BALANCE SHORT SURVEY METHODS

SURVEY PROCEDURES

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1. GENERAL

1.01 This section describes procedures to be followed in making the short survey or expanded survey to determine whether an entity meets balance requirements. These procedures are applied to an entity which has met the requirements for echo return loss (ERL) and singing return loss (SRL) in the past. They are used only to determine the probability that it is still balanced.

1.02 This section is reissued to include operator service entities in the balance component of the TTMI and to make reference to the Expanded Balance Survey. Also changes are made to emphasize the record investigation part of the balance survey. Since there are extensive changes in the section, change arrows have been omitted.

1.03 The procedure is in two parts. One consists of the sample selection for short survey and is described in Part 2. The other consists of the actual measurements which are described in Part 3. (For a more complete description, refer to Section 301-133-100.)

1.04 When there is a divided installation and divided maintenance responsibility within an entity, ie, one force at the testboard under a first-line supervisor and another in the service center under a different first-line supervisor, each operation may be sampled separately if desired. When responsibility for an entity is divided between two organizations, ie, Long Lines and an associated company, each organization must survey and report results on that portion of the trunks for which it is responsible for installation and maintenance.

1.05 The sample survey will include an investigation of the balance records, Forms E600X or equivalent. Balance measurements made in connection with a circuit order will be transferred to the office balance record per Section 660-450-010. ***Any trunk sample for which current records are not available or accurate will be considered to be below minimum balance for survey purposes. Also if a record investigation of an entity reveals that a significant number (greater than 2 percent of the total trunks) of records are not available or accurate, the balance of an entity is doubtful and the sample survey results will be indeterminate. Specific action must be initiated as described in paragraph 4.06.***

2. SAMPLE SELECTION

A. General

2.01 The sample selection is done in two parts. First, an entity is scheduled for survey as specified in Section 301-123-500. When a survey is required, the necessary data about the entity are obtained and recorded on Form E-5530, Office Balance Sample Selection Data, as shown in Part 2B (Fig. 1).

2.02 The sample of trunks is then selected using random number tables, and the selections are listed on Form E-5588, Office Balance Survey Data, as shown in Part 2C (Fig. 2).

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Bell System except under written agreement

B. Recording Data

2.03 The necessary entity sample selection data may be obtained from the circuit layout organization in advance of measurements, or it may be obtained from the CLR card file in the office. The sample selection process requires that a separate Form E-5530 be used for each trunk class: (a) Class I, (b) Class II, (c) Class III, and (d) Class IV (see Table A). The following data is then obtained and recorded on Form E-5530.

(a) ***Heading:*** Enter Company, Area, Division, District, Office, Date, and Trunk Class.

(b) ***Column A:*** Enter the designation of every trunk group that requires balance. The designation may be the far-end office name or location code or such designation as can readily be found at the test location.

(c) ***Column B:*** Indicate the type of balance required. Record the test number found in the Balance Requirements Sections, 660-YYY-30Z.

(d) ***Column C:*** Enter the number of trunks in each group from entity records or centralized records. The last trunk number in each group may not indicate the total quantity of trunks in a group, as many trunk groups are not numbered in consecutive order. In locations where all trunks appear on a testboard, the necessary information can be obtained from the designation strips in the testboard.

2.04 Beginning with line 1 of the form, assign serial numbers to all the trunks listed. For example, if the first trunk group listed has five trunks, enter the number "1" in Column D and the number "5" in Column E. If the trunk group on line 2 also has five trunks, enter the Number "6" in Column D and the number "10" in Column E. In the same manner, proceed to assign serial numbers to all other trunk groups. The last number in Column E should be equal to the total number of trunks in the category requiring balance. ***Do not enter a trunk more than once even though it has more than one mode of operation.***

TABLE A

CLASS	TOLL SWITCHING ENTITITES	TSPS	RTA	ACD	AIS	TRUNK CONCENTRATOR
I	Primary Intertoll	Base-Remote CAMA Transfer Operator Service	Base Remote	Tandem, Trunk Concentrator, ACD, Toll Entity, TSPS Base, To ACD	Remote AIC to Home AIC Trunk Concentrator To AIC	Concentrator To: ACD AIC ESS TSPS
II	Secondary Intertoll Conference Bridge Trunk (At Switchboards)	Inward Delay Call Service Observing Coin Detection and Announcement Busy Line Verification	Inward	Switchboard To: ACD ACD to Switchboard	Switchboard To AIC AIC to Switchboard	Switchboard To Concentrator
III	Intrabuilding Toll Connecting	Position Circuit		Position Circuit	Position Circuit	
IV	Interbuilding Toll Connecting	Incoming Toll Connecting	Incoming Toll Connecting	Class 5 to ACD	Class 5 Office to AIC	Class 5 Office to Concentrator

2.05 Determine the number of each trunk class to be included in each 20 trunk sample in the following manner:

(1) Determine the number of trunks, by class, that require balance. For example: a given office has 1341 trunks requiring balance. The distribution of trunks by class requiring balance are as follows:

627	Class I
71	Class II
245	Class III
398	Class IV
1341	Total

(2) Determine the number of each class of trunk (rounded to the nearest whole number) to be included in each 20 trunk sample.

$$\text{No. Class I} = \frac{\text{No. Class I Trks}}{\text{Total Trunks Req Balance}}$$

$$\text{No. Class I} = \frac{\text{No. Class I Trks}}{\text{Total Trunks Req Balance}} \text{ X20}$$

$$= \frac{627}{1341} \text{ X20}$$

$$= 9.3$$
$$= 9 \text{ (rounded off)}$$

$$\text{No. Class II} = \frac{\text{No. Class II Trks}}{\text{Total Trunks Req Balance}} \text{ X20}$$

$$= \frac{71}{1341} \text{ X20}$$

$$= 1.1$$
$$= 1 \text{ (rounded off)}$$

$$\text{No. Class III} = \frac{\text{No. Class III Trks}}{\text{Total Trunks Req Balance}} \text{ X20}$$

$$= \frac{245}{1341} \text{ X20}$$

$$= 3.7$$
$$= 4 \text{ (rounded off)}$$

$$\text{No. Class IV} = \frac{\text{No. Class IV Trks}}{\text{Total Trunks Req Balance}} \text{ X20}$$

$$= \frac{398}{1341} \text{ X20}$$

$$= 5.9$$
$$= 6 \text{ (rounded off)}$$

The sample breakdown would then be:

Class I	9 trunks
Class II	1 trunk
Class III	4 trunks
Class IV	6 trunks
Total	20 trunks

If the total exceeds 20, subtract one from each group beginning with the largest until the total equals 20. For example, if the trunks are broken down in the following percentages:

Class I	72.5%
Class II	17.5%
Class III	2.5%
Class IV	7.5%

then the computed sample breakdown would be:

Class I	15 trunks
Class II	4 trunks
Class III	1 trunk
Class IV	2 trunks
Total	22 trunks

which is two too many. Thus, one trunk would be subtracted from each of the two largest classes of trunks; class 1 and 2, giving the final sample breakdown as:

Class I	14 trunks
Class II	3 trunks
Class III	1 trunk
Class IV	2 trunks
Total	20 trunks

If the total as found is less then 20, add one to each group beginning with the smallest until the total equals 20. For example, if the trunks are broken down in the following percentages:

Class II	73.1%
Class II	17.3%
Class III	2.3%
Class IV	7.3%

then the computed sample breakdown would be:

Class I	15 trunks
Class II	3 trunks
Class III	0 trunks
Class IV	1 trunk
Total	19 trunks

which is one too few. Thus, one trunk should be added to the intrabuilding toll connecting class giving the final sample breakdown as:

Class I	15 trunks
Class II	3 trunks
Class III	1 trunk
Class IV	1 trunk
Total	20 trunks

Each class of trunk requiring balance should have at least one trunk included in each 20 trunk sample. In some cases, this will require subtracting from the sample requirement for the largest trunk class and adding one to the trunk class whose computed sample size was rounded off to zero.

C. Selecting Sample Trunks

2.06 Random number tables are required for the sample trunk selection. Section 304-010-100 furnishes suitable tables, together wth instructions to be followed in their use. A separate selection of random numbers must be used for each trunk category.

2.07 The last number in Column E of each trunk category's Forms E-5530 determines the range within which the numbers are to be selected. For example, if the last number is 567, 3-digit random numbers are selected between 1 and 567. When a 3-digit number larger than 567 is read, it is passed over and the next number is selected.

2.08 Select the first random number. Identify the trunk group on Form E-5530 which has the matching serial number. Record the selected number on the same line in Column F. This must be done to ensure that trunks are selected only once.

2.09 Prepare three Forms E-5588 (Fig. 2). The first two are to be used for the survey while the third will be used as a source of spare trunks in the event that any of the trunks listed on the first two Forms E-5588 are out of service or disconnected. Use the following procedure when a trunk that is part of the first or second 20 trunk sample is found to be disconnected or out of service:

(a) If the trunk is part of the first sample of 20, go to the second sample of 20 trunks and select the first trunk of this type as a replacement. If additional trunks of this type are required, then continue to select from the second sample of 20, in order, beginning with the lowest line number. If the second sample of 20 trunks is required to determine the status of balance in the office, replacement trunks of the same type as those in the second sample that have already been measured should be taken from the third set of 20 beginning with the lowest line number.

(b) If the trunk is part of the second sample of 20, go to the third set of 20 and select the first trunk of this type as a replacement. Again, if additional replacement trunks of this type are required continue to select from the third set of twenty in order beginning with the lowest line number. Enter the trunk type on each line beginning with Class I and proceeding through Class IV. Refer back to the example in paragraph 2.05 where the following sample breakdown was arrived at.

Class I	9 trunks
Class II	1 trunk
Class III	4 trunks
Class IV	6 trunks
Total	20 trunks

The following would be entered in Column A of each E-5588:

Lines 1 through 9--Class I
Line 10--Class II
Lines 11 through 14--Class III
Lines 15 through 20--Class IV

Enter the first selected trunk on line 1 of the form. Enter the serial number in Column B and the trunk group designation in Column C.

2.10 Continue using random numbers until all the Class I trunks to be entered on the three forms have been chosen. Then begin selecting and entering the Class II, Class III, and Class IV trunks to be measured until all 20 lines on each of the three forms has been completed. If a random number repeats at any time, and which already appears in Column F of Form E-5530, skip this number and make another selection (no repetition). The serial numbers in Column B of Form E-5588 must appear in the order selected, ie, first by type and then by order of selection.

3. SAMPLE MEASUREMENTS

3.01 Select the trunk on line 1 of the first page of Form E-5588 and identify the trunk number in Column D; for example, the fifth in order in the group or the fifth card in the card file. The balance requirements will depend on the type of trunk and the method of measurement. The requirements must be determined from Section 660-YYY-30Z. Enter the ERL median and minimum requirements on line 1 in Columns F and G, respectively. Enter the SRL median and minimum requirements on line 1 in Columns J and K, respectively. If the selected trunks have more than one mode of access, select the mode for testing randomly, using random numbers. The ERL and SRL requirements must be in accordance with the mode of access. When a choice is made, note it in Column C for possible future reference.

> ***Note:*** The only exception to this is the 4-wire toll connecting trunk. For this trunk, the test of the toll connecting trunk hybrid is not to be included as a mode of operation.

3.02 Measure ERL and SRL on one of the first 20 trunks, as specified in the appropriate instruction of the 660 Division of Plant Series practices for the office involved. Record the ERL measurement in Column H on line 1 and the SRL measurement in Column L on line 1. If the KS-20501 return loss measuring set is used, record the SRL measurement in Column L on line 1 and the SRL-HI measurement in Column M on line 1. Record measurements after any required test circuit correction factors are applied.

3.03 In the same manner, obtain and record measurements on the first 20 trunks listed. If any trunk is found to be disconnected or out of service, substitute another trunk of the same type as described in paragraph 2.09 and continue testing until 20 trunks have been measured. The results are then analyzed in accordance with Part 4 to determine the probability that the office is balanced or unbalanced.

3.04 If the analysis of Part 4 indicates that the office is balanced or unbalanced, no further measurements are required. If no decision is made, the next 20 trunks are measured.

3.05 Analysis is made again in accordance with Part 4, using the measurements for the first 40 trunks. Note that satisfactory results will not be obtained if ***any*** trunk measures below the minimum requirements. If this occurs at any point in the sampling, the sampling should be completed anyway to provide data for further analysis.

4. ANALYSIS OF RESULTS

4.01 Charts are attached to aid in the analysis of results. The charts of Fig. 3 are used if the total trunks requiring balance are 200 or less. The charts of Fig. 4 are used if the total trunks are 201 to 400, and the charts of Fig. 5 are used if the total trunks are greater than 400. For the example in Part 2 (567 trunks), the charts of Fig. 5 would be used. Chart A of each figure is used after 20 trunks have been measured, while Chart B is used after 40 trunks have been measured.

4.02 As the first 20 trunks are being measured and the results being recorded, stroke each measurement in the appropriate box at the botton of the first page of Form E-5588. Compare each ERL measurement in Column H with the requirements in Columns F and G. Determine whether it meets or exceeds the median requirement, is less than the minimum, or falls in the intermediate range. In the same manner, compare the SRL measurements. If the KS-20501 return loss measuring set is used, then use the lower of the two recorded measurements in Columns L and M for comparison with medium and minimum requirements. Then place a stroke in the appropriate box in the summary section. For example, if both the ERL and SRL meet or exceed their median requirement, place a stroke in box 1.

4.03 Enter Chart A of the appropriate Fig. 3, 4, or 5 with the number of ERL measurements meeting median requirements on the vertical scale and the number less than the minimum requirements on the horizontal scale (box 4 and box 12). At the point where the horizontal and vertical lines cross, determine whether the crossing point is in the "balanced" area, "unbalanced" area, or gray area. Make a similar test using the results of the SRL measurements (box 13 and box 15).

4.04 If both tests (ERL and SRL) produce a crossing point in the "balanced" area, no further tests are required. If either or both tests produce a crossing point in the "unbalanced" area, futher tests are desirable (see paragraph 4.06) to aid in identification of corrective measures. If either or both tests produce a crossing point in the gray area, an additional 20 trunks must be measured.

4.05 If the additional trunks are measured, strokes for the additional results are added to those already in the boxes at the bottom of Form E-5588. A different colored pencil may be used to aid in accurate recordings. The appropriate Chart B is then used and the results are tested again.

4.06 Whenever the tests of both ERL and SRL results fall in the "balanced" area, the office is considered balanced, and no further sampling is done. ***Whenever in message toll switching entities, the tests of both ERL and SRL results fall in the "unbalanced" area, the transmission engineer will perform an Expanded Balance Survey Procedure as described in Section 853-500-110. In operator service entities when the tests of both ERL and SRL results fall in the "unbalanced" area, the transmission engineer will refer to Section 852-400-010 for the next step.***

4.07 If one or both of the tests still fall in the gray area after all 40 trunks have been measured, a decision must be made on further action. The charts and other data, particularly the data on E-5588 should be helpful. One of the first items that should be checked is whether the problem is related to a particular category of trunk in the measured sample or whether it is common to all types. Consideration should also be given to any major rearrangements or additions, as well as normal circuit orders, where balance tests were required and may not have been performed. Corrective action is required and the office should be surveyed again when corrective action is completed. An Expanded Survey Procedure could also be performed to determine the balance status.

4.08 A box is provided at several crossing points on the charts. Some of the boxes contain two numbers. The left-hand number is the probability that the entity is balanced. The right-hand number is the probability that it is not balanced. The "balanced" area includes all tests with a probability of 0.80 or greater than the entity is balanced. The "unbalanced" area contains all tests with a probability of 0.80 or greater that the office is not balanced. A test in the gray area may sometimes be a borderline case and may have some effect on the final judgment.

5. REPORTS

5.01 Results of tests should be reported in accordance with local administrative practices. The report should include any indicated decision on the state of balance and recommended actions.

5.02 A copy of all Forms E-5530 and E-5588 should also be sent to the transmission engineer for index calculations in accordance with Section 301-123-500.

6. AVAILABILITY OF FORMS

6.01 Forms are available on order from Western Electric Company. They are furnished in pads of 50 (2 pads per package). Order in quantities of 100. Ordering information is as follows:

(Quantity) Form E-5530 (9-71)

(Quantity) Form E-5588 (9-71).

OFFICE BALANCE
SAMPLE SELECTION DATA

Form E-5530 (9-71)

CO. PNB AREA W-1 DIV. STTL

DIST. 1 OFC. SEATTLE 4A DATE 6-28-71

TRUNK CLASS* SECONDARY INTERTOLL

	TRUNK GROUP DESIGNATION	TYPE BAL.	NO. OF TRKS. IN GRP.	SER. NOS. FROM	SER. NOS. TO	SERIAL NUMBERS SELECTED
	A	B	C	D	E	F
1.	SPRING ACD 131	THRU	22	01	22	
2.	SPRING ACD 555	THRU	61	23	83	54,
3.						
4.						
5.						
6.						
7.						
8.						
9.						
10.						
11.						
12.						
13.						
14.						
15.						
16.						
17.						
18.						
19.						
20.						
21.						
22.						
23.						
24.						
25.						

* See Text BSP 301-133-500, Para. 2.03

Fig. 1—Office Balance Sample Selection Data (Sheet 1 of 2)

OFFICE BALANCE
SAMPLE SELECTION DATA

Form E-5530 (9-71)

CO. PNB AREA W-1 DIV. STTL

DIST. 1 OFC. SEATTLE 4 A DATE 6-28-71

TRUNK CLASS* INTRABUILDING TOLL CONNECTING

	TRUNK GROUP DESIGNATION		TYPE BAL.	NO. OF TRKS. IN GRP.	SER. NOS. FROM	SER. NOS. TO	SERIAL NUMBERS SELECTED
	A		B	C	D	E	F
1.	MA 2	TC	TERM.	65	001	065	
2.	MA 3	TC		70	066	135	121, 108, 102,
3.	MA 4	TC		67	136	202	
4.	MU 2	TC		41	203	243	210,
5.	MA 2	CA		20	244	263	
6.	MA 2	LA		43	264	306	
7.	MA 3	CA		16	307	322	
8.	MA 3	LA		46	323	368	
9.	MA 4	LA		40	369	408	
10.	M.A 4	CA		25	409	433	
11.	MU 2	CA		78	434	511	
12.	344, 6, 626	TC		50	512	561	
13.	345 CTX	TC		39	562	600	
14.	344, 6, 626	LA		95	601	695	697,
15.	345 CTX	LA		70	696	765	
16.	345 CTX	CA		2	766	767	
17.	583, 7	LA		94	768	861	
18.	583	CA		5	862	866	
19.	SSN Main (Lock)	LA		5	867	871	
20.	SSN Main (Bol)	LA		6	872	877	
21.	SSN Main (Sow)	LA	TERM.	61	878	938	
22.							
23.							
24.							
25.							

* See Text BSP 301-133-500, Para. 2.03

Fig. 1—Office Balance Sample Selection Data (Sheet 2 of 2)

Form E-5588 (9-71)

OFFICE BALANCE
SURVEY DATA

CO. PNB AREA W-I DIV. STTL
DIST. 1 OFC. SEATTLE 4A DATE 6-28-71

LINE	CLASS*	SER. NO.	ORDER IN GRP.	TRUNK DESIGNATION GROUP	NO.	ERL MED.	ERL MIN.	ERL MEAS.	SP MED.	SP MIN.	SP MEAS. SRL.	SP MEAS. SRL-HI
	A	B	C	D	E	F	G	H	J	K	L	M
1.	S	76	54	SPRING ACD 555	54	29	25	32	26	22	28	—
2.	TI	647	47	344, 6, 626 LA	2546	36	32	34	29	24	30	—
3.		210	8	MU 2 TC	8	36	32	33	29	24	28	—
4.		121	56	MA 4 TC	56	36	32	46	29	24	37	-
5.		108	43	MA 3 TC	43	36	32	46	29	24	41	—
6.	TI	102	37	MA 3 TC	37	36	32	43	29	24	37	-
7.	TO	2647	35	RO 2,3 LA	34	32	26	34	24	20	28	-
8.		210	3	EM 2,3 TC	03	32	26	29	24	20	24	-
9.		121	14	CH 4, 6, 8 TC	14	26	20	33	19	13	26	-
10.		108	1	CH 4, 6, 8 TC	1	26	20	34	19	13	25	-
11.		1986	3	RENTON 772, SP2 CA	3	32	26	27	24	20	23	-
12.		2377	3	RO 7 CA	1301	32	26	36	24	20	29	-
13.		165	22	EA 2, 4 TC	22	32	26	32	24	20	30	-
14.		1269	2	BEL 733, 4 CA	1002	26	20	24	19	13	24	-
15.		2201	30	CH 4, 6, 8 CA	29	26	20	29	19	13	25	-
16.		1385	15	BELLEVUE SM6 CA	14	32	26	31	24	20	25	-
17.		241	6	EM 4, 5, 7 TC	6	32	26	29	24	20	23	-
18.		578	9	BELLEVUE GL 4, 5 TC	208	32	26	27	24	20	21	-
19.		1747	22	KENT UL 2, 4 CA	21	26	20	39	19	13	31	-
20.	TO	252	17	EM 4, 5, 7 TC	17	32	26	28	24	20	25	-

	SP ≥ MED.	SP < MED. ≥ MIN.	SP < MIN.	TOTALS
ERL ≥ MED.	~~THH THH~~ / 1.	2.	3.	// 4.
ERL < MED. ≥ MIN.	~~THH~~ 5.	//// 6.	7.	9 8.
ERL < MIN.	9.	10.	11.	0 12.
TOTALS	16 13.	4 19.	0 15.	20 16.

* Enter One of the Following Designations:
P – Primary Intertoll
S – Secondary Intertoll
TI – Intra-Building Toll Connecting
TO – Inter-Building Toll Connecting

Fig. 2—Office Balance Survey Data

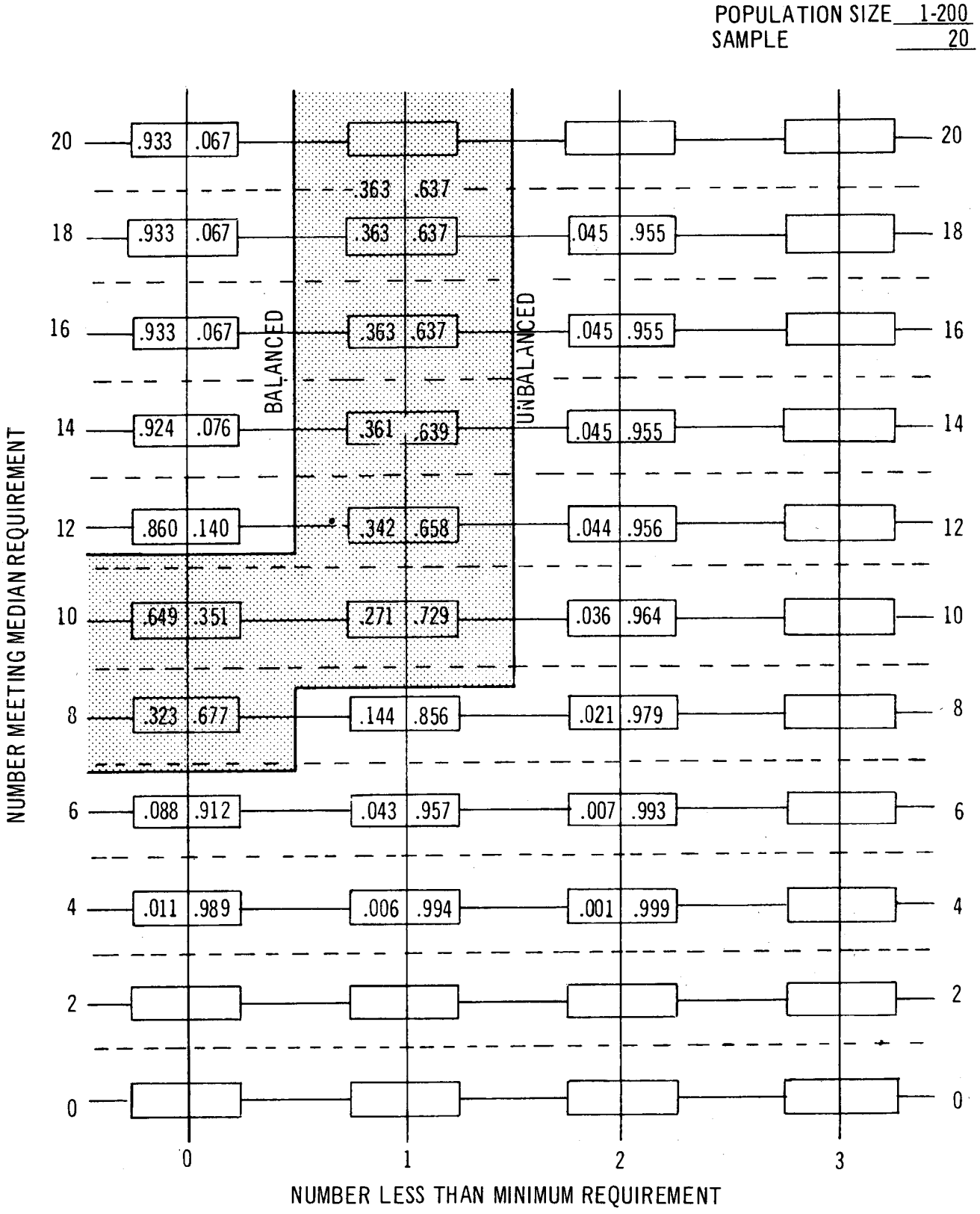
POPULATION SIZE 1-200
SAMPLE 20
BALANCED
UNBALANCED
20 .933 .067 .363 .637 20
18 .933 .067 .363 .637 .045 .955 18
16 .933 .067 .363 .637 .045 .955 16
14 .924 .076 .361 .639 .045 .955 14
12 .860 .140 .342 .658 .044 .956 12
10 .649 .351 .271 .729 .036 .964 10
8 .323 .677 .144 .856 .021 .979 8
6 .088 .912 .043 .957 .007 .993 6
4 .011 .989 .006 .994 .001 .999 4
2 2
0 0
0 1 2 3
NUMBER MEETING MEDIAN REQUIREMENT
NUMBER LESS THAN MINIMUM REQUIREMENT

Fig. 3—Chart A

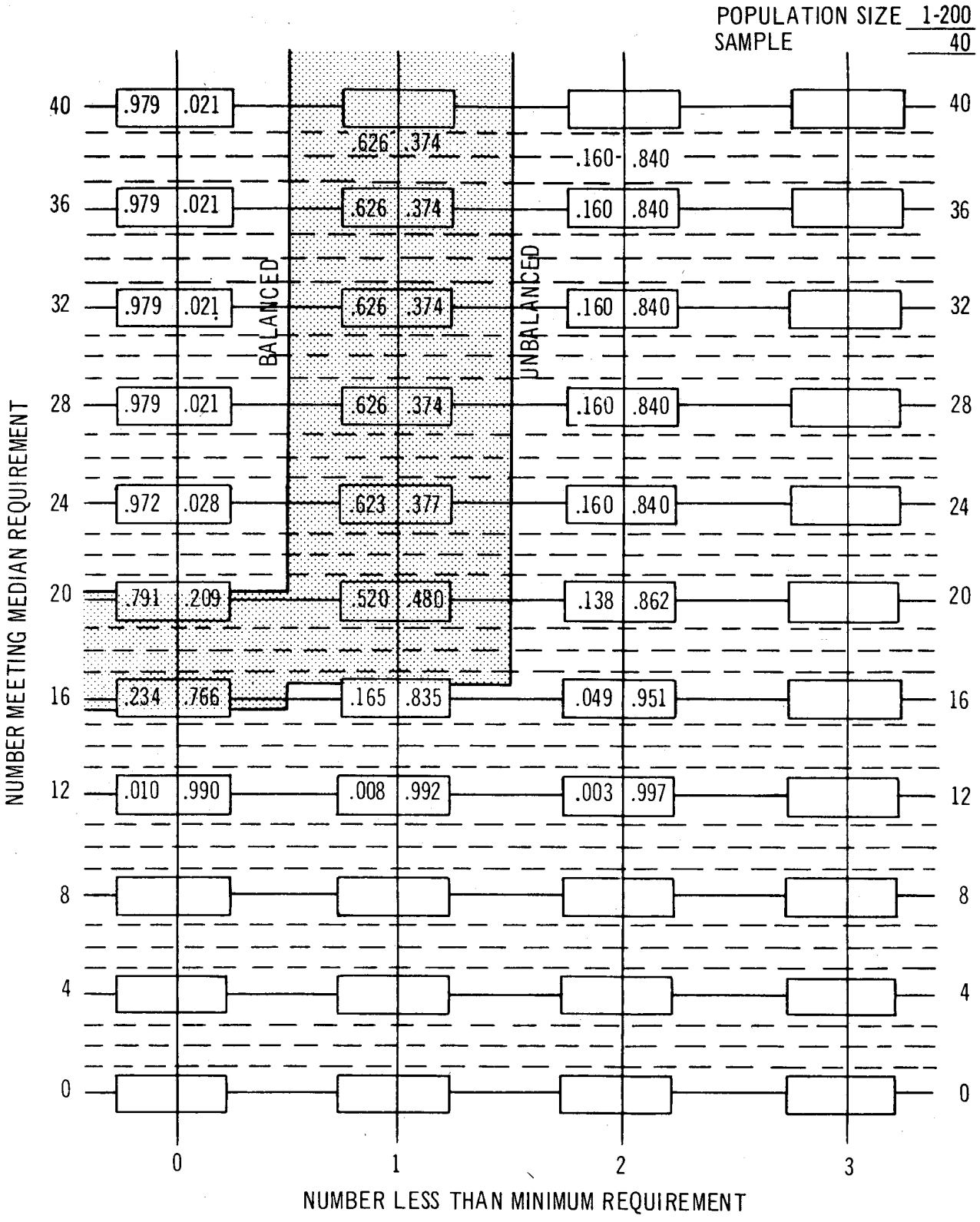
POPULATION SIZE 1-200
SAMPLE 40
NUMBER MEETING MEDIAN REQUIREMENT
NUMBER LESS THAN MINIMUM REQUIREMENT
BALANCED
UNBALANCED
40
36
32
28
24
20
16
12
8
4
0
0
1
2
3
.979 .021
.626 .374
.160 .840
.979 .021
.626 .374
.160 .840
.979 .021
.626 .374
.160 .840
.979 .021
.626 .374
.160 .840
.972 .028
.623 .377
.160 .840
.791 .209
.520 .480
.138 .862
.234 .766
.165 .835
.049 .951
.010 .990
.008 .992
.003 .997

Fig. 3—Chart B

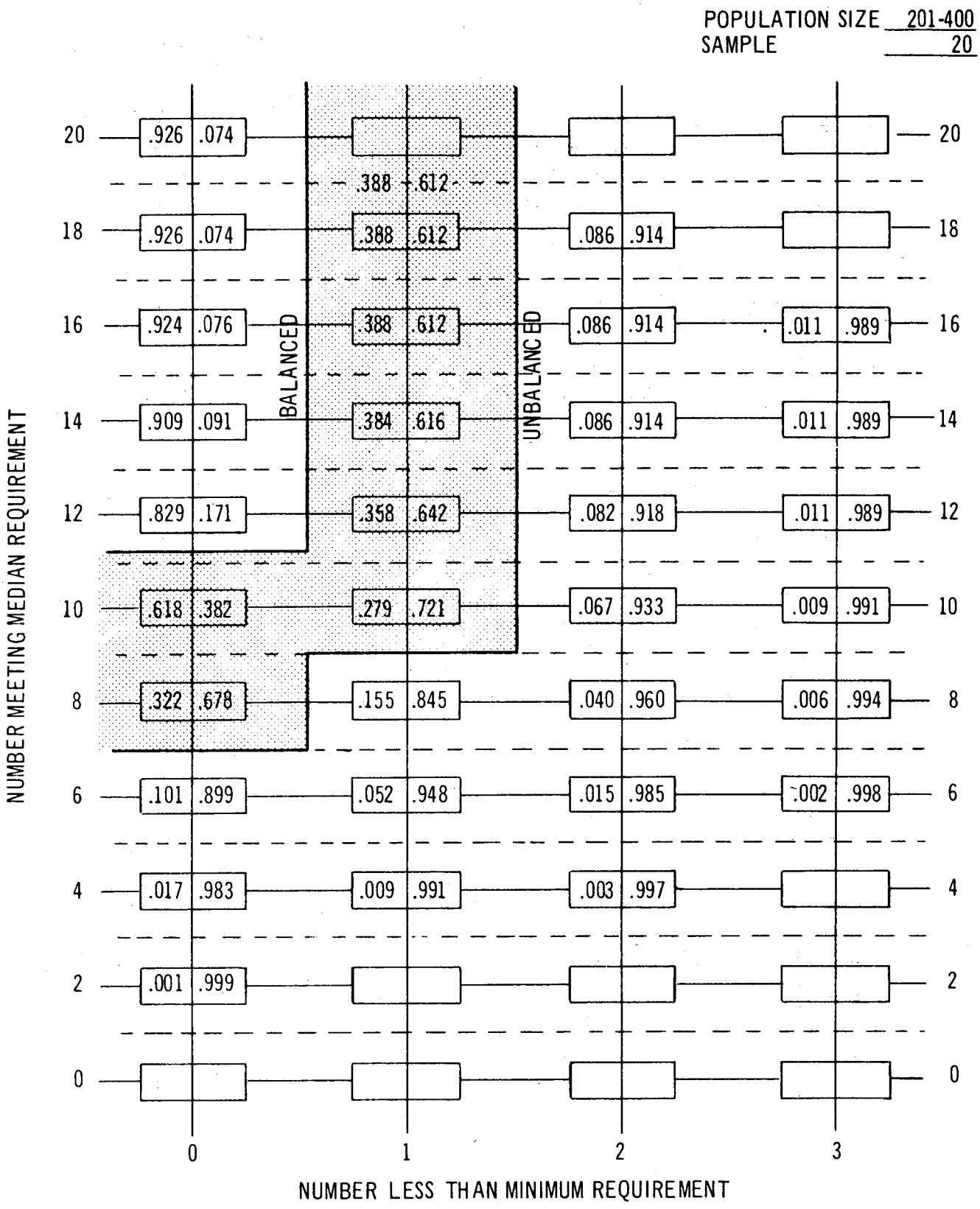
POPULATION SIZE 201-400
SAMPLE 20
NUMBER MEETING MEDIAN REQUIREMENT
NUMBER LESS THAN MINIMUM REQUIREMENT
BALANCED
UNBALANCED
20 .926 .074 .388 .612
18 .926 .074 .388 .612 .086 .914
16 .924 .076 .388 .612 .086 .914 .011 .989
14 .909 .091 .384 .616 .086 .914 .011 .989
12 .829 .171 .358 .642 .082 .918 .011 .989
10 .618 .382 .279 .721 .067 .933 .009 .991
8 .322 .678 .155 .845 .040 .960 .006 .994
6 .101 .899 .052 .948 .015 .985 .002 .998
4 .017 .983 .009 .991 .003 .997
2 .001 .999
0
0 1 2 3

Fig. 4—Chart A

POPULATION SIZE 201-400
SAMPLE 40

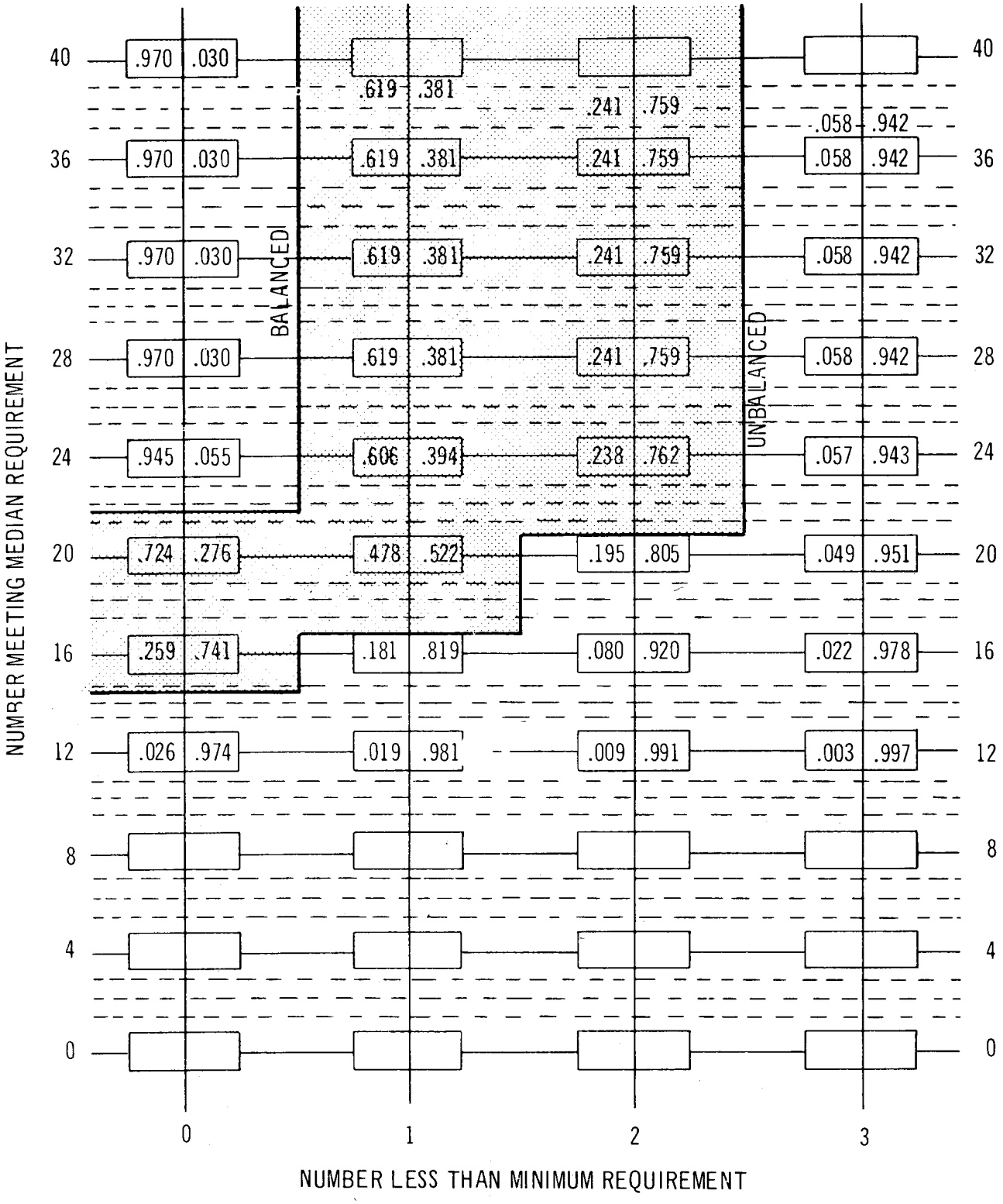

Fig. 4—Chart B

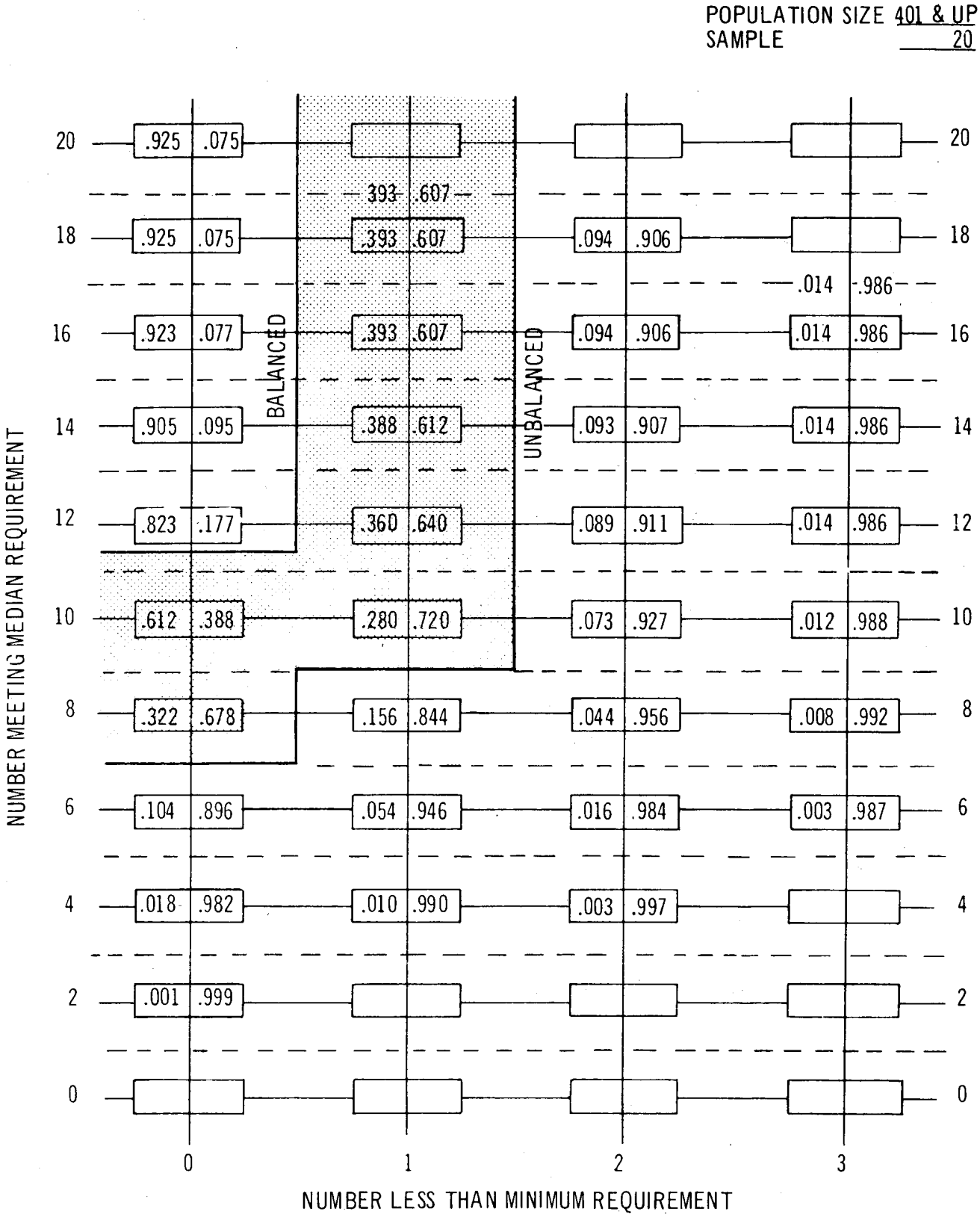
POPULATION SIZE 401 & UP
SAMPLE 20
NUMBER MEETING MEDIAN REQUIREMENT
NUMBER LESS THAN MINIMUM REQUIREMENT
BALANCED
UNBALANCED
20 .925 .075 .393 .607 20
18 .925 .075 .393 .607 .094 .906 .014 .986 18
16 .923 .077 .393 .607 .094 .906 .014 .986 16
14 .905 .095 .388 .612 .093 .907 .014 .986 14
12 .823 .177 .360 .640 .089 .911 .014 .986 12
10 .612 .388 .280 .720 .073 .927 .012 .988 10
8 .322 .678 .156 .844 .044 .956 .008 .992 8
6 .104 .896 .054 .946 .016 .984 .003 .987 6
4 .018 .982 .010 .990 .003 .997 4
2 .001 .999 2
0 0
0 1 2 3

Fig. 5—Chart A

POPULATION SIZE 401 & UP
SAMPLE 40

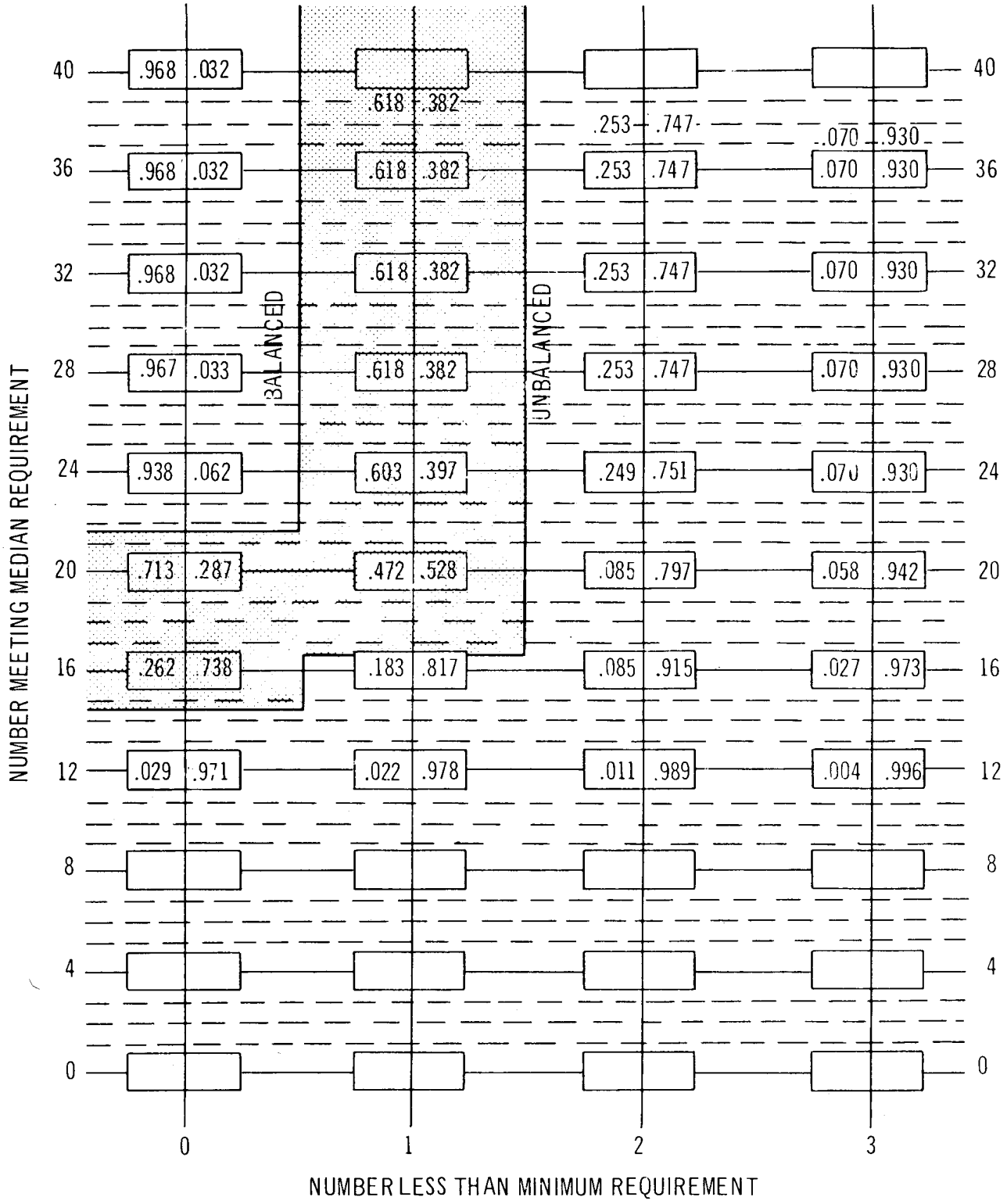

Fig. 5—Chart B