practice discusses the 1/1A ESS®, 4 ESS™, 5ESS®, and DMS® 100/200. Each switching system is addressed individually for each type of reroute. Feature requirements and ordering information are covered in detail in BR 780-150-132. Some special features are also covered in this practice. This practice is being reissued to provide an overall update.

Reroutes are one means of expanding the engineered capacity of the network on a real-time basis. The use of reroutes is appropriate in cases of facility failures, trunk shortages due to peak day or peak load conditions, and to move traffic around an overloaded or failed tandem switch. Reroutes have the potential to improve call completions and service to the customers. See Figures A-1 through A-6 in Appendix A, which represent the different types of reroutes addressed in this practice.

Many companies have deployed Dynamic Routing tools. These tools are usually an adjunct to the NTMOS. A typical Dynamic Routing tool monitors trunk group capacity on an ongoing basis, and identifies valid via routes to supplement the routing plan. The dynamic Routing tool can be deployed as a passive system or an active system. In the passive mode, the Dynamic Routing Tool will identify valid VIAs for congested routes and suggest that the reroute be implemented. The Network Manager has the option to allow or disallow the suggested routes. In the active mode, the dynamic router performs all of the above and then implements the reroute without human intervention. A Network Manager must be trained in the use of these tools to avoid a potential conflict when implementing a reroute.

As ATM tandems are deployed, the use of reroutes will be changed or replaced. A reroute control begins with an originating office (A) and a destination office (B) connected by trunk group A-B. Calls that are unable to access the A-B trunk group will overflow in accordance with a predefined in-chain route advance pattern. Calls that are unable to access any of the trunk groups in the in-chain route ultimately will fail and will be sent to a final handling treatment, typically an announcement or 120 Impulses Per Minute (IPM) reorder tone. Such calls might be completed by implementing a reroute control. To implement a reroute, a third office (V), commonly called the VIA or TO office, which is connected to offices A and B by trunk groups A-V and V-B, is required. However, trunk groups A-V and V-B must be outside of the in-chain route advance pattern of A-B. A reroute sends calls that cannot access A-B to A-V, and if there is idle capacity on trunk groups A-V and V-B, the calls are completed to office B. Calls unable to access A-V are returned to the next trunk group in the normal in-chain route advance pattern of A-B. A reroute control modifies the normal in-chain route advance pattern by inserting an out-of-chain trunk group into the set of in-chain trunk groups.

Note: A basic understanding of network engineering concepts is helpful for planning reroutes.

Rerouted calls that encounter an all trunks busy condition on the A-V trunk group will not advance up that trunk group's routing chain but will return in chain to find the next route to take, whether it be an alternate route, announcement, busy tone, or reorder tone. The CANCEL IN CHAIN RETURN (CICR) option prevents rerouted calls that find all trunks busy on the A-V trunk group from returning in chain. Those calls are canceled and sent to No Circuit Announcement (NCA), even if the A-V route is a high-usage trunk group with capacity in chain. For this reason, care must be taken not to reroute calls to a "dummy" trunk group (one that has 0 or 1 trunk members and advances to the regular group). Rerouting calls to a "dummy" group will cause the rerouted calls to be canceled and sent to NCA if the CICR option is used. "Dummy" trunk group concepts are also addressed in BR 780-150-132.

Often no single reroute can be found where both the A-V and V-B trunk groups have sufficient idle capacity to carry all of the traffic that needs to be rerouted. To overcome this limitation, some switches have the ability to allow traffic to be rerouted from one originating A-B trunk group to several different VIA offices. Usually up to seven VIA offices can be specified. Either of two techniques, ordered hunt or spray, may be used to define the sequence of VIA route selection for rerouted calls.

In an ***ordered hunt,*** a given rerouted call is offered successively to as many VIA trunk groups as were specified when the reroute was activated, following a circle hunt approach. If none of the VIA trunk groups can carry the call, it is returned to the next in chain trunk group. If the first call is carried, the next rerouted call is offered to the trunk group following the one that carried the first rerouted call and, if it overflows, successively to the rest of the VIA groups until it is either carried or has hunted all the VIA trunk groups without success, in which case it is returned in chain.

The ***spray technique*** offers a given call to one of the available VIAs and, if it is not carried, returns the call to the next in-chain trunk group The next rerouted call is offered to the VIA trunk group following the one that was tried for the previously rerouted call. The trunk groups are not hunted for each call as is the case with ordered hunt reroutes.

The Network Manager must first determine which trunk groups are candidates for reroutes in each office. The appropriate switching system translation forms are useful in identifying those groups.

Generally, the best FROM, TO, and VIA route candidates are the only route and final trunk groups. Under special circumstances, high usage trunk groups are good candidates. One example would be when the group's alternate final group is carrying more than its engineered capacity (i.e., overflowing to 120 IPM or NCA). A reroute on one or more of the high usage groups ***will*** help to deload the alternate final group. Only when the reroute VIA group(s) overflow would the calls route advance to the normal alternate final.

Note: Two-way trunk groups that are only route or finals in both directions, will generally overflow in both directions at the same time. An Immediate Reroute of 25% or 50% on one end only will often relieve the group's capacity sufficiently to allow 100% completions in both directions.

- One way to help identify reroute VIA candidates is to use Network Traffic Management Operating System (NTMOS) Reroute Search Analysis Page during the final trunk group's busy hour. NTMOS gives a near real-time picture of the network, listing the best choices for VIA routes in order of equivalent idle circuits. However, having capacity does not necessarily mean that the group can be used as the VIA for a reroute.
- Translations must also be checked in the VIA office to determine if the digits received on rerouted calls coming to that office can be interpreted and routed properly.
- Certain offices are better candidates for VIA traffic than others due to their non-coincidence of busy hour, completing field or available spare capacity, real-time capacity of the machine, transmitters, and receivers, etc.

Transmission quality is a concern with rerouted calls due to an extra link being added to those calls. The following suggested guidelines may be of assistance in maintaining adequate transmission quality while a reroute is activated. These guidelines are Telcordia recommendations, and are subject to Regional modification.

- Only ONE additional link should be added to the overall connection.
- Each reroute contemplated should be tested for transmission prior to the reroute being activated, and tested again with the added link. If more than a 3 dB loss is added to the call, the reroute should not be implemented. Local company policy should be established in this regard and may alter this recommendation. The Telcordia suggestion is that loss should be exceeded only in the case of National Security Emergency Preparedness (NSEP) directed activity.
- Each reroute should be tested ***annually***, with a record maintained of the transmission characteristics. Actual use may constitute a test, if tested at least once before first application.
- Reroutes for and with ICs are a matter of cooperative agreements. Where Company policies differ with this practice, this should be indicated locally before release.
- A count of all rerouted calls should be furnished daily or weekly to the trunk servicing, forecasting and design engineers so that rerouted traffic will not be reflected as a capacity requirement for future capital expenditures.
- The Network Managers should monitor the VIA office for capacity prior to and during the reroute to assure the quality of the network throughput is maintained. Five-minute and 30-second machine data and discretes are available for that purpose with NTMOS.

- The NTMOS system will indicate if VIA trunk group capacity has been exceeded every five minutes. Only the A-V route will be designated as a VIA route. The V-B route should be put on the monitor and mapped to a wallboard indicator.
- High Attempts per Circuit per Hour (ACH) and Connections per Circuit per Hour (CCH) may indicate that transmission is beyond reasonable usable limits even if the testing records show it was adequate at the time of testing. A reroute should be removed if holding time (HT) reduces significantly or connections are impaired on a real-time basis. High ACH or CCH can also be an indication of incorrect translations that cause connection problems in the network.
- A Feature Group D access connection should only have an overall loss of 3 dB. One link is always set to a 0 dB loss and the other to a 3 dB loss when an Access Tandem is used for the connection between an Equal Access end office and an IC for Feature Group D. Often, an Access Tandem ***will*** have a 0 dB loss group to an IC for tandem-routed calls, and a 3 dB loss group for its own end office customers. If capacity exists on one group, a reroute can be used only in one direction. The 3 dB loss group ***cannot*** be routed to the 0 dB loss group, but the 0 dB loss group can be rerouted to the 3 dB loss group. Adding an additional 3 dB loss to an overall connection is not a problem. Reducing the loss to zero can result in a "squeal" noise on the connection. See Figures A-7 through A-9 in Appendix A.

2 1/1*A* ESS REROUTES

2.1 1/1A ESS Basic Reroute Translation Forms (Originating Office)

The degree of complexity of 1/1A ESS reroute translations differs greatly depending on the generic, feature packages, and type reroute desired (regular, regular spray, immediate, or immediate spray). For example, 1 ESS machines with any generic, 1A ESS machines with 1AE7 and earlier, and 1A ESS machines with lAE8 that does not have feature 9SNMER loaded use ***preprogrammed translations*** to do reroutes. Preprogrammed reroutes are optional in 1A ESS machines with feature 9SNMER loaded, but with this feature, the machine has the capability of doing flexible reroutes, which are much simpler to accomplish from the translations point of view. Reroutes that are activated as a response to an Automatic Congestion Control (ACG) message, if used, still require preprogrammed translations in all 1/1A ESS offices. There are a few translations required for reroutes in general to work that are input on a per-machine basis and are discussed only once. Changes or additions to these translations occur infrequently once the office is on line.

2.1.1 Trunk and Service Circuit Route Index Record Form

The Trunk and Service Circuit Route Index Record (Form 1303C) (no figure attached) maybe reviewed to identify final trunk groups. See ESS Translations Guide for detailed information.

2.1.2 Office Options Record Form

The Office Options Record (Form 1500D) (no figure attached) turns the Network Management reroute feature ON or OFF, and for 1E8, 1AE8, and later generics, allows preprogrammed control counts and flexible reroute counts to be sent to NTMOS. See BR 780-150-132, 1/1A ESS Parameters and Features Including Data, for determining and controlling control counts. This is a one per office translator.

Form 1500D is used as follows:

Item	Column	Description
23	27	Turns on Network Management Reroute Feature
38	27	Sends Preprogrammed Control Counts to EADAS/NTV1
41	27	Sends Flexible Reroute Counts to NTMOS

2.1.3 3-Digit Non-Reroutable Code Record Form

The 3-Digit Non-Reroutable Code Record (Form 1512) is ***required*** in all 1/1A ESS offices in order for any reroutes to work. This translator must exist whether any

entries are on the form or in the translator or not, in order for any reroutes to work. It is suggested that at least a token entry of a non-dialable code be entered on this form in order to prevent it from being inadvertently eliminated with a translations repack. Most areas, however, do have codes that may be non-reroutable, e.g., 411, 611, 800[1], 900, etc., due to signaling constraints, VIA office limitations, BR 780-150-134 Issue 3, October 2001, or operating company policy. See ESS Translations Guide for detailed information.

Form 1512 is only valid for three-digit codes and will not accommodate Operator codes, 1010XXX access codes, six-digit or destination codes. Some of those codes may be non-reroutable but blocking them from being rerouted would require pointing other codes that access that trunk group to a "dummy" group (with one originating member that can either be operational or not operational but made busy permanently), and rerouting the "dummy" trunk group. The non-reroutable code translator is effective for both regular and immediate reroutes. For this reason, codes on this list will be blocked if a 100% immediate reroute is activated on a trunk group in preparation for a cutover or for maintenance purposes. In 1 ESS machines, this translator is not recent change huntable, and central office translations must be updated for the 1512 form to be effective in call processing. On an emergency basis only, a single card overwrite could be done by the 1 ESS maintenance personnel. This is a one per office translator.

2.1.4 Traffic Register Assignment Record Form

The Traffic Register Assignment Record (Form 1400) (no figure attached) is where the five-minute collect feature is activated. A checkmark in KP column 34 turns on five-minute collect for any traffic registers on the H or C schedule. For more details, see BR 780-150-132. These translations are input on a per-trunk-group basis and are essential to NTMOS's ability to map the trunk group for reroute activation.

2.1.5 Trunk Group Supplementary Record Form

The Trunk Group Supplementary Record (Form 1218) (no figure attached) requires Network Management entries for trunk groups involved in reroutes. The trunk groups designated as FROM trunk groups must have the NPA to which they terminate assigned, and the TO trunk groups need both the NPA and a Reroute Route Index (RRRI) assigned.

1A ESS offices with the 9SNMER feature loaded have flexible reroute capability. If using flexible reroutes, the 1218 form entries are still needed for reroutes to work. It may be desirable as a local option to assign all outgoing and two-way message trunk groups both the NPA and RRRI, making them usable as either FROM or TO trunk groups for total reroute flexibility.

1. All Toll Free Codes, e.g., 888, 877, 866, 855.

Note: Preprogrammed control translations (see paragraph 2.08) are not necessary with flexible reroutes, except those activated by ACG messages. Also, some TO offices are not capable of acting as a VIA, so trunk groups to those switch types should not be assigned to the 1216 form.

See Translations Guide for detailed information.

Form 1216 is also used for purposes other than reroutes. A trunk group may appear on more than one line of Form 1216. In offices with Equal Access (EA), all trunk groups will already have entries on this form and the addition of reroute information will be on an additional line.

If reroutes are to be activated as a response to receipt of a ACG Message, a preprogrammed control must be built as well as Form 1216 entries.

Form 1216 entries for reroutes are the same for all types of reroutes and for all types of traffic being carried (local, intra-LATA toll, and Feature Groups A, B, C, and D).

Preprogrammed Reroutes

Reroutes must be preprogrammed in all 1A ESS machines prior to the 1AES generic or with 1AEB without the 9SNMER (flexible reroute) feature loaded. Reroutes must be preprogrammed in all 1 ESS machines with any generic and in all 1/1A ESS machines for ACG-activated controls.

2.1.6 Miscellaneous Assignment Record Form

The Miscellaneous Assignment Record (Form 1506) (no figure attached) is used to build the Unit Type 46 translator (preprogrammed controls). Form 1506 has multiple uses. This practice addresses the form entries to build regular and spray reroutes.

Reroutes require three line entries on Form 1506 if only one VIA TGN is being used, or four line entries if two or three VIA TGNs are used in a spray arrangement. See Translations Guide for detailed information.

2.1.7 Network Management Trunk Group Control Pointer Record Form

The Network Management Trunk Group Control (Pointer) Record (Form 1508) (no figure attached) is not a true translation form and is not used in building a particular translator. It is an administrative form only, as it has no key punch column numbers. The pointer number administered by this form, however, is entered on Form 1506 for preprogrammed controls for input to the ESS machine. Form 1508 is self explanatory. Pointer 00 is invalid. Each of the other pointers (01-63) may be used only once. In the TRUNK GROUP NUMBER column, enter a FROM TGIF for a trunk group that will have one or more preprogrammed controls against it. Any TGN may be assigned as many pointers as desired, but one is all that is necessary. It is easier

to administer the form if each pointer number matches the preprogram number on Form 1506; this may result in TGN duplication on Form 1508. If more than one ACG-controlled preprogram exists for the same trunk group, all must have the same pointer on Form 1508 or audits will occur in the 1/1A ESS machine when more than one machine congestion level is received at the same time.

To summarize, a number of translations are required to implement and administer 1/1A ESS reroutes. The following is a brief breakdown of those translation requirements:

- In all 1/1A ESS offices, the following translations must exist for reroutes to work:
  - — The 1400 form (Traffic Register Assignment Record) needs five-minute collect set on all trunk group measurements from which the Network Manager desires to receive data.
  - — The 1500D form (Office Options Table) needs the reroute feature turned ON.
  - — The 1512 form (3-Digit Non-Reroutable Code Table) needs to exist.
- In 1A ESS offices with the 1AE8 generic and feature 9SNMER loaded, the following additional translations need to exist for flexible reroutes to work:
  - — The 1216 form (Trunk Group Supplementary Record) needs to exist for assigning the terminating NPA and a valid RRRI on all outgoing and two-way trunk groups in order to have complete flexibility of FROM and TO trunk groups with flexible reroutes.
  - — The 1303 form (Route Index Record) needs a valid route index that can be used as an RRRI. If not, a new, dedicated RRRI should be built.
- In all 1A ESS offices without feature 9SNMER loaded and in all 1 ESS offices, all of the above translations are required as well as the following:
  - — On the 1506 form (Miscellaneous Assignment Record), preprogrammed reroute controls need to be built.
  - — The 1508 form (Network Management Trunk Group Control Pointer Index Record) needs a pointer assigned to each FROM trunk group on which preprogrammed controls are built.

In 1 ESS switches, some office translations must be updated to be effective in call processing. Of the forms discussed so far, Forms 1500D, 1512, and 1303C are the only ones with such a requirement. Forms 1400, 1202, 1216, 1506, and 1508 are recent change hunted and do not require an update.

2.2 1/1A ESS Basic Reroute Translation Forms (VIA Office)

2.2.1 Trunk Class Code (TCC) Record Form

The Trunk Class Code (TCC) Record (1204 form) (no figure attached) determines the quantity of digits that may be received on an incoming or two-way trunk group. TCC word 2, bits 7-10 is labeled "QUANTITY OF DIGITS RECEIVED." The form identifies these bits as 2, 3, or NO digits received if the value of the bits is 0000. A value of 0000 is also used for seven- or ten-digit impulsing for tandem-type calls. A rerouted call is a tandem call in the VIA (TO) office. Bit 22 of the same word must also be set to Charge on Free in order to pass answer supervision to the originating office on calls for which a charge should be made such as measured service or any toll calls. See Translations Guide for detailed information.

2.2.2 Trunk Group Tandem Record Form

The Trunk Group Tandem Record (1209A form) (no figure attached) is used to apply the tandem feature to a trunk group. Seven- or ten-digit incoming calls that are the result of a reroute in another office should route out of the VIA office as if the call originated in that office; however, if it is normally a billed call in the VIA office, it cannot be billed again. Normally, if this is a seven/ten-digit incoming trunk group it should be routed to tandem table 000. Tandem table 000 is not a real tandem table in 1/1A ESS, but its use instructs the program to use the office three-digit translations to route calls received. The three-digit translator is identified in the RATE CENTER column.

> Note: When tandem table 000 is used, call gaps activated in the VIA office will affect both incoming and originating traffic. This is because a call gap is actually a recent change that is activated against codes in the local rate center (000), and both incoming and originating traffic will be treated the same.

See Translations Guide for detailed information.

2.2.3 Rate and Route Chart Form

The Rate and Route Chart (1304A form) (no figure attached) provides screening, special routing, type of billing, and access code requirements for all types of intraoffice and interoffice calls. Since local tandem calls cannot be billed in the tandem office, the charge index should always be marked as 000 (free). Access codes 1- or 0+ are not passed on by the originating office and should be permitted in the VIA office but not required, or forbidden. Generally, all screening codes will be marked as REGULAR, but special routing may occur if necessary.

See Translations Guide for detailed information.

2.3 1/1A ESS Rerouting of Local and Feature Group A

Local and Feature Group A Reroutes in 1/1A ESS offices using another local 1/1A ESS office as the VIA are the easiest of all reroutes to translate. Translations needed are outlined in the preceding paragraphs. See Translations Guide for detailed information.

For flexible reroutes, the originating office (A) needs Forms 1400, 1500D, 1512, and 1216 and a valid RRRI on Form 1303C. For preprogrammed reroutes, the 1506 and 1508 form entries are also required. If office A is a 1 ESS (in lieu of a lA ESS) office, the office translations must be updated to be effective in call processing. See Translations Guide for detailed information.

The TO or VIA office (V) must be set up to receive seven or ten digits and to "Charge on Free." This needs translation forms 1204 and 1209A entries. In addition, the 1304 form associated with the VIA trunk group must screen properly to allow the call to tandem through the office without attempting to charge. If office V is a 1 ESS (in lieu of a 1A ESS*)* office, the office translations must be updated to be effective in call processing. See Translations Guide for detailed information.

If office V is a LATA Access Tandem and the VIA trunk group is used only for local traffic, the same translations are needed as outlined above. If the VIA trunk group carries combined traffic (local tandem and toll), the translations are already in place for local reroutes to complete properly. See Translations Guide for detailed information.

Feature Group A inter-LATA traffic being served by office B will reroute properly along with local traffic from Office A. Feature Group A traffic from office B to the Interexchange Carrier (IC) cannot be rerouted due to Feature Group A service being a line termination service (line side connection) accessed by a local directory number, not a trunk group. See Translations Guide for detailed information.

2.4 1/1A ESS Rerouting of Feature Group B

Feature Group B (FGB) reroutes in 1/1A ESS offices work very similarly to local and Feature Group A (FGA) reroutes.

FGB is provided as trunk side switching through the use of end office or access tandem (AT) switch trunk equipment. The switch trunk equipment is provided with wink start and answer and disconnect supervisory signaling. The Bell Operating Company (BOC)/Information Distribution Company (IDC) may provide Automatic Number Identification (ANI) to the IC if requested, but the IC's customer must do two-stage dialing as in FGA. The uniform code to be dialed by the FGB IC customer is 1010XXX with XXX being the applicable IC access code. An IC may have different access codes for different service offerings.

The originating office (A) needs Forms 1400, 1500D, 1512, and 1216 and a valid RRRI on Form 1303C for flexible reroutes. For preprogrammed reroutes, the 1506 and

1508 form entries are also required. If office A is a 1 ESS (in lieu of a lA ESS) office, the office translations must be updated to be effective in call processing.

The TO or VIA office (V) must be set up to receive seven or ten digits and to “Charge on Free”. The 1204 form must show the quantity of digits received as 0000 and the 1209A form should assign the incoming trunk group to tandem table 0. Screening on the 1304A form must allow calls to 950 to complete without billing (charge index 000). All translations in the VIA office must be updated if this is a 1 ESS (in lieu of a 1A ESS) office. See Translations Guide for detailed information.

2.5 1/1A ESS Rerouting Equivalent for Feature Group D

Feature Group D (FGD) reroutes in 1/1A ESS offices require most of the translations covered previously and are referenced where appropriate. Some additional translations are also required and vary depending on the trunking arrangement being used. Detailed in this section are the translation differences needed in the originating (FROM) and VIA (TO) offices.

There are two methods of routing FGD traffic from an EAEO to an IC: one is to send the calls to an Access Tandem switch and is discussed directly below and the other method is to route directly to an IC, which involves totally different translations, and is discussed in Section 2.8 of this practice.

Feature Group D traffic originating in an Equal Access End Office (EAEO) may route through an Access Tandem (AT) switch that then forwards the calls on to the proper Interexchange Carrier (IC). The trunk group from the EAEO to the AT usually carries combined traffic that may consist of inter-LATA toll, intra-LATA toll, and local traffic. Some operating companies may choose not to reroute inter-LATA traffic from a combined group but reroute only intra-LATA toll and/or local calls allowing more capacity on the combined group for inter-LATA IC traffic. This type of reroute is advantageous because it:

- avoids adding another link to FGD traffic that would reduce overall end-to-end transmission quality, and
- segregates ICs that want their calls rerouted from those that do not.

To accomplish an equivalent reroute, a "dummy" trunk group would have to be built in the originating office. The "dummy" group must have at least one member in the group in order to be audited by NTMOS. Without the audit capability, any attempt to activate a reroute would fail. The one trunk could be taken from the combined group and may or may not be terminated to carry "good" traffic, making the "dummy" a possible trunk subgroup, in which case it would be necessary to communicate with the Circuit Administration Center (CAC), Network Administration Center (NAC), and Switching Control Center (SCC) forces to ensure that the records actually reflect the two trunk groups and that data is accumulated properly for future engineering needs. Five-minute collect should be checked on the usage, peg count, and overflow (and incoming peg count if it is a two-way group) registers on the C Schedule of Form 1400 to provide audit and control capability for

the NMC on the "dummy" trunk group. Intra-LATA and/or local traffic should first route to the "dummy" group that would then overflow to the combined group. A reroute on the "dummy" group will remove intra-LATA toll and/or local traffic from the combined group. Calls should not be rerouted to the "dummy" trunk group, because they cannot overflow to the combined group. The Cancel In Chain Return (CICR) option will not force rerouted calls to route up the "dummy" group's routing chain.

The same method could be used to reroute a particular IC's traffic off of the combined group by routing the IC first to a "dummy" group that overflows to the combined group and applying a reroute to the "dummy" group. Translations for the VIA office would have to be built for this arrangement as outlined in Sections 2.6 through 2.9

Note: See also BR 780-150-132 for diagrams of "dummy" trunk group arrangements.

2.6 1/1A ESS Translations Common to All Feature Group D Reroutes

To reroute Feature Group D (FGD) traffic from an Equal Access End Office via (to) another 1/1A ESS EAEO requires more translations than local or intra-LATA toll reroutes.

The originating office translations are the same as for other reroutes that are covered in Sections 2.1 through 2.3 of this practice, but if international calls are to be rerouted, the 011 code must not be specified as non-reroutable on the 8 Digit Non-Reroutable Code Record (1518 Form).

Translations in the VIA (TO) office are different, depending on whether the rerouted calls are to route to an IC directly or through a designated VIA office as well as the Access Tandem (AT). Subsequent paragraphs in this section cover the translations that are common to both types of reroutes. Section 2.7 covers the translations for rerouting calls from an EAEO to an AT via another EAEO. Section 2.8 covers the translations for rerouting EAEO to IC direct trunks via another EAEO with direct IC trunking.

The translations for the two types of VIA are not compatible or interchangeable with each other. A VIA trunk group may be used for one type of FGD reroute or the other**,** but not both. This will necessitate detailed preplanning and accurate record keeping in the NMC. The Build Plans File in NTMOS may be used to store the "preplanned" reroute information for real-time activation of flexible reroutes. The records may then be referenced when implementing FGD flexible reroutes to ensure that proper routing is maintained.

In either case, the group may still be used for local and/or intra-LATA reroutes as well as FGD reroutes as long as the BR form, the Toll Digit Index (TLDI) (no figure attached), is built to accommodate all the digit combinations.

In the VIA office, for both types of FGD reroutes, the Trunk Class Code (1204 form) of the trunk group incoming from the originating EAEO must have the "Charge On

Free" bit marked in word two, bit 22. If the AT for which rerouted calls are destined is a 1/1A ESS office, the incoming trunk group's TCC must also have the "Charge On Free" bit marked. This allows answer supervision to be passed to the originating office for proper charging of the calls. TCCID (bit 8 of word 3) is used to identify trunk groups that are connected directly to an IC. Since this trunk group is incoming from an EAEO, TCCID must be 0.

The Trunk Group Supplementary Record (1218 form) (no form attached) in the VIA office must assign an Incoming Separation of Revenue code (INSEP) to the incoming trunk group for both types of FGD reroutes. See Translations Guide for detailed information.

For both types of FGD reroutes, the incoming trunk group in the VIA office must be retranslated as a "type 10" (intertoll) trunk group. No translation form entry is required.

To change a trunk group to "type 10" may involve considerable recent change work. All the trunks in the trunk group must be taken out of service and removed from the trunk group, the TGN must be removed completely and then rebuilt as a type 10 TGN, with the proper Trunk Class Code (1204 form), Toll Digit Index (BR form), Chart Column (1304 form), and INSEP code (1216 form) assigned. The new Trunk Class Code, Toll Digit Index, and Chart Column must already exist. The trunks may then be moved back into the group and returned to service. The alternative would be to build a new TGN with the required translations, remove the individual trunks from service a few at a time, move them into the new "type 10" TGN and return them to service. The old trunk group could then be removed. With either alternative, the changes should be made during periods of light traffic.

The Trunk Group Toll Record (1217 form) (no form attached) associates the TLDI with the incoming trunk group. See Translations Guide for detailed information.

The first stage of Equal Access outpulsing from the originating office consists of digits either in the form of ZZZ+XXX, where ZZZ picks which trunk group is to carry the call and XXX identifies which carrier is to receive the call, or INTX+XDD~+0111 (or CCC), where OIR (or CCC) is the padded country code for international calls.

A Toll Digit Index (BR form) (no figure attached) must be built. All three-digit codes that are normally accessible from this incoming trunk group need to be translated on the TLDI. All local codes to the office, and any codes that may tandem through to another office would be included. If it is desired to reroute local or intra-LATA toll calls as well as FGD calls through the office, Rate Center 0 translations must be duplicated here as well as the ZZZ/1NX codes to be received for rerouted FGD traffic. TLDI 0 may not be used for rerouted FGD calls because it cannot accommodate ZZZ/1NX codes. The valid range of Rate Center numbers, TLDI numbers, and Toll Foreign Area Indexes (TFAI) combined is 000-083. They share the same head table and, therefore, may not be duplicated. See Translations Guide for detailed information.

2.7 1/1A ESS Rerouting from an EAEO to an Access Tandem via Another EAEO to the Access Tandem Only Reroutes for Feature Group

To reroute Feature Group D (FGD) calls from an EAEO to an Access Tandem (AT) via another EAEO to the AT only, the VIA or TO office translations must be set up to receive the first stage of outpulsing in the form of ZZZ+XXX or 1NX+XXX+O1R (or CCC). The VIA office should select a route to the AT based on three-digit translations, delete no digits, prefix no digits, cut through to the AT, repeat outpulse the first stage of digits received, and repeat "winks" from the AT back to the EAEO. From this point on, the VIA office is transparent to the call and the EAEO outpulses the second stage of digits through the VIA office directly to the AT. The VIA office repeats "winks" from the AT back to the EAEO providing proper protocol for Equal Access signaling.

The trunk group and three-digit translations Toll Digit Index (TLDI) are set up as outlined in Section 2.6. See Translations Guide for detailed information.

Figure A-10 in Appendix A shows the sequence of events involved in rerouting an EAEO to an AT trunk group via another EAEO.

2.8 1/1A ESS Rerouting to Directly Connected Interexchange Carriers for Feature Group D

To reroute calls to directly connected Interexchange Carriers (ICs), the sequence is the same as described in Section 2.7, except that, instead of cutting through to the Access Tandem (AT), cut through is directly to an IC.

If the VIA (TO) office already serves as an Access Tandem, the necessary translations for reroutes to work may already be in place. If not, they should already exist but are not accessed by the local trunk group. In that case, all that should be necessary to make the VIA route work for FGD reroutes, is to change the incoming trunk group to a "type 10" group Section 2.6, assigning it the existing AT Toll Digit Index (TLDI), Chart Column (CCOL), and Incoming Separation of Revenue code (INSEP).

If the VIA (TO) office is an EAEO that does not now serve as an Access Tandem but does have direct trunking to ICs, it must treat incoming rerouted Feature Group D calls as if it (the VIA office) were an Access Tandem. All Access Tandem translations must be in place. Some of the translations required in the routing sequence will already exist and are shared with the regular end office Equal Access feature, while others are unique to the rerouted calls (TLDI, INSEP, special Rate and Route Patterns, and special Route List Indices on the IC Common Block).

The first stage of pulsing (ZZZ+XXX or 1NX+XXX+OIR (or CCC)) is not repeat outpulsed to the IC. See Figure A-11 in Appendix A.

2.8.1 Rate and Route Pattern Record Form

The Rate and Route Pattern Record (1305 forms) (Not Attached) must have separate entries for each Interexchange Carrier and International Carrier ZZZ/INX code that may be received for rerouted calls because calls to different carriers will route out of the office on different trunk groups. See Translations Guide for detailed information.

2.8.2 Interexchange and International Carrier Common Block Record Form

The Interexchange and International Carrier Common Block Record (1333 form) (IC COMMON BLOCK) provides the Route Indices for all possible routes from this office to each IC or INC. Each IC will have one or more common blocks. Each common block is identified by its unique Carrier Code (XXX digits) in KP columns 16-18.

If an EAEO is being used as a reroute VIA (TO) office, the IC Common Blocks, which may be used for rerouted calls, will already be in place and used for local Equal Access calling. This practice does not address the descriptive line entries or the Route List entries for local customers' Equal Access, which will already exist and need not be changed to accommodate reroutes.

Entries for rerouted or Access Tandem-type calls must be made for every IC Common Block that may be accessed by rerouted calls. See Translations Guide for detailed information.

2.8.3 Carrier Interconnection Selector and Index Table Form

The Carrier Interconnection Selector and Index Table (1335 form) furnishes the various combinations of Route List Selectors and Route List Indices and provides each with a unique three-character code to be used for recent change input of Trunk Group, Rate and Route Pattern, and Chart Column translations.

The codes consist of three alpha and/or numeric characters A-Z and/or 0-9 and may not be duplicated. A code of 000 (all zeros) is invalid.

Every unique Route List Selector and Index pair that appears on the IC Common Blocks (1333 form) must be associated with a code on the 1335 form. Up to 128 codes may be entered. It is not necessary to build table entries for just a Route List Selector or Route List Index as an existing entry with the appropriate Route List Selector or Route List Index may be used when only one or the other is needed. See Translations Guide for detailed information.

2.9 1/1A ESS Reroute Translations Summary

The translations that are required for reroutes in 1/1A ESS offices can be relatively simple or quite complex, as with Feature Group D directly connected to an IC. In any case, all reroutes do require special translations that are not a part of the normal office routing records.

Reroutes in 1 ESS offices require preprogrammed translations, whereas 1A ESS offices with the 1AE8A generic program and feature 9SNMER loaded have flexible reroute capability. Flexible reroutes require less translations in the originating office, making them far more convenient to use or change. However, in certain cases, preprogrammed translations provide a safer means to reroute Feature Group D (FGD) calls to the proper VIA (TO) office since that office can only be programmed to act as a VIA for FGD to an Access Tandem or to a directly connected IC; it cannot serve as a VIA to both types of calls. For this reason, the Network Manager must maintain a complete set of up-to-date records of any translations for FGD reroutes. Failure to do so could result in the loss of many revenue producing telephone calls, transmitter or receiver time-outs (TN08s) in the originating and/or VIA office, and customer trouble reports. The Build Plans Files in NTMOS may be used to store the "preplanned" reroute information for real-time use when activating flexible reroutes.

As with most 1/1A ESS translations, errors can be fatal. Should a loop condition[2] be formed, either in translations or through the use of flexible controls, a minimum of a Manual Phase Five reinitialization of the machine would be required to restore normal call processing. The Network Manager must exercise extreme care in preplanning and implementing reroute controls.

Reroutes work very well in 1/1A ESS switching machines when the proper translations have been thoughtfully and accurately written and input to the machines.

2. A loop condition, or 'round-robin', exists when a routing path is established that would allow a call attempt to return to a previous routing point.

3 5ESS REROUTES

3.1 5ESS Reroutes (Originating Office)

Reroutes originating in a 5ESS switching machine are not as dependent on translations as in other switching systems, and in many cases are not required for some Network Management functions to work properly. It is necessary, however, for the switch to have the Network Management Features loaded. See ordering information in BR 780-150-132.

Reroutes in a 5ESS switching machine are fully flexible, and require no preprogramming in memory for the FROM or TO trunk group translations.

Section 3 of this practice covers the basic 5ESS switch translations used for rerouting calls. These translations should be reviewed to ensure their accuracy before using the reroute. In most cases they will already exist, except in the case of rerouting Feature Group D (FGD) calls via an EAEO that is not already translated to act as an Equal Access Tandem. Sections 3.5 and 3.6 cover the translations needed for FGD reroutes.

The 5ESS translations addressed refer to the translators or tables involved, by both table name and 5ESS form numbers, even though the forms are seldom used after the office is cut into service except as a paper record of what is in the machine. See Translations Guide for detailed information.

One caution is necessary and must be considered when rerouting calls that originate from a 5ESS switching machine: there is no translation table in the 5ESS switch to identify three-digit codes that should not be rerouted; and there is also no means of declaring a code or series of codes as non-reroutable on a real-time basis. Therefore, the Network Manager must evaluate all reroutes to ensure that all codes normally routed on the FROM trunk group can be rerouted and complete properly over the TO trunk group(s). Improper routing can result in problems at the VIA office or calls completing to wrong numbers. If there are any codes that reroute to a FROM trunk group that should not be rerouted, or would be misrouted as a result of the reroute, the trunk group between the affected offices should be split into two trunk groups. The route index derived from the code that should not be rerouted will point to the first trunk group that will exclusively handle these calls in-chain. The second trunk group will be normally set up to handle other calls as well as calls that overflowed the first group. A reroute can be activated on the second group, specifying the desired reroute percentage for Direct Routed traffic (DIR), and zero percentage for Alternate Routed (AR) traffic. This will prevent the calls that overflowed from the first trunk group from being rerouted.

3.1.1 Trunk Group Record Form

The Trunk Group Record (5202-1 form) (no figure attached) must be checked to see if the Far End NPA is entered for both the FROM and TO trunk groups. This is the

NPA (area code) in which this trunk group terminates. If the trunk group does not have the NPA assigned, reroutes will not work properly. The suggested solution is to have the Far End NPA assigned to all outgoing and two-way message trunk groups. This will provide increased flexibility in implementing reroutes in the 5ESS switching machine. (Some offices will still not be suitable VIA office candidates because of other constraints, i.e., office type Step-by-Step, No. 5 Crossbar with screening, etc.). The Build Plans feature in NTMOS may be used to store valid flexible reroutes as a means of identifying valid VIA offices.

3.2 5ESS Basic Reroute Translations (VIA Office)

5ESS translations for reroutes in the VIA (TO) office are addressed in the following paragraphs from the incoming or two-way trunk group (VIA group), as a call progresses through the different translations and routes back out of the office.

To process seven- or ten-digit rerouted calls, only one translator, if any, will need to be changed or augmented. That translator is the Incoming Digit Interpreter Table (INDIT) (5309 form), and is described in Section 3.2.2, with sample form entries following Section 3. (Examples of translation forms not requiring special input for local and/or intra-LATA toll reroutes are not included.) The full call progression is, however, explained in simplified terms for ease in understanding the process involved. The call flow is diagrammed in Figure A-12 in Appendix A.

3.2.1 Trunk Group Record Form

The Trunk Group Record (5202 form) of the incoming or two-way trunk group on which the call is received in the VIA office will already exist. It provides the Digit Analysis Selector (DAS) and Screening Index (SCR IDX), which are the initial translation entries used for routing an incoming or tandem type call.

The Digit Analysis Selector (5300-1 form) (no figure attached) will also already exist and provides the Incoming Digit Interpreter Table (INDIT) number and the Local Digit Interpreter Table (LDIT) number.

3.2.2 Incoming Digit Interpreter Table Form

The Incoming Digit Interpreter Table (5309 form) provides several different routing outputs. The existing entries on the INDIT are the code interpretations necessary to route calls normally terminating in and tandeming through the office. If the form is not presently set up for seven- or ten-digit incoming and local tandem digit interpretation, the only entries required will be to list digits 2 through 9 in the INC DIGS column and mark the LDIT column with a Y for each entry. This is the only translation change or addition needed to handle seven- or ten-digit rerouted local and intra-LATA toll calls in a 5ESS office. The other columns on the form are not applicable to seven- or ten-digit tandem type calls.

3.2.3 Prefix/Feature Digit Interpreter Record (PDIT) Form

The LDIT is used for local subscriber originations following interpretation by the Prefix/Feature Digit Interpreter Record (PDIT) (5300-2 form) where Custom Calling Access Codes, 1+, 0+, etc., requirements are determined. Since these codes will not be received on incoming or tandem type calls, the Y (yes) in the LDIT column of MIT (5309 form) tells the call processing program to use the (LDIT) identified in the Digit Analysis Selector (5300-1 form) to interpret the rest of the digits necessary to process the call.

The two major outputs of LDIT for local and intra-LATA toll calls are a Route Index (RTI) and a Code Index (CDI). The RTI is the Regular Route Index that is used by most calls to this code and the CDI is used to index into the Rate And Route translator that was picked by the Screening Index (SCR IDX) entered on the Incoming Trunk Group Record (5202 form).

3.2.4 Rate And Route Record (RAR) Form

The Rate And Route Record (RAR) (5301 form) is a routing and charging matrix, the crosspoints of which are selected by the SCR IDX and CDI.

The column labeled Route Index may contain REGL, which indicates that the regular Route Index is supplied by INDIT or LDIT. If the call should terminate to a Route Index other than the Regular Route Index, or to a Special Route Index instead of an intraoffice code, that Special Route Index will be listed and will override the Regular Route Index.

Also found in the RAR is the Charge Index (CI) (5302 form), which will determine if and how a call is to be charged. Since this is the VIA office for rerouted calls, those calls cannot be billed in this office. The call will route out of the office without an AMA record being made, no matter which Charge Index is in translations. Charging for rerouted calls is done in the originating office.

3.2.5 Route Index Record (RTI) Form

The Route Index Record (RTI) (5303 form) provides the Trunk Group Number (TGN) of the group from the VIA office to the office for which the call is destined. The TGN is expanded on the Trunk Group Record (5202 form).

3.3 5ESS Rerouting of Intra-LATA Local and Toll and Feature Groups A, B, and C

Since there are no translations required for reroutes from an originating 5ESS switch, there are no specific issues to address for intra-LATA local or toll or Feature Groups A, B, or C. Trunk groups must still be conditioned for variable digit delivery to be used as a VIA for rerouted traffic. See Section 3.2.2.

With Feature Group B, since there is no non-reroutable table in the 5ESS switch, the 950 access code will reroute like any other three-digit code. If ICs that serve Feature Group B customers desire different reroute treatment, the "dummy" trunk group concept may be used to handle IC traffic in accordance with Intercompany Network Management Agreements that may be in place. The "dummy" trunk group concept is described in BR 780-150-132 and in this practice, as it relates to other Feature Groups and switch types.

3.4 5ESS Dummy Trunk Groups and Rerouting Equivalent for Feature Group D

Feature Group D (FGD) reroutes in 5ESS offices require most of the translations covered in Sections 3.1 and 3.2 and are referenced in this section where appropriate. Some additional translations are also required and vary depending on the trunking arrangement being used. Detailed in this section are the translation differences needed in the originating (FROM) and VIA (TO) offices.

There are two methods of routing FGD traffic from an EAEO to an Interexchange Carrier (IC): one is to send the calls to an Access Tandem switch, which is discussed in Section 3.5; the other method is to route directly to an IC, which involves totally different translations and is discussed in Section 3.6 of this practice.

Feature Group D traffic originating in an Equal Access End Office (EAEO) may route through an Access Tandem (AT) switch that then forwards the calls on to the proper Interexchange Carrier (IC). The trunk group from the EAEO to the AT usually carries combined traffic that may consist of inter-LATA toll, intra-LATA toll, and local traffic. Some operating companies may choose not to reroute inter-LATA traffic from a combined group but reroute only intra-LATA toll and/or local calls, allowing more capacity on the combined group for inter-LATA IC traffic. This type of reroute has the following advantages:

- avoids adding another link to FGD traffic that would reduce transmission quality, and
- segregates ICs that want their calls rerouted from those that do not want their calls rerouted per local agreements.

In order to accomplish an equivalent reroute as described in above. A "dummy" trunk group would have to be built in the originating office. The "dummy" group must have at least one member in the group in order to be audited by NTMOS. Without the audit capability, any attempt to activate a reroute would fail. The one trunk could be a trunk taken from the combined group and could carry good traffic making the "dummy" a trunk subgroup, in which case it would be necessary to communicate with the Circuit Administration Center (CAC), Network Administration Center (NAC), and Switching Control Center (SCC) forces to ensure that the records actually reflect the two trunk groups and that data is accumulated properly for future engineering needs. Intra-LATA and/or local traffic should first route to the "dummy" group, which would then overflow to the combined group. A

reroute on the "dummy" group will remove intra-LATA toll and/or local traffic from the combined group.

> Note: Calls should not be rerouted to the "dummy" trunk group as they cannot overflow to the combined group. The Cancel In Chain Return (CICR) option will not force rerouted calls to route up the "dummy" group's routing chain.

The translations required for this type of reroute are described in Sections 3.1 and 3.2 of this practice.

The same method could be used to reroute a particular IC's traffic off of the combined group by routing the IC first to a "dummy" group that overflows to the combined group and applying a reroute to the "dummy" group. Translations for the VIA office would have to be built for this arrangement as outlined in Sections 3.5 or 3.6.

3.5 5ESS Rerouting from an EAEO Destined for an Access Tandem via an EAEO for Feature Group D

To reroute Feature Group D (FGD) traffic through (via) a 5ESS Equal Access End Office (EAEO), the VIA (TO) office must be translated differently than for other reroutes. Originating office translations remain unchanged.

There are two types of FGD reroutes: the shared or common trunk group from an EAEO to an Access Tandem (AT) may be rerouted from an EAEO via another EAEO and back to the AT; *or* a trunk group directly connected from an EAEO to an Interexchange Carrier (IC) may be rerouted via another EAEO. The pulsing and signaling sequences are different for these two types of FGD reroutes and they are translated in the VIA office differently. *One type or the other may be used for a trunk group but not both.* This will necessitate detailed preplanning and accurate record keeping in the NMC. (The Build Plans file in EADAS/NIR9 may be used to store the "preplanned" reroutes for real-time activation.) The records may then be referenced when implementing FGD flexible reroutes to ensure that proper routing is maintained. See Figures A-10 and A-11 for examples of Equal Access signaling in Appendix A.

In either case, the group may still be used for local and/or intra-LATA reroutes as well as FGD reroutes as long as the Incoming Digit Interpreter Table (INDIT) is built to accommodate all the digit combinations

This section discusses rerouting the combined group from an EAEO to an AT via another EAEO and back to the AT.

The first stage of Equal Access outpulsing from the originating office consists of digits in the form of either ZZZ+XXX, where ZZZ picks which trunk group is to carry the call, and XXX identifies which carrier is to receive the call, or *1NX+XXX+O1R* (or CCC), where 1NX is the International Carrier Code and O1R (or CCC) is the padded country code for international calls. When these types of calls are rerouted,

the originating office will continue to outpulse to the VIA office in the identical manner in which it outpulsed to the AT.

The object is to translate either the ZZZ or *1NX* code in the IIVDIT (5309 form), outpulse the entire first stage as it was received, with no digits deleted or prefixed, make no billing record (that's being done in the originating office) and then cut through the incoming trunk from the originating office to the AT.

The VIA office must establish INDIT (5309 form) translations for all of the spare toll codes that are valid ZZZ or 1NX codes and block the rest. For ZZZ codes, the INDIT should be set up to expect six incoming digits (ZZZXXX, delete no digits, and have a CI Type EMRR. For 1NX codes, the number of digits expected is nine *(1NX+XXX+CCC/OlR)*, delete no digits, and CI Type EMRR.

A new Route Index to the AT trunk group that does not prefix any digits must be used because the one used for the VIA office's EAEO to AT outpulses the ZZZ or 1NX code as prefixed digits.

The new Route Index should, however, designate the same trunk group number (TGN). For this Route Index, ANI Outpulsing and Overlap Outpulsing is not wanted (the originating office is taking care of that). The Signal Protocol may be either traditional (TRAD) or-equal access (EA), but it is not used due to the INDIT CI Type Call. The CI Route Type should be OTHER.

In addition to FGD traffic, seven or ten-digit incoming intra-LATA traffic will also be rerouted on the AT trunk group. Since subscribers in the VIA office are also permitted to complete to all intra-LATA codes, as are subscribers in the originating office, these translations are provided for in the VIA office's Local Digit Interpreter Table (LDIT). The exception is the VIA office's own codes or NOCs, that can be translated as office codes in the INDIT. The effect of not translating a code will be to send it to reorder.

3.6 5ESS Rerouting from an EAEO via an EAEO with Direct Trunks to the Same Interexchange Carrier for Feature Group D

To reroute calls to directly connected Interexchange Carriers (ICs); the sequence is the same as described in Section 3.5, except that, instead of cutting through to the AT, cut through is directly to an IC. The first stage of pulsing (ZZZ+XXX or 1NX+XXX+OIR [or CCC]) is not repeat outpulsed to the IC. Since the pulsing and signaling sequences are different for these two types of Feature Group D (FGD) reroutes, one type or the other may be used for a trunk group but *not both.* The object in this case is to translate either the ZZZ or 1NX code in the Incoming Digit Interpreter Table (INDIT), choose the proper IC trunk group, make no billing record (the originating office does that), and cut through to the IC.

If the VIA (TO) office already serves as an Access Tandem, the necessary translations for FGD reroutes to work may already be in place. If not, they should already exist but are not accessed by the local trunk group. If the VIA (TO) office is an EAEO not serving as an Access Tandem but does have direct trunking to ICs, it

must treat incoming rerouted Feature Group D calls as if it (the VIA office) were an Access Tandem. All Access Tandem translations must be in place.

The VIA office must establish INDIT translations for all of the spare toll codes that are valid ZZZ or INX codes and block the rest.

For ZZZ codes, the INDIT should be set up to receive six incoming digits (ZZZ+XXX). The CI TYPE is AVT (Access Via Tandem) that is used for an incoming trunk call from an EAEO. The XXX Carrier Identification Numbers are not interpreted on the INDIT.

For 1NX codes, the INDIT should be set up to receive nine incoming digits (1NX+XXX+OIR or CCC). The CI TYPE is INC (International Carrier Call) and is used for incoming trunk international calls from an EAEO. The XXX Carrier Identification Numbers and INX or CCC codes are not interpreted on the INDIT.

The 5ESS office, serving as an Access Tandem, tandems the calls to the interexchange or international carrier based on entries in the Carrier Destination Mapping (CDIM) Record (5300-a Form).

INDIT must also have a Code Index entry that is used to enter CDIM. The valid entries are 1-4095. The Route Index entry on INDIT should contain no entry for CI TYPE AVT or INC calls. INDIT Digits Deleted should be 0.

The Carrier Destination Mapping **(**5300-a form) is used to define carrier-specific Code Indices and Route Indices for the Carrier Interconnect capabilities.

The Code Index from INDIT plus the XXX Carrier Identification Code received from the originating EAEO are the keys to the CDIM. Every valid combination of INDIT Code Index with AVT or INC and Carrier Identification Number (XXX code) that are valid for this office must be entered in the CDIM.

- Under the CODE INDEX heading is the Code Index assigned in INDIT. Valid entries are 1-4095.
- The CARRIER ID) is the XXX Carrier Identification Number. Valid entries are 000-999.
- The CARRIER CODE INDEX is used to enter Rate and Route (RAR). Valid entries are 1-4095.
- The CARRIER ROUTE INDEX assigned to this call is considered to be the Regular Route Index and will be used if the entry found in RAR is REGL. A Special Route Index may be found in RAR that would override this Route Index.

The Screening Index and Code Index form a matrix for routing and charging. The Screening Index is associated with the incoming trunk group and is used as an index into the Rate And Route (RAR) tables. The Code Index from the CDIM is also used as an index into the RAR tables.

The output from the RAR is a Charge Index, which should be a free charge index for tandem calls, and the Route Index to use for the call. The Regular Route Index is found in the CDIM and will be used if the RAR Route Index entry is REGL, but it can be overridden by entering a Special Route Index in the RAR.

All Screening Index and Code Index combinations for access to the Interexchange Carriers (IC) must be entered in the RAR.

The Route Index for each class of IC call should point to the appropriate trunk group for that carrier. Digit prefixing should not be used on calls to Interexchange Carriers over directly connected trunk groups.

3.7 5ESS Remote Switching Module Reroutes

The 5ESS Remote Switching Module (RSM), if equipped with the Network Management Feature and appropriate trunking paths, has the capability of rerouting in the same manner as other Interface Modules. Those reroutes include local, intra-LATA toll, and inter-LATA toll (including Feature Group D). The capability of rerouting from an RSNI is unique to 5ESS switching machines.

3.8 5ESS Reroute Translations Summary

In summary, the 5ESS translations that are required for reroutes can be relatively simple, if any, or somewhat complex, as with Feature Group D directly connected to an Interexchange Carrier (IC). In any case, some reroutes do require special translations that are not a part of the normal office routing.

The Network Manager must take care to reroute Feature Group D (FGD) calls to the proper VIA (TO) office since that office can only be programmed to act as a VIA for FGD to an Access Tandem or to a directly connected IC. It cannot serve as a VIA to both types of calls. For this reason, the Network Manager must maintain a complete set of up-to-date records of any translations for FGD reroutes. These records may be in the NTMOS Build Plans File. Failure to do so could result in the loss of many revenue-producing calls, transmitter or receiver time-outs in the originating and/or VIA office, and customer trouble reports.

Reroutes should work properly in 5ESS switching machines if the necessary translations have been inputted to the machine accurately.

4 DMS-100F REROUTES

4.1 DMS-100F Basic Reroute Translations (Originating Office)

Reroutes originating in a DMS-100F switching machine with BCS-22 and earlier generics require preplanning and preprogrammed translations. However, DMS-100F switching systems that have an interface to NTMOS and are equipped with BCS-25 or later, are provided with the following feature packages:

- NTX 455AB (EADAS/NM interface software)
- NTX 218AA (EADAS/DC)
- NTX 273AA (Multiprotocol Controller, MPC)
- NTX 060AB (Network Management)
- NTX 060BB (Enhanced Network Management)

And are capable of applying "Flexible Reroute" controls from a MAP position or via NTMOS. A maximum of 16 reroutes may have multiple via routes. Each multiple via route can consist of seven alternate routes.

Preprogrammed reroutes may also be a portion of the 128 maximum manual trunk group controls that may be simultaneously defined in a DMS-100F that meets the above listed criteria. (See BR 780-150-128 for a detailed description of the operation of "Flexible Reroute" and "Preprogrammed" controls.)

Following is a description of the translations required for preprogrammed reroutes. These translations should be reviewed to ensure they are in place before using this feature.

Each VIA may be programmed at a different percentage level, but that is not necessary because a different percentage can be specified when the reroute is activated. The preprogrammed percentage is simply a default value that is used if no percentage is specified at the time of activation. Typically, the default value is set at 100%.

Direct Routed (DR) and/or Alternate Routed (AR) traffic will be treated the same and rerouted at the same percentage. (In BCS-22 and earlier generics, AR traffic is always rerouted at 100% when DR is activated at any level.)

A DMS-100-only switch, even with the Equal Access Feature, cannot be used as a VIA office for Feature Group D (FGD) calls unless the Tandem Feature is added to the switch and it is translated as an Access Tandem. If the switch is a DMS-100/200 combination or a DMS200-only, that has the Equal Access Feature and is already being used as an Access Tandem, it can be used as a VIA for FGD reroutes using the existing translations.

The translations discussed refer to the translators or tables involved by both table name and DMS-100F form numbers that provide table editing inputs.

One caution is necessary and must be considered when rerouting calls that originate in DMS-100F switching machines with generic BCS-22 and earlier: there is no translation table to identify three-digit codes that should not be rerouted. Therefore, the Network Manager must use care when applying reroutes on certain trunk groups to ensure that all codes normally routed on that group can be rerouted and complete properly. Failure to do so could cause transmitter or receiver timeouts in the originating or VIA office, possible loss of revenue, calls being completed to wrong numbers, and customer trouble reports.

If any codes that use the trunk group should not be rerouted, or would be misrouted as a result of the reroute, the trunk group between the affected offices should be split into two trunk groups or subgroups. (S**ee Section 4.4** for details on how to build trunk subgroups.) The Route Reference Number (RTEREF) derived from the codes that ***should*** be rerouted will point to the first trunk group that will exclusively handle these calls in chain. The second trunk group will be normally set up to handle non-reroutable codes, as, well as calls that overflowed the first group. A reroute can be activated on the first group, specifying the desired reroute percentage. This will allow all other traffic to be rerouted without affecting the codes that are not reroutable.

Future BCS releases may provide a means to identify non-reroutable codes in software, making the above procedure unnecessary.

The best way to determine which trunk groups are candidates as either FROM or VIA (TO) trunk groups is to obtain a copy of the Office Routing Table (OFRT) or HNPACONT, Sub RTEREF. First log in on the Network Management terminal in the normal manner. This will put you at the Command Interpreter (CI) level. (All commands are followed by a Carriage Return <CR>.)

To obtain table OFRT:

ENTER	RESPONSE
TABLE OFRT <CR>	TABLE: OFRT
	>
LIST ALL <CR>	(The DMS-100F switching machine will print out all of table OFRT.)
QUIT <CR>	

To obtain table HNPACONT, Sub RTEREF:

ENTER	RESPONSE
TABLE HNPACONT <CR>	TABLE: HNPACONT
	>
SUB RTEREF <CR>	>
LIST ALL <CR>	(The DMS-100F switching machine will print out all of HNPACONT.RTEREF)
QUIT <CR>	

In table OFRT, each complete line of data is referred to as a tuple. Each tuple is identified by a *key* which is the first element of data in the tuple. In OFRT the keys are labeled *RTE* and are a list of numbers in numerical order going down the leftmost column of the printout. Each key is an *index* into table OFRT. To identify which trunk groups are only route or final groups, it must first be established which tuple(s) have the data for final handling (No Circuit Announcement (NCA) or Reorder Tone (120 IPM Tone). Every trunk group's final routing must end with either 120 IPM or NCA then 120 IPM.

NOTE: Insert a copy of an OFRT printout from an office in your network. Identify the Route index that shows the following:

- Index AAA shows NCAANN (No Circuit Announcement) followed by (ST BBB)$,
- Index BBB shows T120 (120 IPM Tone Reorder Tone),
- Index CCC also shows NCAANN and is followed by (ST DDD)$, and
- Index DDD also shows T120.

This means that any tuple that has only one Trunk Group COMMON LANGUAGE® Code in its Route List and is followed by list AAA, BBB, CCC, or DDD is a final or only route trunk group. The $ at the end of the line is called the CONTMARK (continuation mark). The $ CONTMARK indicates that the record is the last in the Route List. If additional data for the Route List is on the next record, the CONTMARK will be a +. The position of RRTE in the Route List is the point at which the specified percentage of overflow traffic FROM the previous CLLI in the Route List, is rerouted when the reroute feature is activated. It indicates that Table RRTE, Index XX can be used as a next route before going to NCA if the reroute is activated. RRTE is the table name for reroutes and index XX is the reroute number.

Additional details on table OFRT can be found in Nortel Practice 297-1001-451, Section 007. Blank forms can be found in Nortel Practice 297-1001-454. This practice is not arranged in order by form numbers but by section number. OFRT forms are in Section 007.

The next step is to build table REROUTE and subtables REROUTE.NWMRROUT, where the different choices for VIA (TO) trunk groups are identified. Table REROUTE is used to map the reroute number found in the Route List of table OFRT to the applicable list of VIA routes (subtable NWMRROUT).

Table REROUTE must first be built to a size equal to or greater than the maximum number of reroutes that will be needed in this particular switching machine. The maximum number of reroutes allowed is 256. The reason table REROUTE should be built to the maximum size needed is because the table length can only be extended by deleting existing data, using the EXT (extend) command with a negative argument to change the size to zero, and then reinputing the extend command with the new value desired, and rebuilding all the reroutes that already existed. The first page of form 2190 should list the table length in the blanks following EXT (KP columns 5-7). The first reroute input information could also appear on the rest of the first page.

Once the reroute has been built from the 2190 form and has been associated with the FROM route from the 2431B/C form, the reroute translations can be verified to ensure accuracy.

G. First log in on the terminal in the normal manner. This will put you at the Command Interpreter (CI) level. (All commands are followed by a Carriage Return <CR>.)

ENTER	RESPONSE
TABLE OFRT <CR>	TABLE: OFRT
LIST ALL <CR>	
QUIT <CR>	
TABLE REROUTE <CR>	
LIST ALL <CR>	
POS xx <CR>	xx=reroute number to verify
SUB <CR>	
LIST ALL <CR>	

(The DMS-100F switch will print out all of table OFRT showing the RRTE number assigned to the route.)

TABLE: REROUTE

(The DMS-100F switch will print out all the reroutes built in the machine. Opposite each reroute number in parentheses is a number that tells how many tuples are in subtable NWMRROUT.)

(The DMS-100F switch will print the tuple for reroute xx.)

(The DMS-100F switch will print out all the tuples for the VIA routes for reroute xx.)

If the translations verify as accurate, the reroute is ready to be used.

H. To activate a reroute in a DMS-100F switching machine, you must be at either the CI level or RTECTRL level. From either of these levels the following message can be entered:

APPLY RRTE aaa bb ccc<CR>

where;

aaa =The reroute number

bb =The index into subtable NWMRROUT (RRTSUB number).

ccc =The percentage of traffic to be rerouted if different from the default percentage entered on form 2190.

<CR>= Carriage Return.

If you are using a VDU terminal, you may index in to the RTECTRL level and activate the control by entering the command numbers for APPLY and RRTE:

57 aaa bb ccc<CR>.

I. The reroute control may be removed from either the CI level or the RTECTRL level by entering:

REMOVE RRTE aaa<CR>

where;

aaa = The reroute number.

The control can be removed using a VDU terminal at the RTECTRL level by entering the command numbers:

67 aaa<CR>.

4.2 DMS-100F Basic Reroute Translations (VIA Office)

A DMS-100F switching machine can generally be used as a VIA office for seven- or ten-digit local and/or intra-LATA toll reroutes without any additional translations. Calls incoming on a trunk group are translated in a Standard Pretranslator or without a Pretranslator and with or without Class of Service Screening that could be used to block calls that should not be completed on a tandem basis.

Rerouted calls received by the VIA office are handled in the same manner as if they originated from a line number served by that office. The digits are received, translated and routed to a local office code or to an outgoing trunk group.

A DMS-100 switching machine cannot be used as a reroute VIA office for Feature Group D Equal Access calls unless the office has the Tandem Feature and is translated as an Access Tandem. Without the Access Tandem Feature, the DMS-100 switch cannot repeat the special "winks" back to the originating EAEO, which is necessary for Equal Access reroutes. It is possible to add the Tandem feature to an existing machine in order to have an emergency tandem backup, but all the Access

Tandem translations would already have to be in place if the office is to be used as either a VIA for FGD reroutes or as an emergency backup to an Access Tandem.

4.3 DMS-100F Rerouting of Intra-LATA Local and Toll and Feature Groups A, B, and C

The translations described in Section 4 can accommodate Intra-LATA local and toll and Feature Groups A, B, and C. Since rerouting is a function of translations, the digit delivery must already be set up for the VIA group to accommodate seven- or ten-digit variable digit delivery.

Build Plans may be helpful in NTMOS to store the available reroutes. NTMOS can be used to activate those reroutes in releases above BCS-24.

With Feature Group B, the 950 code would currently reroute, because there is no non-reroutable list in the switch. If Feature Group B customers desire different reroute treatment the "dummy" trunk group concept may be used to handle IC traffic in accordance with Intercompany Network Management Agreements that may be in place.

4.4 DMS-100F Dummy Trunk Groups and Rerouting Equivalent for Feature Group D

Rerouting Feature Group D (FGD) in a DMS-100F switching machine is done the same as any other reroute in the originating office. If the VIA office chosen is a DMS-100 office, it must have the Tandem Feature and be translated as an Access Tandem switch. Additional capacity may be provided for FGD traffic, however, by rerouting local and intra-LATA calls off of a combined trunk group through the use of trunk subgroups.

Feature Group D traffic originating in an Equal Access End Office (EAEO) may route through an Access Tandem (AT) switch that then forwards the calls on to the proper Interexchange Carrier (IC). The trunk group from the EAEO to the AT usually carries combined traffic that may consist of inter-LATA toll, intra-LATA toll and local traffic. Some operating companies may choose not to reroute inter-LATA traffic from a combined group but reroute only infra-LATA toll and/or local calls allowing more capacity on the combined group for inter-LATA IC traffic. This type of reroute has the following advantages:

- avoids adding another link to FGD traffic that would reduce transmission quality, and
- segregates ICs that want their calls rerouted from those that do not.

In order to accomplish an equivalent reroute, a "dummy" trunk group would have to be built in the originating office. The "dummy" group must have at least one member in the group. The one trunk could be a trunk taken from the combined group and could carry good traffic, making the "dummy" a trunk subgroup, in which case it

would be necessary to communicate with the Circuit Administration Center (CAC), Network Administration Center (NAC), and Switching Control Center (SCC) forces to ensure that the records actually reflect the two trunk groups and that data is accumulated properly for future engineering needs. Intra-LATA and/or local traffic should first route to the "dummy" group, which would then overflow to the combined group. A reroute on the "dummy" group will remove intra-LATA toll and/or local traffic from the combined group.

Calls rerouted to the "dummy" trunk group will overflow to the combined group. This type of reroute, while not typical, may have application for special NM needs.

The same method could be used to reroute a particular lCs traffic off of the combined group by routing the IC first to a "dummy" group that overflows to the combined group and applying a reroute to the "dummy" group. The VIA office cannot be a DMS-100-only office unless it has the Tandem Feature and is translated as an Access Tandem.

4.5 DMS-100F Reroute Translations Summary

Reroutes in DMS-100F offices with BCS-22 and earlier generic programs require preprogrammed translations. The BCS-25 and higher generic program has flexible reroute capability. Flexible reroutes require less translations in the originating office making them far more convenient to use or change but, in certain cases, preprogrammed translations provide a safer means to reroute Feature Group D calls to the proper VIA (TO) office since that office can only be programmed to act as a via for FGD to an Access Tandem OR to a directly connected IC. It cannot serve as a VIA to both types of calls.

For this reason, the Network Manager must maintain a complete set of up-to-date records of any translations for FGD reroutes. Failure to do so could result in the loss of many revenue producing telephone calls, transmitter or receiver time-outs in the originating and/or VIA office, and customer trouble reports. The Build Plans Files in NTMOS may be used to store the "preplanned" reroute information for real-time use when activating these reroutes.

Translations errors can be fatal, should a loop condition be formed either in translations or through the use of reroute controls. The Network Manager must exercise extreme care in preplaning and implementing reroute controls.

Reroutes work very well in DMS-100F switching machines when the proper translations have been thoughtfully and accurately written and inputted to the machine.

5 4 ESS REROUTES

5.1 4 ESS Basic Reroutes (Originating and VIA Offices)

Reroutes in a 4 ESS switch require no special translations for either the originating or VIA office. The 4 ESS switch has no line assignments and functions only as a tandem switch, therefore all the translations for doing reroutes are in place already.

When testing reroutes in a 4 ESS switch, either as an originating or as a VIA office, if rerouted calls are blocked, screening on the incoming trunk group is probably being done improperly. Normal translations should allow for any tandem calls to be completed as long as the 4 ESS switch has trunking incoming from the originating office and outgoing to the destination office.

A 4 ESS switch can be used as either an originating or VIA office for Feature Group D reroutes as long as it has the Access Tandem feature and is programmed as an Equal Access Tandem.

5.2 4 ESS Rerouting of Intra-LATA Local and Toll and Feature Groups A, B, and C

Since the 4 ESS BOC/IDC application does not handle line-side traffic, local and Feature Group A line-side reroutes are not an issue. Typically, a 4 ESS group can be carrying incoming and terminating local or Feature Group A traffic. Digit delivery to the tandem is already typically seven or ten digits. From the tandem, changes to seven- or ten-digit variable digit delivery would have to occur before rerouting could be done from the 4 ESS switch using an end office as a VIA route; this is especially helpful as a peak day technique to handle terminating traffic to residential exchanges using freed-up downtown business exchange routes.

In the 4 ESS switch, prior to 4E10, domain screening often precluded the use of local reroutes if they were categorized as non-POTS domain. Fixes were made available with 4E10 to allow those reroutes. The 4 ESS switch does not have a non-reroutable code feature. Network Managers often work around this situation, on a real-time basis, through the declaration of Hard-To-Reach (HTR) of a particular code or codes and the activation of reroutes using the HTR or non-HTR selection capability. This misuse of HTR is only a problem if actual HTR codes and the resultant controls are active simultaneously. For example, Selective Trunk Reservation (STR) active on a group would restrict HTR codes from accessing idle capacity when the group reaches its predesignated setting. If an HTR code was selectively set up for a reroute at the same time, there would be a conflict. By definition. HTR is not used for rerouting. In practice, it solves some problems: it eliminates the need for "dummy" trunk groups and provides real-time change capability. HTR does not currently extend to access codes such as 1010XXX type.

Feature Group B originating reroutes should not be a problem. The 950 code can be rerouted to an IC along with other three-digit codes. The trunk group is direct to the IC, so Intercompany Agreements will govern reroutability.

Feature Group C calls should not be rerouted via Feature Group D-only groups because of signaling differences.

5.3 4 ESS Rerouting for Feature Group D

Since the 4 ESS switch is a tandem, it would only reroute Feature Group D calls via a second Feature Group D route to the same IC, or via another Equal Access Tandem with Feature Group D trunks to the same IC. Billing considerations should have occurred in the EAEO.

While it is improper to reroute one IC's calls to another, it is also technically not feasible because of the constraints specified in the Carrier Interconnect FSD-20-24-0000, which is part of the LATA Switching Systems Generic Requirements (LSSGR).

5.4 4 ESS Reroute Summary

4 ESS rerouting requires no special ordering of features. The only work that may be required is the verification of digit delivery and viability of the VIA offices and its incoming trunk groups.

HTR is often used to replace the non-reroutable function of the switch as a temporary real-time "workaround." It should be used with caution.

6 Terminating Reroutes from an Access Tandem

All Switch Types:

Terminating Feature Group D reroutes from an access tandem switch can be accomplished in the same manner as local or intra-LATA tandem reroutes. Translations for these types of reroutes are covered in Sections 2 through 5.

Calls incoming from an Interexchange Carrier to an Access Tandem switch do not require special signaling as do originating Feature Group D calls. Therefore, these calls can be rerouted from the Access Tandem using any end office as a VIA office, as long as the VIA off ice is translated to process local tandem traffic (including the DMS-100 switch without the Access Tandem feature).

Access billing for the Interexchange Carrier is done at the first point of entry into the LATA, which is the Access Tandem switch, and is accomplished prior to the effects of a reroute on the outgoing trunk group to the end office.

7 Terminating Reroutes from an Interexchange Carrier

End Office via Another End Office (all switch types):

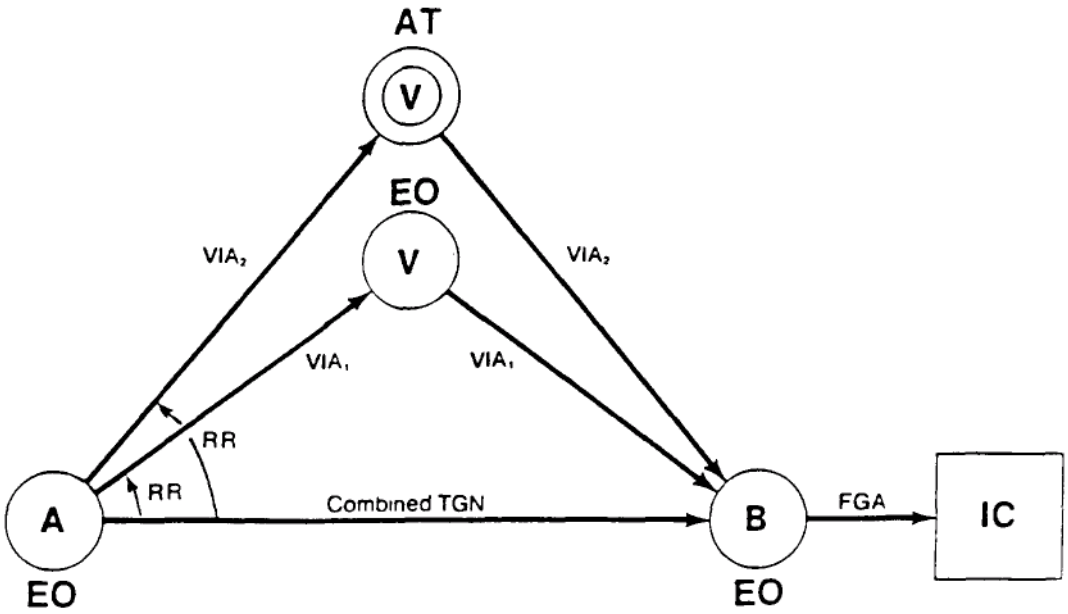
Terminating reroutes from an Interexchange Carrier to an end office via another end office can be done if allowed by Local Company or Regional policy. Normally, allowing an Interexchange Carrier to reroute terminating traffic via another end office would only be done at such times as peak days (Mothers Day, Christmas, etc.) when spare capacity would be plentiful in offices that have mostly business customers, or during an emergency.

To allow this type of reroute, the incoming screening in the office to be used as a VIA will have to be changed to allow calls to other central offices to tandem through. This is normally done in the digit interpretation for the incoming trunk group, and is discussed in this practice as translations for VIA offices.

Restricting Interexchange Carrier reroutes via a BOC end office during times other than peak days or emergencies could be done with recent change by changing the screening or digit interpretation for the incoming trunk group back to its original form.

Appendix A: Reroute Translations Figures A1-A12

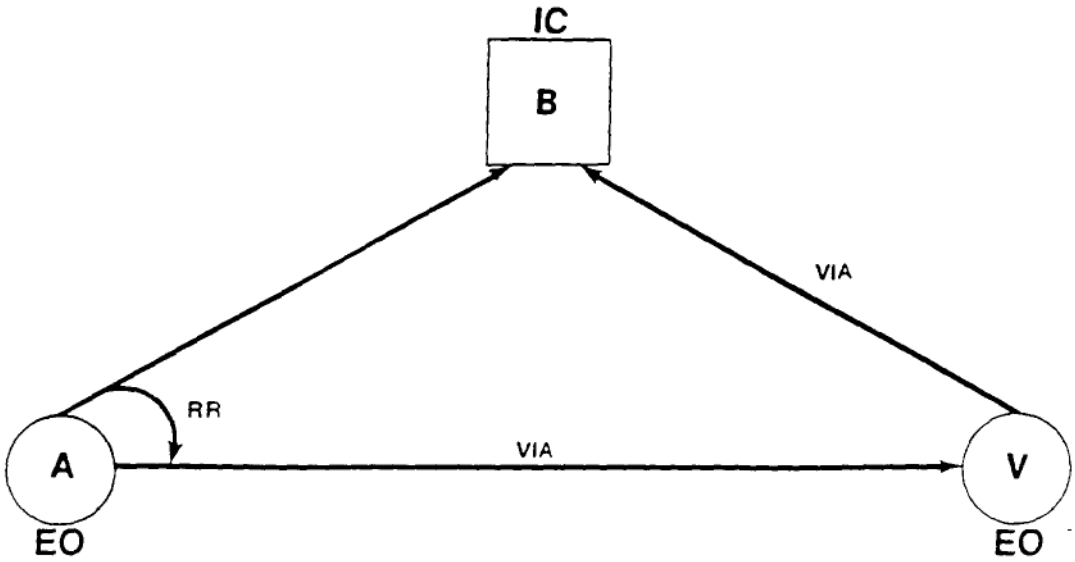
Figure A-1 Local and Feature Group A Spray Reroute Using an End Office and an Access Tandem as VIA to Trunk Groups



Rerouted local traffic may include Feature Group A calls. This type of reroute causes no Carrier Access Billing System (CABS) billing problems.

A - Originating Office
B - Feature Group A Serving Office
V - VIA Office(s) chosen by NM personnel
AT - Access Tandem
EO - End Office
IC - Interexchange Carrier serving the Feature Group A customer
RR - Reroute
TGN - Trunk Group Number

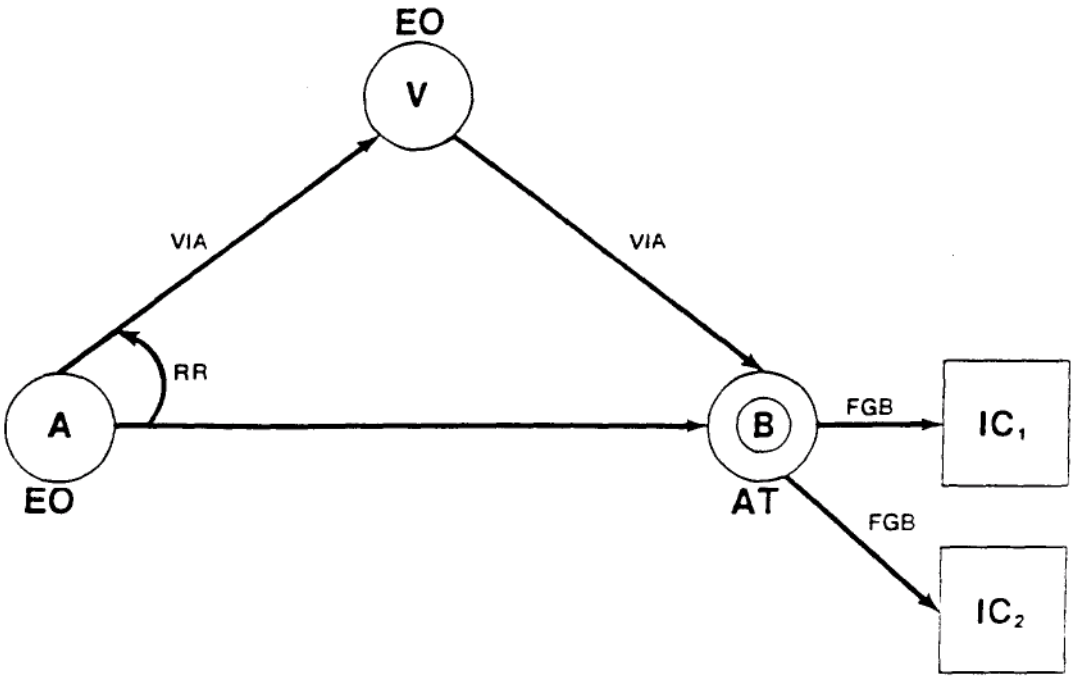
Figure A-2 Reroute of Feature Group C, Feature Group B with Direct Trunks to an IC, or Feature Group D with Direct Trunks to an IC



For Feature Group D routes, Carrier Access Billing System (CABS) billing must be set up to show the A-B trunk group as a high usage group, advancing to a common group. If trunk group A-B is a high-usage group that overflows to an Access Tandem, the reroute may be used without causing CABS billing errors. (Local CABS systems may vary. Check with CABS personnel.)

A - Originating Office
B - Terminating Office of IC
V - VIA Office chosen by Network Manager
EO - End Office
IC - Interexchange Carrier
RR - Reroute

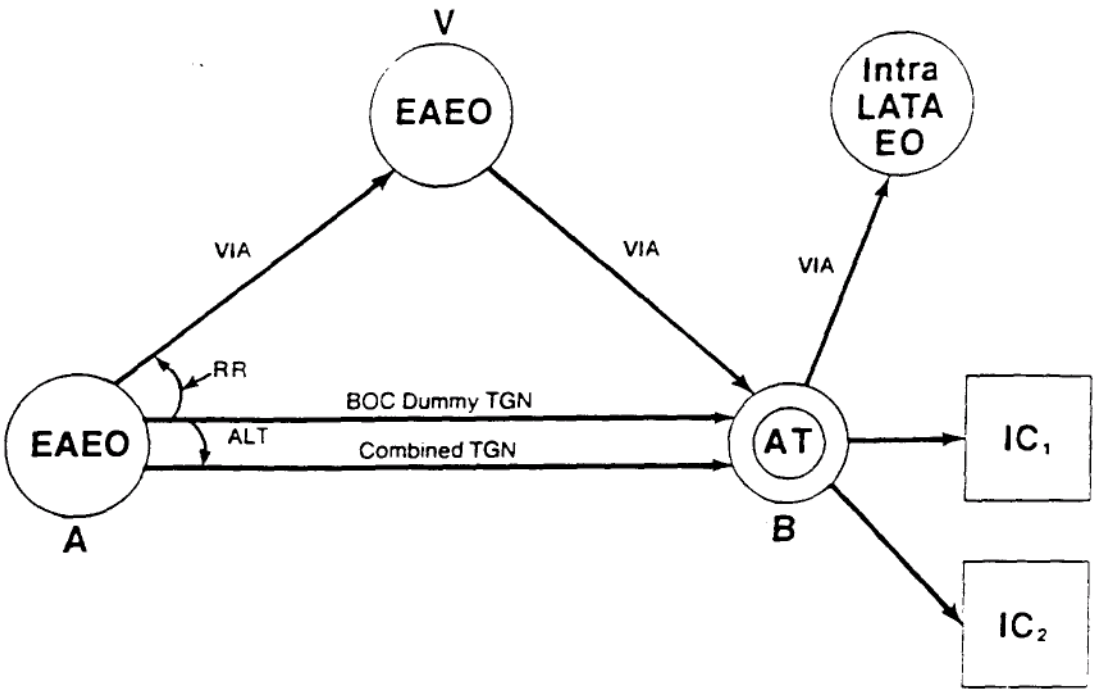
Figure A-3 Reroute of Feature Group B Traffic Served by an Access Tandem



This type of reroute causes no Carrier Access Billing System (CABS) billing errors.

A - Originating Office
B - Terminating Office of IC
V - VIA Office chosen by Network Manager
EO - End Office
IC - Interexchange Carrier(s)
RR - Reroute

Figure A-4 Reroute of Local and/or Intra-LATA Toll Traffic from a Combined Trunk Group to an Access Tandem that also Carries Feature Group D Inter-LATA Traffic

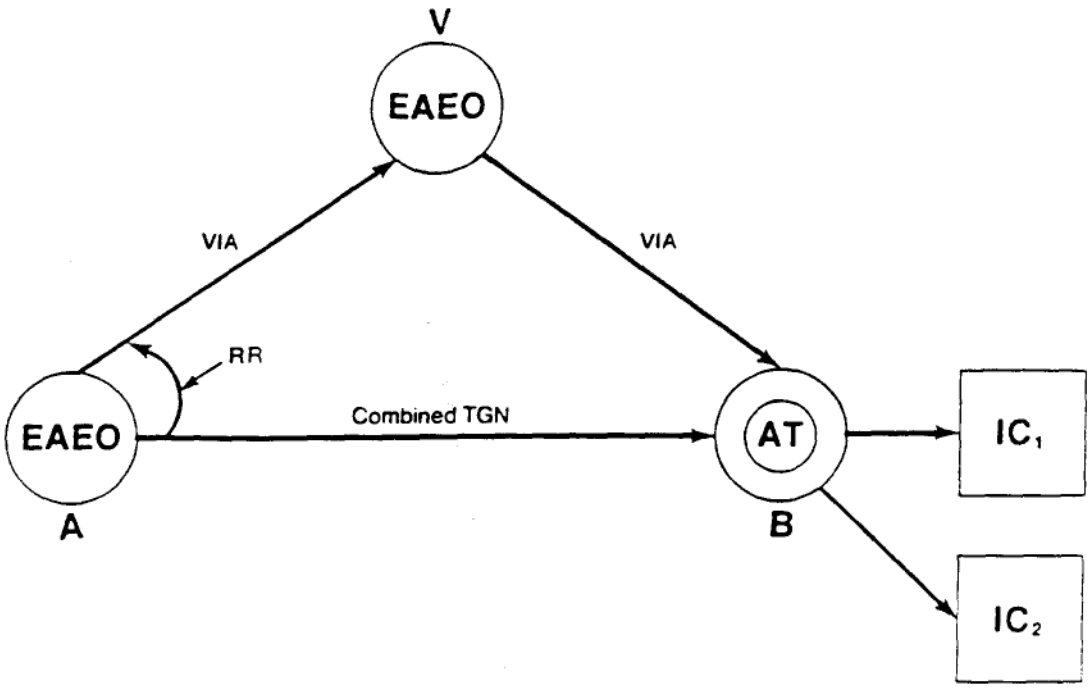


This type of reroute provides expanded access to IC(s) when activated. A reroute of local and intra-LATA toll traffic allows ICs full access to the combined trunk group. If B to IC_1 and IC_2 are at capacity, the reroute will protect local and intra-LATA toll traffic. This type of reroute causes no Carrier Access Billing System (CABS) billing problem.

Note: Capacity must be furnished to Trunk Servicing and Forecasting so that the ICs can be advised if there is a need to expand capacity, and so that future trunking requirements reflect actual loads.

A	- Originating Office	IC	- Interexchange Carrier
B	- Terminating Office for access to IC(s) and Intra-LATA toll/local traffic	RR	- Reroute
V	- VIA Office	ALT	- Alternate
AT	- Access Tandem	TGN	- Trunk Group Number
EO	- End Office	EAEO	- Equal Access End Office

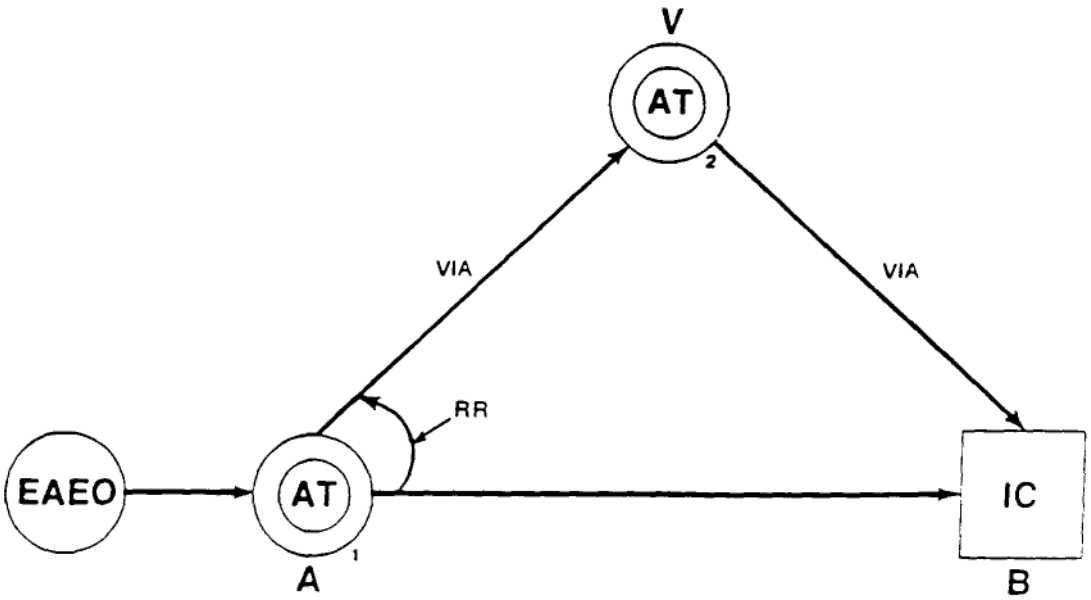
Figure A-5 Reroute of Combined Trunk Group that may Carry Local, Intra-LATA Toll and Feature Group D IC Traffic from an Equal Access End Office to an Access Tandem via Another Equal Access End Office



The A-B group can be a direct final to the Access Tandem or a high-usage group, which normally overflows to the Access Tandem. No billing errors will occur if the Carrier Access Billing System (CABS) shows the combined group as a “common group”, and the TGN is not put on the bill, but only a “common group” identifier is put on the bill. If the TGN is put on the bill, CABS must be notified of the reroute VIA TGN as another alternate final TGN.

A	- Originating Office
B	- Terminating Office for access to IC(s) and Intra-LATA toll/local traffic
V	- VIA Office
AT	- Access Tandem
EO	- End Office
IC	- Interexchange Carrier
RR	- Reroute
TGN	- Trunk Group Number
EAEO	- Equal Access End Office

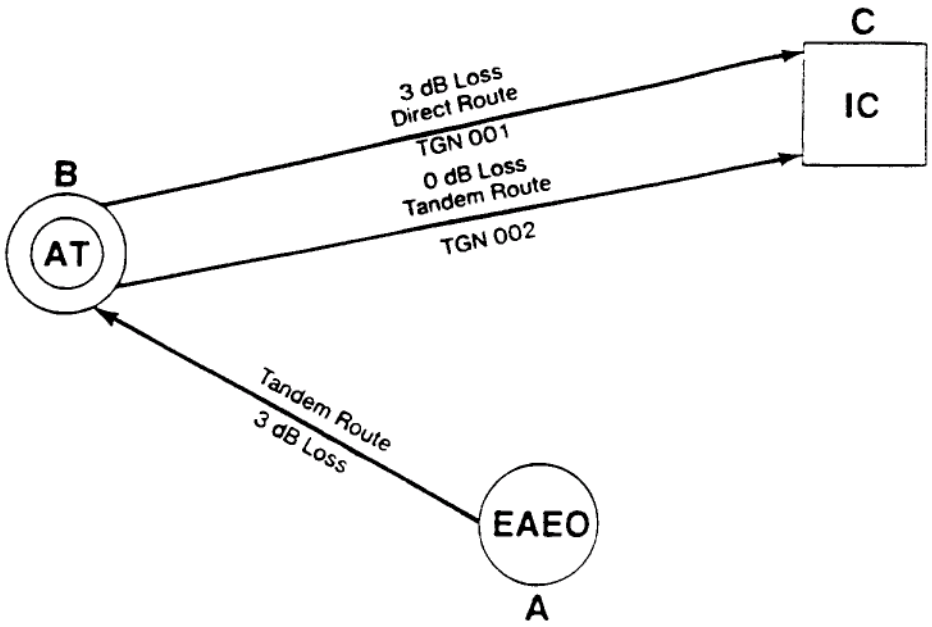
Figure A-6 Feature Group D Calls Originating in an Equal Access End Office (EAEO) and Destined for an Interexchange Carrier (IC) Through an Access Tandem (AT), Rerouted via Another Access Tandem (AT)



AT_1 must outpulse 0ZZ+XXX or INX+XXX codes to AT_2. AT_2 treats the call as if the EAEO homes directly on AT_2. No Carrier Access Billing System (CABS) billing error will occur because billing is done in the EAEO.

A - Originating Office
B - TO Office - in this case, the IC Switch
V - VIA Office
AT - Access Tandem
IC - Interexchange Carrier
RR - Reroute
EAEO - Equal Access End Office

Figure A-7 Normal Routing of Feature Group D with Transmission Noted

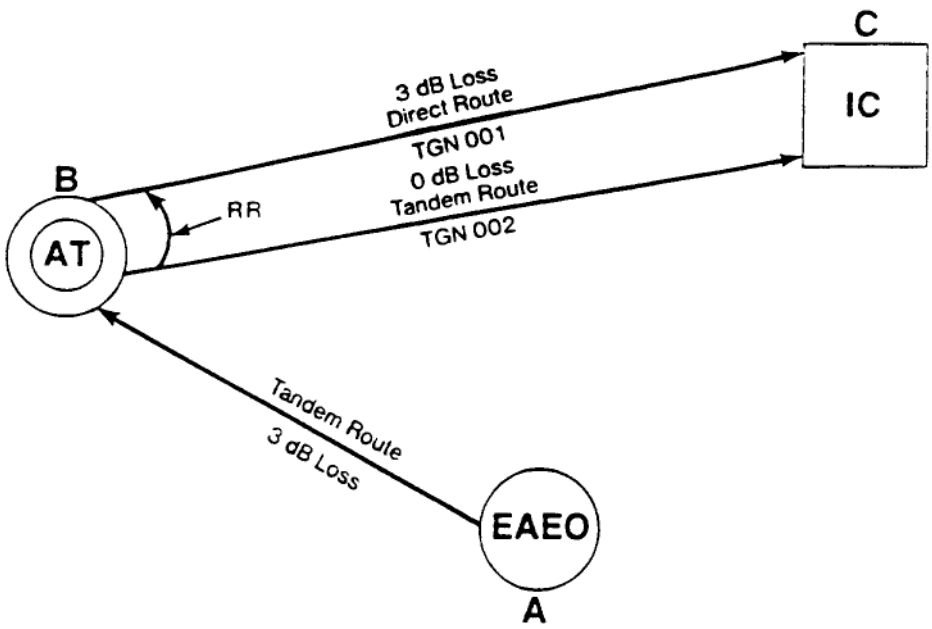


A call from A via B to C = 3 dB Loss

A call from B to C =3 dB Loss

A	- Originating Office
B	- Access Tandem for FG “D” Access and Originating Equal Access End Office
C	- Interexchange Carrier Switch
AT	- Access Tandem
IC	- Interexchange Carrier
TGN	- Trunk Group Number
EAEO	- Equal Access End Office

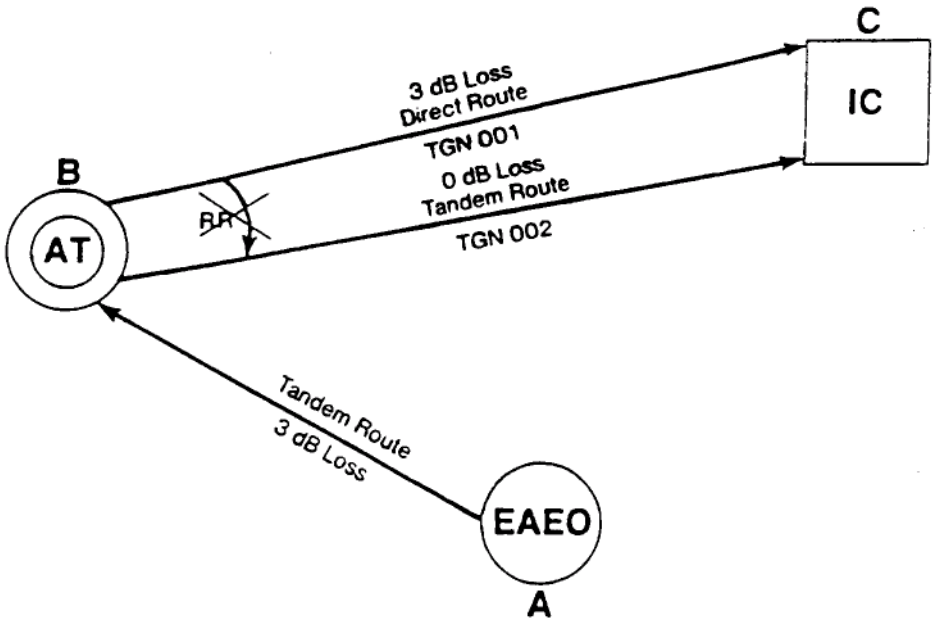
Figure A-8 Acceptable Reroute of Feature Group D with Transmission Noted



Reroute from TGN 002 of Office B to TGN 001 of Office B would cause A to C traffic to have 6 dB overall loss. This could be acceptable if the IC agrees. It adds no links to the connection, and only increases overall loss by 3 dB.

A	- Originating Office
B	- Access Tandem for FG “D” Access and Originating Equal Access End Office
C	- Interexchange Carrier Switch
AT	- Access Tandem
IC	- Interexchange Carrier
RR	- Reroute
TGN	- Trunk Group Number
EAEO	- Equal Access End Office

Figure A-9 Unacceptable Reroute of Feature Group D w/Transmission Noted



Reroute from TGN 001 of Office B to TGN 002 of Office B would cause B to C traffic to have 0 dB overall loss. This would not be acceptable. It adds no links to the connection, but reduces loss to 0 dB which causes a “squeal” or “howl” in the connection.

A	- Originating Office
B	- Access Tandem for FG “D” Access and Originating Equal Access End Office
C	- Interexchange Carrier Switch
AT	- Access Tandem
IC	- Interexchange Carrier
RR	- Reroute
TGN	- Trunk Group Number
EAEO	- Equal Access End Office

Figure A-10 Example of FGD Reroute Signaling to Access Tandem

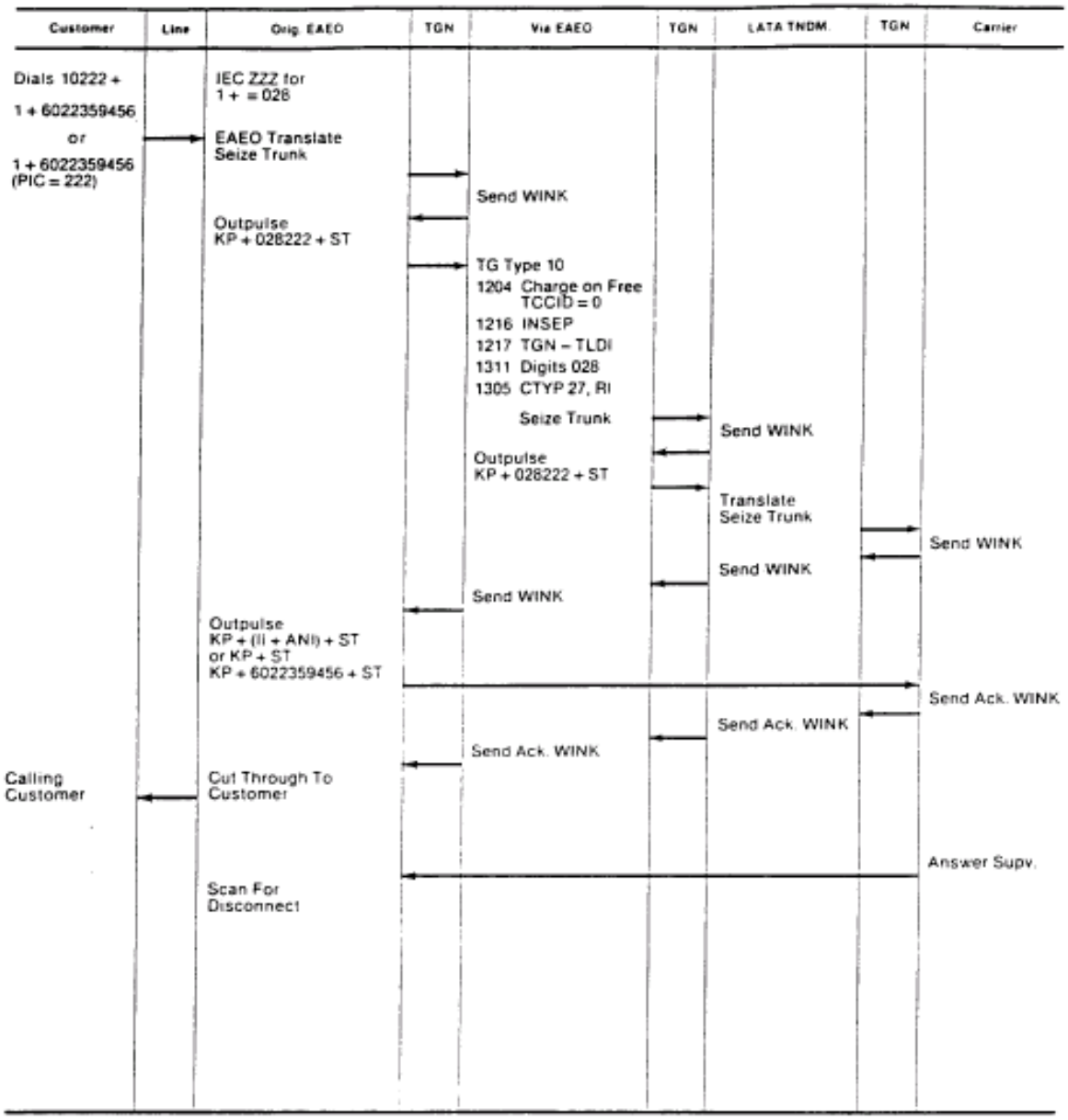


Figure A-11 Example of FGD Reroute Signaling to IC Direct

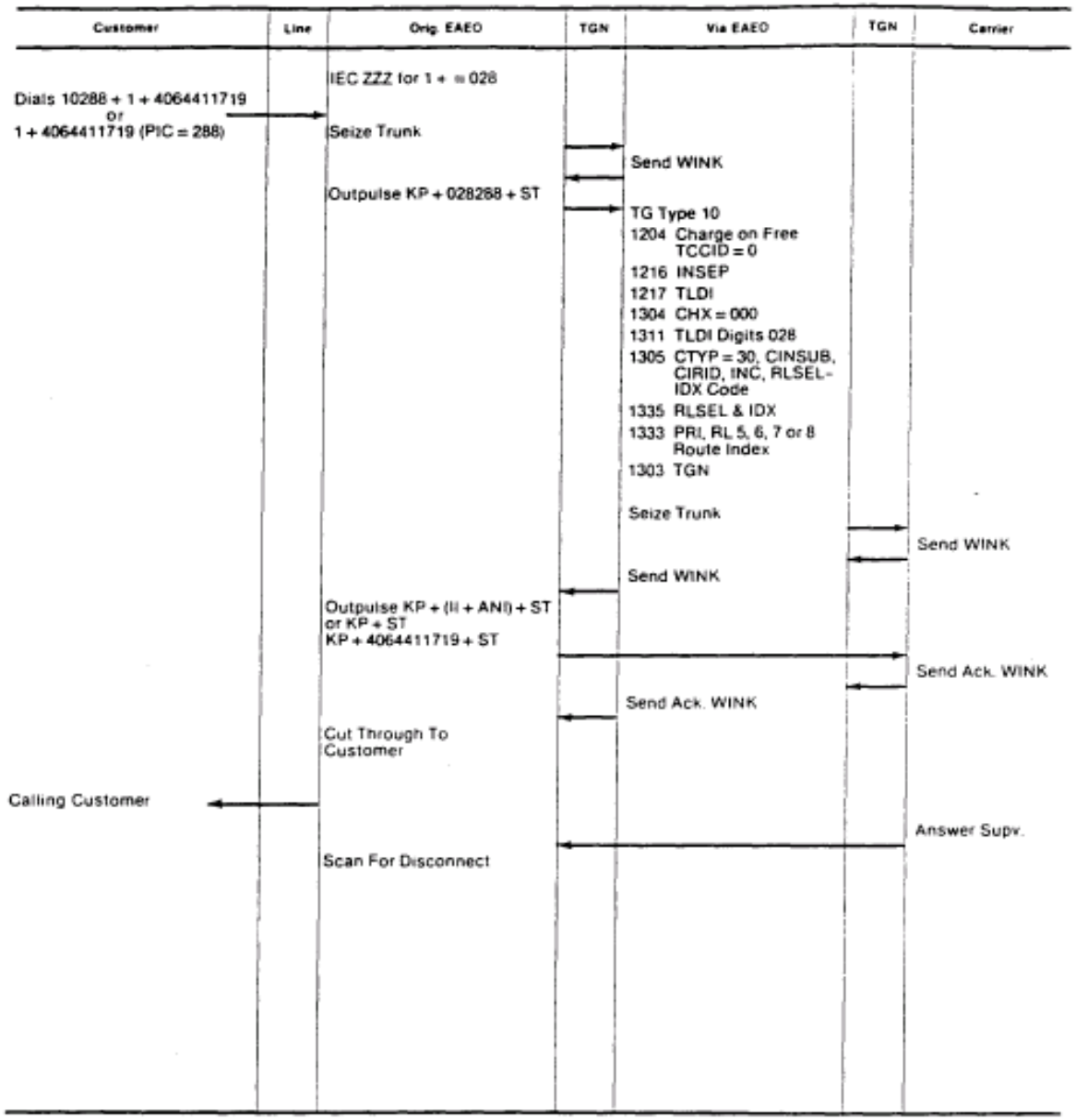


Figure A-12 Basic Tandem Call Flow in 5ESS Switch (Via Office for Reroute)