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THROUGH AND TERMINAL BALANCE SWITCHING ENTITY CERTIFICATION REQUIREMENTS INTRA-LATA MESSAGE TRUNK NETWORK

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1. INTRODUCTION

1.01 This section describes the engineering considerations and responsibilities that are taken into account when certifying a switching entity in the long distance intra-LATA network. A **long distance** intra-LATA network is a network with end to end route mileage exceeding 200 miles. Switching machines and switchboards are considered separate entities for purposes of certification.

1.02 This section replaces BSP Section 853-500-110 issue 4 and is reissued to update the office certification procedures for long distance intra-LATA switched services.

2. RESPONSIBILITY

2.01 Although balance certification is the responsibility of the transmission engineer or similar titled person, testing, adjustment and balance conditioning of the trunks is the responsibility of the trunk maintenance personnel.

2.02 Office certification is a process used by the Bell operating companies to assure that work being done meets certain standards with regard to impedance balance (Fig. 1).

2.03 It is essential that the transmission engineering staff, operations staff and central office maintenance forces cooperate in scheduling reviews, testing, and remedial action. Joint engineering and operation reviews and surveys are suggested but not required.

3. INITIAL CERTIFICATION

3.01 Initial certification is required prior to the cut-over of a new office. Offices in a "phased" cut-over will require initial certification when they have assumed 50 percent of the traffic from any one of the machines being replaced. Any trunks within an office having incomplete records will be considered below the specified immediate action (IA) values (refer to the applicable layer in Sections 660-47Y-300 and/or 301) and should not be turned up for service. Also trunks not meeting the criteria specified in paragraph 3.02 **should not** be turned up for service.

3.02 The basic requirements for initial certification are as follows:

(a) All trunks will be tested and the results recorded on Form (Fig. 2).

(b) Complete and up-to-date records for the appropriate switching and 660-47Y-010 entity will be available as required in the applicable layer of sections 660-46Y-010 and 660-47Y-010.

Note: Records older than 12 months are invalid for initial office certification.

(c) Trunks will be designed according to standard design concepts.

(1) Intertoll trunks must be on 4-wire facilities

(2) Loss on all trunks must be within design rules (Section 853-101-100)

(d) In 2-wire switching entities, the network build-out (NBO) capacitor value **must not** exceed 0.080 micro Farads.

(e) In each of the trunk categories (Table A), at least 50 percent of all trunks should meet or exceed the appropriate maintenance limit (ML) value for echo return loss (ERL) and singing return loss (SRL).

(f) No trunk with measurements less than the immediate action limits will be turned up for service. This also includes trunks considered to be less than immediate action limits for design reasons, lack of measurements, or lack of complete and up-to-date records.

3.03 The transmission engineer will send a report of the initial certification conditions to district managers in both the Engineering and Network Operations organizations.

4. SHORT SURVEY (20 TO 40 TRUNK SAMPLES)

4.01 To maintain certification, an office should be surveyed at least every even year (Section 301-123-100). The survey will include an investigation of balance records. Balance measurements made in connection with a circuit order will promptly be transferred to the office balance record per Section 660-450-010. Any trunk for that has no current records available should be considered below immediate action limits for survey purposes. If an office has never met balance requirements and is not certified as balanced, it will not be scheduled for survey. Offices performing routine trunk balance testing are exempt from the short survey.

4.02 The balance short survey is the responsibility of the transmission engineer. He will select the trunk sample to be tested per Section 301-133-500 and will observe the testing done by operating company personnel. He will forward the test results to the organization responsible for quality control.

4.03 If the short survey falls into the unbalanced or grey area (Section 301-133-500), proceed directly to the Expanded Balance Survey Procedure (Part 6).

4.04 The transmission engineer will make a report to third level management in both the Engineering and Network Operations organizations.

TABLE A

MESSAGE TRUNK CATEGORIES

TRUNK CATEGORY	NEW TRAFFIC USE NAME AND CATEGORY	COMMON LANGUAGE CIRCUIT IDENTIFICATION
Intertoll	Intertandem Toll.	IT
Secondary Intertoll.	Operator Access Call Back.	LW
	Operator Access inward.	OA
	Tandem Access Switched.	TT
	Tandem Access Operator Junctor.	OJ
Interbuilding Toll Connecting, LATA Tandem Connecting, Tandem Connecting, 2- and 4 Wire Incoming.	Tandem Access CAMA	CA
	Tandem Access LAMA.	DD
	Operator Access Recording Completing.	RC
	Tandem Access Service Position.	SP
Interbuilding Toll Connecting, LATA Tandem Connecting Tandem Connecting, 2- and 4-Wire Outgoing and 2-Way Trunks.	Tandem Completing Toll.	TC
	Operator Completing.	TS
	Tandem Connecting.	DT
	Operator Connecting.	OO
	Tandem Completing Multiple.	TM
Intrabuilding Toll Connecting.	Same as in the Above Toll Connecting Categories.	

5. BALANCE QUALITY REVIEW

5.01 To maintain certification, a Balance Quality Review will be conducted by the transmission engineer at least every odd year. It is the purpose of the review to determine that the posted measurements accurately reflect the present balance of each trunk. The absence of complete and current office records or inaccurate records will indicate that the office may not be currently balanced. A Balance Quality review requires the following:

(a) Balance test records per applicable layers of 660-46Y-010 and 660-47Y-010

(b) Balance test data transcribed to summary records (Section 660-450-010).

5.02 If an office has never met balance requirements and is not certified as balanced, it will not be scheduled for Balance Quality Review. Where trunks are routinely tested, the Balance Quality Review may be deferred or discontinued with the district engineers approval.

5.03 Any changes within an office that may affect balance, such as circuit order and traffic load rearrangements, make it necessary for new balance measurements to be made and posted. In this category are the following:

(a) Any wiring changes between hybrid and switch on an intertoll trunk

(b) Any wiring changes between a fixed impedance point (impedance compensator, 2-dB pad, or

channel bank hybrid) and a switch on a toll connecting trunk

(c) Any facility changes on 2-wire toll connecting trunks.

(d) Any wiring changes in the end office of a toll connecting trunk.

(e) a change in the office NBO value

(f) Removal of toll switchboards.

5.04 The transmission engineer should be sure that:

(a) Proper Measurements are in fact being made using valid measurement techniques.

(b) These measurements are being compared against the appropriate published requirement values.

5.05 A checklist form (see Fig. 2) will be used as a guide to conduct the review. It will enable the reviewer to determine the quality of performance in balance testing.

5.06 The quality review includes testing from 4 to 20 trunks at the option of and selected by the reviewer. They should be taken from the first 50 percent of a trunk group and from the latest trunk additions. In reviewing the first 50 percent of the trunk group, the oldest trunks should be identified. The current test activity should be identified when reviewing the latest trunk additions.

5.07 There are various techniques that can be developed to get an indication of the quality of balance work being done in an office. Some of the things that should be noted are:

(a) Does the personnel in the office know where to obtain the balance testing requirements?

(b) Are the requirements current?

(c) Are the personnel in the office familiar with the test equipment and procedures for balance testing?

(d) What is the condition of the test equipment?

(e) Are the test lines properly built out?

(f) Are the NBO capacitors in the non-ESS 2-wire switching entities set to the same value?

(g) Are the drop build-out(DBO) capacitors set at different values except possibly for trunks in the same trunk group?

5.08 If no records are available or their accuracy is in question, the office has failed the quality review. The expanded Balance Survey procedure will then be conducted by the transmission engineer (Part 6).

5.09 Where accurate partial records are available, the deficient records may be updated within 90 days in lieu of the expanded survey.

5.10 The transmission engineer will make a report to third level management in both Engineering and Network Operations organizations.

Note: The Balance Quality Review may also be conducted by an auditing group per Section 010-301-001.

6. EXPANDED BALANCE SURVEY PROCEDURE

6.01 This procedure is designed to evaluate the balance status of an office that has failed the short survey of balance quality review. This survey will follow within 90 days after the transmission engineer has conducted the Short Survey or Balance Quality Review (Fig. 1). Delays beyond 90 days will result in decertification.

6.02 This procedure will not be used for initial certification.

6.03 The transmission engineer will perform the following steps:

(a) Procure a complete inventory of all trunk groups.

(b) Separate the trunk groups into the various trunk categories (Table A)

(c) Select two trunks form each **trunk group**. One trunk should be selected from the first half of the trunk group (select an older trunk). The second trunk selected should be from the higher numbered trunk (preferably newly established trunks).

(d) List these trunks on the appropriate form per the applicable layers of Section 660-46Y-010 and 660-47Y-010.

(e) Post the ERL and SRL requirements on the form.

6.04 The transmission engineer will **observe** the balance testing of these selected trunks and record the balance test results on form. The data recorded will be the initial reading and not readings obtained after adjustments are made.

6.05 When both trunks tested measure below the specified maintenance level values or one trunk measures below the immediate action value, all of the trunks in that group must be tested.

6.06 The transmission engineer will compare the test results to the requirements and then compute the percentage in each trunk group category (paragraph 6.03) for the following:

(a) Trunks equal to or exceeding the maintenance limit values

(b) Trunks below the immediate action limit values

6.07 The transmission engineer will determine if any category fails to reach or exceed 50 percent of the maintenance limit values. If so, the office will be decertified. The following actions should be taken:

(a) The transmission engineer will submit a complete report of the results to an immediate supervisor in the engineering staff and the network operations staff.

(b) The decertified office must establish a schedule for retesting 100 percent of the trunks. All records must be complete within 12 months or less, the same as initial certification process.

6.08 If all categories satisfy the maintenance and immediate action limit requirements, a statement will be issued to establish a "Provisional Certification" of the office. All of the records are then required on all balance testing done from that day forward, with old trunk records deficiencies corrected within 12 months.

(a) The Provisional Certification will be valid for 12 months

(b) A Balance Quality Review (Part 5) will be conducted in 12 months by the transmission engieer with special emphasis on balance records for **all** new and old trunks.

(c) If the office fails the Balance Quality Review, the office shall be decertified immediately.

(d) If the office meets the requirements of the Expanded Survey, the transmission engineer will submit a report to their immediate supervisor in engineering and to their Operations counterpart.

6.09 Once an office is decertified, it must enter into the "initial Balance Certification" process as described in Part 3 and Section 301-123-100.

6.10 Office failing the Expanded Survey will be decertified. Test results should be studied by the transmission engineering staff, the operations staff, and the central office management for mutual understanding and action plans. The transmission engineer will make a report to the district manager in the Engineering and Network operations organizations, responsible for transmission.

7. DECERTIFICATION AND RECERTIFICATION

7.01 As discussed, an office is decertified if it fails the Expanded Balance Survey procedures, the transmission engineer is unable to ensure that the office meets all the requirements listed in Part 3, since any old records of measurements are considered unreliable and should not be used for recertification.

7.02 The transmission engineer will report the decertification and recertification of the office to the appropriate district manager in both the Engineering and Network Operations organizations.

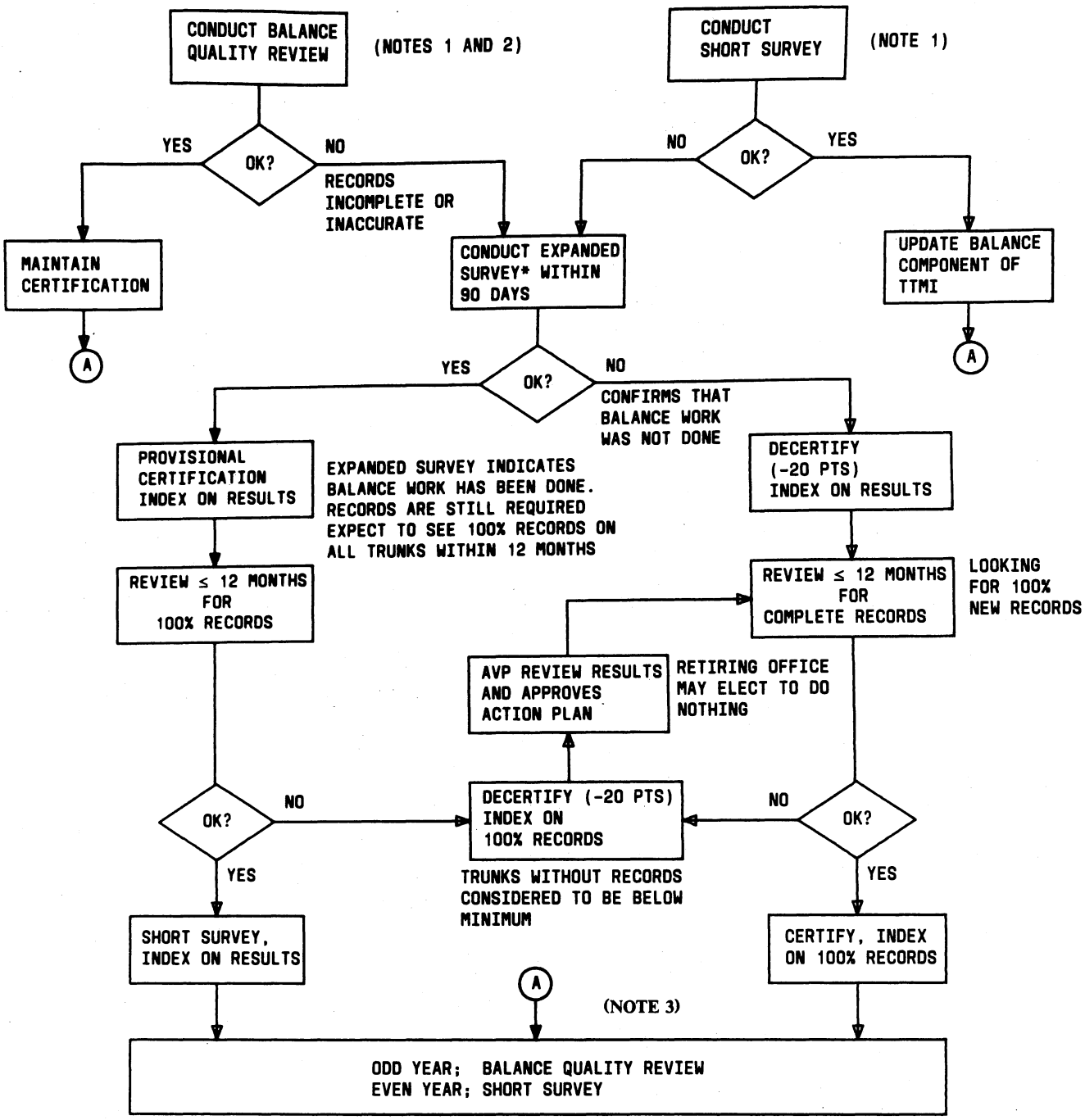
7.03 To be recertified, the office must pass the same tests placed on a new office being initially certified.

8. REFERENCES

8.01 The following references provide additional information.

SECTION	TITLE
853-500-100	Through and Terminal Balance, General Engineering Considerations

SECTION	TITLE
301-133-100	Balance Survey, Methods Survey, General Description
301-133-500	Balance Survey, Methods Survey, Procedures
660-46(Layer)	Balance Practices for each Type Office
660-47(Layer)	Balance Practices for each Type Office
010-301-001	Quality Review Plan for Trunks Toll Special Services



* DEFICIENT RECORDS CAN BE UPDATED WITHIN 90 DAYS IN LIEU OF SURVEY

Note 1: Balance quality reviews need not be conducted on Toll Connecting Trunks when performing balance testing.

Note 2: Entities performing routine balance testing should submit the latest results to the area transmission engineer for quarterly review upon request.

Note 3: When one hundred percent of all trunks are balance tested on a routine basis, all sample surveys and balance quality reviews will be discontinued.

Fig. 1—Flowchart for Balance Survey and Review

BALANCE QUALITY REVIEW

Item	Action	Requirements	Yes	No	Practice	Alternate Action
I	Balance And Circuit Order Rcds.					
	1. Form Or Local Equivalent	a) Requirements On Form b) Requirements From Latest BR c) Test Results Posted For Each Trunk d) Are Records In Good Condition			660-47X-XXX	
	2. E2545A Circuit Order Or Trunk Order Tests Form Or Local Circuit Order Work Sheet.	a) Requirements On Form b) Requirements From Latest BR c) All Action Information Posted d) Are Records In Good Condition			660-47X-XXX 660-450-010	
	3. Select XRL/COLR For The Following Type Trunks: a) Newly Established OGT Trunk b) Newly Established Inc. Trunk c) Older OGT Trunk d) Older Inc. Trunk	Trunk Designation a) b) c) d)			660-450-301	
	4. Obtain Requirements For Each Trunk Selected In =3	Balance Requirements ERL MED/MIN SRL MED MIN. a) b) c) d)				
	5. Compare Test Results On E2545A Or Equivalent Form With Requirements In Step 4.	Recorded Values ERL SRL a) b) c) d)				
	6. Compare NBOC Screw Settings On Equipment With Settings XR/COLR	NBOC Value vs. XRL COLR NBOC / XRL COLR a) b) c) d)				
	7. Inspect Terminating Trunk NBOC Settings	a) Are They Similar By Trunk Group Facilities.				
	8. Inspect Through NBOC/DBOC	a) Are There DBOC's On Any Through Office Trunks b) Are Through Office Settings The Same				

Fig. 2—Form - Balance Quality Review (Sheet 1 of 2)

Item	Action	Requirements	Yes	No	Practice	Alternate Action
II	Verifying Tests	Test Results ERL SRL				
	1. Have Craft Perform Balance Test On Trunks Selected In Action 3, Item 1.	a) b) c) d)				
	2. Compare Measured Results With Posted Results. (± 1dB Is Acceptable).	Posted ERL SRL a) b) c) d)				
	3. Check Calibration Of Test Equipment	a) Craft Can Calibrate b) Calibrate Record Available				
	4. Request Craft To Retrieve BR 660-47X-010 660-47X-300 660-47X-301	a) Craft Retrieved b) Located In Or Near Test Center c) Latest Issue				
III	Maintenance Of Balance Rcds.					
	1. Who Maintains	a) Transmission Engineer b) Circuit Order Group c) Test Board Group				
	2. Balance Survey	a) Done Yearly b) Done Every 2 Years c) Scientific Sampling Used d) Date Of Last Survey			301-133-100	
	3. Certification	a) Office Certified b) Date:			853-500-110	
	Summary: Reviewer _____ Date _____					

Fig. 2—Balance Quality Review (Sheet 2 of 2)