Voting Methods	Working Group (	VMWG ) , NIST In	teroperability W	orking Group										
Modeling Subgroup for Voting Method Tabulation Methods 08/30/2018 DRAFT  Authors: H. Deutsch, George Gilbert et. al (wtih contributions from the VMWG members)														
Authors: H. Deut	sch, George Gilbe	ert et. al (wtih co	ntributions from	the VMWG mem	<u>bers)</u>									
Lauren Lochridge	e, John Wack, Phi	lip Stark, Ron Riv	est, Editors											
<b>DRAFT NIST SP</b>	1500-10X Votin	g Methods , Sec	tion 3.1.3 Tabul	ation Methods,	<b>Ranked Choice</b>	Voting, Test Co	nditions and Exp	ected Outcome	S					
The tabs in														
this														
spreadsheet														
define the														
Test														
Conditions														
and Expected														
Outcomes														
for Logic and														
Accuracy														
Testing for														
each named Ranked														
Choice Voting														
Tabulation														
Method														
Variant.														
<b>Tabulation Meth</b>	od tests and out	comes specification	on do not include	the election con	test decision rules	s, by design.								
For specification	of election conte	st outcome tests	, see the spreads	heet correspondi	ng to Section 3.1.	4 Voting Method	s Test Conditions	and Expected Ou	tcomes.					
<b>Voting Methods</b>	use one of more	Tabulation Metho	ods, and therefor	e the Tabulation	Method's corresp	onding Tests spe	cification.							
Voting methods	Test Conditions a	nd Expected Out	comes, in contras	t to Tabulation N	/lethods Tests, tes	t the Voting Met	hod Decision Rule	e Set						
for logic and acc	uracy of applying	the election out	come decision ru	le(s).										
TODO: POINTERS	TO REFERENCES													
[Conformance Te	esting: VVSG1.1 Vo	olume II, P.14 -LL]												
[Functionality Te	sting: VVSG1.1, V	olume II, P. 53-56	-LL]											

Test Set 0	12 ballots listed. Omitted 1st choice (ballot 6), overvoted 2nd choice (ballot 9)
Description round	Shows what a tabulator tape would report for totals of the 12 ballots. Only 1st choices would be reported thus 2nd thru 4th choices grayed out. Overvotes and undervotes are shown to
0	account for votes not assigned to candidates.
Description round	This would match round 0 if all ballots had valid 1st choice votes. Since ballot 6 had no 1st choice selection, the 2nd choice selection (candidate B) is used in the candidate count. A new count is
1	determined. This round does not produce a winner and candidate D, having the least votes, iwill be eliminated.
Description round	A new count is determined after candidate D is eliminated on ballot 10 and the 2nd choice (candidate B) is used instead. There still is no winner and candidate C will now be eliminated having
2	the least votes.
Description round	A new count is determined after candidate C is eliminated on ballots 3, 9 and 11. Candidate B is used on ballots 3 and 11 being the 2nd choice. Ballot 9 is eliminated as the 2nd choice is
3	overvoted. Candidate B is the winner having more than 50% of the total remaining votes cast.

							Ballot adva	nced to next	highest ran	ked continui	ng candidate	9				
		d designate					nd 1				nd 2				nd 3	
Ballot #	1st Choice	2nd Choice	3rd Choice	4th Choice	1st Choice	2nd Choice	3rd Choice	4th Choice	1st Choice	2nd Choice	3rd Choice	4th Choice	1st Choice	2nd Choice	3rd Choice	4th Choice
1	Α	В	С	D	Α	В	С	D	Α	В	С	D	Α	В	С	D
2	В	Α	D	С	В	Α	D	С	В	Α	D	С	В	Α	D	С
3	С	В	Α	D	С	В	Α	D	С	В	Α	D	С	В	Α	D
4	Α	С	В	D	Α	С	В	D	Α	С	В	D	Α	С	В	D
5	В	С	Α	D	В	С	Α	D	В	С	Α	D	В	С	Α	D
6		В	С	А		В	С	Α		В	С	Α		В	С	Α
7	Α	С	В	D	Α	С	В	D	Α	С	В	D	Α	С	В	D
8	В	Α	С	D	В	Α	С	D	В	Α	С	D	В	Α	С	D
9	С	A/D	В		С	A/D	В		С	A/D	В		С	A/D	В	
10	D	В	Α	С	D	В	Α	С	D	В	Α	С	D	В	Α	С
11	С	В	Α	D	С	В	Α	D	С	В	Α	D	С	В	Α	D
12	Α	В	С	С	Α	В	С	С	Α	В	С	С	Α	В	С	С
Candidate	Total	%	Transfer		Total	%	Transfer		Total	%	Transfer		Total	%	Transfer	
Α	4	36%			4	33%			4	33%			4	36%		
В	3	27%			4	33%	1		5	42%	1		7	64%	2	
С	3	27%			3	25%			3	25%			0	0%	-2	
D	1	9%			1	8%			0	0%	-1		0	0%		
Votes Counted	11				12				12				11			
Inactive	0				0				0				1			
Total Ballots	11				12				12				12			
Overvote	0															
Undervote	1															
Current Active																
choice																
Eliminated Choice/																
Skipped ranking																

Test Set 1	Overvote - Exhaust ballot. 15 ballots listed. 1st choice overvoted (ballot 1). 2nd choice overvoted (ballot 8). Skipped choices are advanced to next highest ranked continuing candidate.*
Description round	Shows what a tabulator tape would report for totals of the 15 ballots. Only 1st choices would be reported thus 2nd thru 4th choices grayed out. Overvotes and undervotes are shown to account for
0	votes not assigned to candidates. (1 overvote and 0 undervotes)
Description round	This would match round 0 if all ballots had valid 1st choice votes. Since 1st choice on ballot 1 is overvoted, ballot 1 is eliminated and is omitted from further counting. A new count is determined.
1	This round does not produce a winner and candidate D, having the least votes, will be eliminated.
Description round	A new count is determined after Candidate D is eliminated. Candidate C is used on ballot 14 being the 2nd choice. There still is no winner and candidate C will now be eliminated having the least
2	votes.
Description round	A new count is determined after candidate C is eliminated on ballots 3, 8 and 14. Candidate B is used on ballot 3.being the 2nd choice. Ballot 8 is eliminateded as the 2nd choice is overvoted. The 3rd
3	choice in ballot 14 was not voted so candidate B, the 4th choice, is selected. Candidate B is the winner having more than 50% of the total remaining votes cast.

							Ballot adva	nced to next l	nighest rank	ed continuin	g candidate					
	Tabulat	ed designate	d 1st choice-	-Round 0)		Rou	nd 1			Rou	ınd 2			Rou	nd 3	
Ballot #	1st Choice	2nd Choice	3rd Choice	4th Choice	1st Choice	2nd Choice	3rd Choice	4th Choice	1st Choice	2nd Choice	3rd Choice	4th Choice	1st Choice	2nd Choice	3rd Choice	4th Choice
1	A,B		С	D	A,B		С	D	A,B		С	D	A,B		С	D
2	В	Α	D	С	В	Α	D	С	В	Α	D	С	В	Α	D	С
3	С	В	Α	D	С	В	Α	D	С	В	Α	D	С	В	Α	D
4	Α	С	В	D	Α	С	В	D	Α	С	В	D	Α	С	В	D
5	В	С	А	D	В	С	Α	D	В	C	Α	D	В	С	Α	D
6	Α	С	В	D	Α	С	В	D	Α	C	В	D	Α	С	В	D
7	В	Α	С	D	В	Α	С	D	В	Α	С	D	В	Α	С	D
8	С	B,D	Α		С	B,D	Α		С	B,D	Α		С	B,D	Α	
9	В	С	А	D	В	С	Α	D	В	С	Α	D	В	С	А	D
10	Α	В	D	С	Α	В	D	С	Α	В	D	С	Α	В	D	С
11	В	С	Α	D	В	С	Α	D	В	С	Α	D	В	С	Α	D
12	В	Α	D	С	В	Α	D	С	В	Α	D	С	В	Α	D	С
13	Α			С	А			С	А			С	Α			С
14	D	С		В	D	С		В	D	С		В	D	С		В
15	Α	В	D	С	Α	В	D	С	Α	В	D	С	Α	В	D	С
Candidate	Total	%	Transfer		Total	%	Transfer		Total	%	Transfer		Total	%	Transfer	
A	5	36%			5	36%			5	36%	0		5	38%	0	
В	6	43%			6	43%			6	43%	0		8	62%	2	
С	2	14%			2	14%			3	21%	1		0	0%	-2	
D	1	7%			1	7%			0	0%	-1		0	0%	0	
Votes Counted	14				14				14				13			
Inactive	0				1				1				2		1	
Total Ballots	15				15				15				15			
Overvote	1															
Undervote	0															
Current Active																
choice																
Eliminated Choice/																
Skipped ranking																

<sup>\*</sup> I the case of this skipped choice, advancing to the next highest ranked continuing candidate results in the ballot being cast for the voter's last choice. I would think that this does not truly reflect the voter's intent. Should we consider a rule that provents a vote being cast for a voter's last choice when all candidates are allowed to be ranked and a maximum numeric rank is given to a candidate?

Fest Set 2	Overvote - Skip to next continuing candidate. 15 ballots listed. 1st choice overvoted (ballot 1). 2nd choice overvoted (ballot 8). Skipped choices are advanced to next highest ranked continuing candidate.*  Shows what a tabulator tape would report for totals of the 15 ballots. Only 1st choices would be reported thus 2nd thru 4th choices grayed out. Overvotes and undervotes are shown to account for votes not assigned to candidates. (1 overvote and 0 undervotes)																			
escription round							only 1st choic	es would be	reported th	nus 2nd thru	4th choices ફ	grayed out. (	Overvotes a	nd undervote	es are showr	to account				
escription round				ots had valid roduce a win							hioce was on	nitted, both a	re skipped	and C is selec	cted. A new	count is				
escription round	A new cand	idate count	is determine		lidate D is el	liminated on					ected instead	d. A new cou	nt is then d	etermined. T	There still is	no winner				
escription round	A new coun	ew count is determined after candidate C is eliminated on ballots 1, 3, 8 and 14. Ballot 1 is eliminated as the 4th choice is candidate D, who has already been eliminated, and there are no re choices. Candidate B is selected on ballot 3, being the 2nd choice. Candidate A, the 3rd choice, is selected on Ballot 8 as the 2nd choice is skipped due to being overvoted. The 3rd choice ballot 14 was not voted so candidate B so the 4th choice, is selected. Candidate B is the winner having more than 50% of the total remaining votes cast.  Ballot advanced to next highest ranked continuing candidate																		
		Ballot advanced to next highest ranked continuing candidate																		
	Tahulate	Tabulated designated 1st choice-Round 0) Round 1 Round 2 Round 3																		
Ballot #	1st Choice   2nd Choice   3rd Choice   3rd Choice   4th Choice   2nd Choice   2nd Choice   3rd C															4th Choice				
1	A.D	00/66	C	D	A,D		C	D D	A,D	05100	C	D	A.D		C	D				
2	B B	A	D	C	B	Α	D	C	B B	А	D	C	B	А	D	С				
3	C	B	A	D	C	B	A	D	С	В	A	D	С	B	A	D				
4	A	C.	B	D	A	С	B	D	A	С	B	D	A	С	B	D				
5	B	C	A	D	В	С	_	D	B	С		D		C		D				
							A				A		В		A					
6	A	C	В	D	A	C	В	D	A	C	В	D	A	C	В	D				
7	В	Α	С	D	В	A	С	D	В	A	С	D	В	A	С	D				
8	С	B,D	A		С	B,D	A		С	B,D	A		С	B,D	Α					
9	В	С	A	D	В	С	Α	D	В	С	A	D	В	С	A	D				
10	Α	В	D	С	Α	В	D	С	Α	В	D	С	Α	В	D	С				
11	В	С	A	D	В	С	A	D	В	С	A	D	В	С	A	D				
12	В	Α	D	С	В	Α	D	С	В	Α	D	С	В	Α	D	С				
13	Α			С	Α			С	Α			С	Α			С				
14	D	С		В	D	С		В	D	С		В	D	С		В				
15	Α	В	D	С	Α	В	D	С	Α	В	D	С	Α	В	D	С				
Candidate	Total	%	Transfer		Total	%	Transfer		Total	%	Transfer		Total	%	Transfer					
Α	5	36%			5	33%			5	33%	0		6	43%	1					
В	6	43%			6	40%			6	40%	0		8	57%	2					
С	2	14%			3	20%			4	27%	1		0	0%	-4					
D	1	7%			1	7%			0	0%	-1		0	0%	0					
Votes Counted	14				15				15				14							
Inactive	0				0				0				1		1					
Total Ballots	15				15				15				15							
Overvote	1																			
Undervote	0																			
Current Active choice																				
iminated Choice/																				
11																				
I the case of this s	kinned choi	ce advancir	og to the pos	rt highest ran	ked continu	iing candidat	to recults in t	the hallot be	ing cast for	the voter's Is	st choice. L	would think t	hat this do	s not truly re	offect the ve	tor's intent				

Test Set 3	Skipped choice - Exhaust ballot. 15 ballots listed. 1st choice skipped (ballot 1). 2nd choice skipped (ballot 13). 3rd choice skipped (ballot 14).
Description round	Shows what a tabulator tape would report for totals of the 15 ballots. Only 1st choices would be reported thus 2nd thru 4th choices grayed out. Overvotes and undervotes are shown to account
0	for votes not assigned to candidates. (0 overvote and 1 undervotes)
Description round	This would match round 0 if all ballots had valid 1st choice votes. Since 1st choice on ballot 1 is skipped, ballot 1 is eliminated and is omitted from further counting. A new count is determined.
1	This round does not produce a winner and candidate D, having the least votes, will be eliminated.
Description round	A new count is determined after Candidate D is eliminated on ballot 14 and the 2nd choice, candidate C, is selected. There still is no winner and candidate C will now be eliminated, having the
2	least votes.
· ·	A new count is determined after candidate C is eliminated on ballots 3, 13 and 14. Candidate B is selected on ballot 3, being the 2nd choice. Ballot 13 is eliminated as the 2nd choice is not voted. Ballot 14 is eliminated as the 3rd choice is not voted. Candidate B is the winner having more than 50% of the total remaining votes cast.

	_															
		d designate					nd 1				ind 2				nd 3	
Ballot #	1st Choice	2nd Choice	3rd Choice	4th Choice	1st Choice	2nd Choice	3rd Choice	4th Choice	1st Choice	2nd Choice	3rd Choice	4th Choice	1st Choice	2nd Choice	3rd Choice	4th Choice
1		В	С			В	С			В	С			В	С	
2	В	Α	D	С	В	Α	D	С	В	Α	D	С	В	Α	D	С
3	С	В	Α	D	С	В	Α	D	С	В	Α	D	С	В	Α	D
4	Α	С	В	D	Α	С	В	D	Α	С	В	D	Α	С	В	D
5	В	С	Α	D	В	С	Α	D	В	С	Α	D	В	С	Α	D
6	Α	С	В	D	Α	С	В	D	Α	С	В	D	А	С	В	D
7	В	Α	С	D	В	Α	С	D	В	Α	С	D	В	Α	С	D
8	Α	В	С		Α	В	С		Α	В	С		Α	В	С	
9	В	С	Α	D	В	С	Α	D	В	С	Α	D	В	С	Α	D
10	Α	В	D	С	Α	В	D	С	Α	В	D	С	Α	В	D	С
11	В	С	Α	D	В	С	Α	D	В	С	Α	D	В	С	Α	D
12	В	А	D	С	В	Α	D	С	В	Α	D	С	В	Α	D	С
13	С			В	С			В	С			В	С			В
14	D	С		В	D	С		В	D	С		В	D	С		В
15	Α	В	D	С	А	В	D	С	Α	В	D	С	А	В	D	С
Candidate	Total	%	Transfer		Total	%	Transfer		Total	%	Transfer		Total	%	Transfer	
Α	5	36%			5	36%			5	36%	0		5	42%	0	
В	6	43%			6	43%			6	43%	0		7	58%	1	
С	2	14%			2	14%			3	21%	1		0	0%	-3	
D	1	7%			1	7%			0	0%	-1		0	0%	0	
Votes Counted	14				14				14				12			
Inactive	0				1				1		0		3		2	
Total Ballots	15				15				15				15			
Overvote	0															
Undervote	1															
Current Active																
choice																
Eliminated Choice/																
Skipped ranking																

Test Set 4	Skipped choice - Skip to next continuing candidate. 15 ballots listed. No 3rd or 4th choice on ballot 1. No 4th choice ballot 8. No 2nd or 3rd choice ballot 13. No 3rd choice ballot 14.
Description round	Shows what a tabulator tape would report for totals of the 15 ballots. Only 1st choices would be reported thus 2nd thru 4th choices grayed out. Overvotes and undervotes are shown to account for
0	votes not assigned to candidates. (0 overvotes and 0 undervotes)
Description round 1	This matches round 0 since all ballots have valid 1st choice votes. This round does not produce a winner and candidate D, having the least votes, will be eliminated.
	A new candidate count is determined after Candidate D is eliminated on ballot 14 and the 2nd choice, candidate C, is selected. There still is no winner and candidate C will now be eliminated, having the least votes. Skipped choices are advanced to next highest ranked continuing candidate.*
Description round 3	A new count is determined after candidate C is eliminated on ballots 3, 13 and 14. Candidate B is selected on ballot 3, being the 2nd choice. Candidate B, the 4th choice on ballot 13, is selected since the 2nd and 3rd choices are omitted. The 3rd choice in ballot 14 was not voted so candidate B, the 4th choice, is selected. Candidate B is the winner having more than 50% of the total remaining votes cast.

								Ballot advan	ced to next	highest rank		g candidate	-			
		ed designate					ind 1				ınd 2				ind 3	
Ballot #	1st Choice	2nd Choice	<b>3rd Choice</b>	4th Choice	1st Choice	2nd Choice	3rd Choice	4th Choice	1st Choice	2nd Choice	3rd Choice	4th Choice	1st Choice	2nd Choice	3rd Choice	4th Choic
1	В	С			В	С			В	С			В	С		
2	В	Α	D	С	В	Α	D	С	В	Α	D	С	В	Α	D	С
3	С	В	Α	D	С	В	Α	D	С	В	Α	D	С	В	Α	D
4	Α	С	В	D	Α	С	В	D	Α	С	В	D	Α	С	В	D
5	В	С	Α	D	В	С	Α	D	В	С	Α	D	В	С	Α	D
6	Α	С	В	D	Α	С	В	D	Α	С	В	D	Α	С	В	D
7	В	Α	С	D	В	А	С	D	В	Α	С	D	В	Α	С	D
8	Α	В	С		Α	В	С		Α	В	С		Α	В	С	
9	В	С	Α	D	В	С	Α	D	В	С	Α	D	В	С	Α	D
10	Α	В	D	С	Α	В	D	С	А	В	D	С	Α	В	D	С
11	В	С	Α	D	В	С	Α	D	В	С	Α	D	В	С	Α	D
12	В	Α	D	С	В	Α	D	С	В	Α	D	С	В	Α	D	С
13	С			В	С			В	С			В	С			В
14	D	С		В	D	С		В	D	С		В	D	С		В
15	Α	В	D	С	Α	В	D	С	Α	В	D	С	Α	В	D	С
Candidate	Total	%	Transfer		Total	%	Transfer		Total	%	Transfer		Total	%	Transfer	
Α	5	33%			5	33%			5	33%	0		5	33%	0	
В	7	47%			7	47%			7	47%	0		10	67%	3	
С	2	13%			2	13%			3	20%	1		0	0%	-3	
D	1	7%			1	7%			0	0%	-1		0	0%	0	
Votes Counted	15				15				15				15			
Inactive	0				0				0				0			
Total Ballots	15				15				15				15			
Overvote	0															
Undervote	0															
Current Active choice																
liminated Choice/																
kipped ranking																

<sup>\*</sup> I the case of these skipped choices, advancing to the next highest ranked continuing candidate results in the ballots being cast for the voter's last choice. I would think that this does not truly reflect the voter's intent. Should we consider a rule that provents a vote being cast for a voter's last choice when all candidates are allowed to be ranked and a maximum numeric rank is given to a candidate?

LIEST SET 5	Skipped choice - Exhaust if 2 successive skipped choices. Otherwise skip to next continuing candidate. 15 ballots listed. No 1st choice on ballot 1. No 4th choice ballot 8. No 2nd or 3rd choice ballot 13. No 3rd choice ballot 14. Single skipped choices are advanced to next highest ranked continuing candidate.*
	Shows what a tabulator tape would report for totals of the 15 ballots. Only 1st choices would be reported thus 2nd thru 4th choices grayed out. Overvotes and undervotes are shown to account for votes not assigned to candidates. (0 overvotes and 1 undervote)
	This would match round 0 if all ballots had valid 1st choice votes. Since 1st choice on ballot 1 is skipped, candidate B the 2nd choice is selected and a new count determined. This round does not produce a winner and candidate D, having the least votes, will be eliminated.
	A new candidate count is determined after Candidate D is eliminated on ballot 14 and the 2nd choice, candidate C, is selected. There still is no winner and candidate C will now be eliminated, having the least votes.
The state of the s	A new count is determined after candidate C is eliminated on ballots 3, 13 and 14. Ballot 13 is eliminated since the 2nd and 3rd choices are consecutive omssions. The 3rd choice in ballot 14 was not voted so candidate B, the 4th choice, is selected. Candidate B is the winner having more than 50% of the total remaining votes cast.

Skipped choice_Ext	aust if cons	ecutive skips						Ballot advan	ced to next	highest ranke	ed continuin	g candidate				
	Tabulat	ed designate	d 1st choice-	Round 0)		Rou	nd 1			Rou	ınd 2			Rou	ınd 3	
Ballot #	1st Choice	2nd Choice	3rd Choice	4th Choice	1st Choice	2nd Choice	3rd Choice	4th Choice	1st Choice	2nd Choice	3rd Choice	4th Choice	1st Choice	2nd Choice	3rd Choice	4th Choice
1		В	С			В	С			В	С			В	С	
2	В	Α	D	С	В	Α	D	С	В	Α	D	С	В	Α	D	С
3	С	В	А	D	С	В	Α	D	С	В	Α	D	С	В	Α	D
4	Α	С	В	D	Α	С	В	D	А	С	В	D	Α	С	В	D
5	В	С	Α	D	В	С	Α	D	В	С	Α	D	В	С	Α	D
6	Α	С	В	D	Α	С	В	D	Α	С	В	D	Α	С	В	D
7	В	Α	С	D	В	Α	С	D	В	Α	С	D	В	Α	С	D
8	Α	В	С		Α	В	С		Α	В	С		Α	В	С	
9	В	С	А	D	В	С	Α	D	В	С	Α	D	В	С	Α	D
10	Α	В	D	С	Α	В	D	С	Α	В	D	С	Α	В	D	С
11	В	С	А	D	В	С	Α	D	В	С	Α	D	В	С	Α	D
12	В	Α	D	С	В	Α	D	С	В	Α	D	С	В	Α	D	С
13	С			В	С			В	С			В	С			В
14	D	С		В	D	С		В	D	С		В	D	С		В
15	Α	В	D	С	А	В	D	С	А	В	D	С	Α	В	D	С
Candidate	Total	%	Transfer		Total	%	Transfer		Total	%	Transfer		Total	%	Transfer	
Α	5	36%			5	33%			5	33%	0		5	36%	0	
В	6	43%			7	47%			7	47%	0		9	64%	2	
С	2	14%			2	13%			3	20%	1		0	0%	-3	
D	1	7%			1	7%			0	0%	-1		0	0%	0	
Votes Counted	14				15				15				14			
Inactive	0				0				0		0		1		1	
Total Ballots	15				15				15				15			
Overvote	0															
Undervote	1	<u> </u>														
Current Active choice																
Eliminated Choice/																
Skipped ranking																

<sup>\*</sup> I the case of this skipped choice, advancing to the next highest ranked continuing candidate results in the ballot being cast for the voter's last choice. I would think that this does not truly reflect the voter's intent. Should we consider a rule that provents a vote being cast for a voter's last choice when all candidates are allowed to be ranked and a maximum numeric rank is given to a candidate?

Test Set 6	Duplicate choice - Exhaust ballot. 15 ballots listed. 2nd choice a duplicate of 1st choice on ballot 1.
The state of the s	Shows what a tabulator tape would report for totals of the 15 ballots. Only 1st choices would be reported thus 2nd thru 4th choices grayed out. Overvotes and undervotes are shown to account for votes not assigned to candidates. (0 overvotes and 0 undervotes)
Description round 1	This matches round 0 since all ballots have valid 1st choice votes. This round does not produce a winner and candidate D, having the least votes, will be eliminated.
The state of the s	A new count is determined after Candidate D is eliminated on ballots 1 and 14. Ballot 1 is eliminated as the 2nd choice is a duplicate of the 1st choice. On ballot 14 the 2nd choice, candidate B, is selected. There still is no winner and candidate C will now be eliminated, having the least votes.
Description round	A new count is determined after candidate C is eliminated on ballots 2, 3, 11 and 13. Ballot 2 is eliminated as the 2nd choice is skipped having previously been eliminated and the 3rd choice being a duplicated of the 1st choice. Candidate B is selected on ballots 3 and 13, being the 2nd choice on both. Ballot 11 is also eliminated due to 2nd choice being a duplicate of the 2nd choice. B is the winner having more than 50% of the total remaining votes cast.

								Ballot advan	nced to next highest ranked continuing candidate							
	Tabulated designated 1st choice-Round 0)				Round 1				Round 2				Round 3			
Ballot #		2nd Choice			1st Choice	2nd Choice	3rd Choice	4th Choice	1st Choice	2nd Choice	3rd Choice	4th Choice	1st Choice	2nd Choice	3rd Choice	4th Choice
1	D	D	Α		D	D	Α		D	D	Α		D	D	Α	
2	С	D	С	Α	С	D	С	Α	C	D	С	Α	С	D	С	Α
3	С	В	Α	D	С	В	Α	D	С	В	Α	D	С	В	Α	D
4	Α	С	В	D	Α	С	В	D	А	С	В	D	Α	С	В	D
5	В	С	А	D	В	С	Α	D	В	С	Α	D	В	С	Α	D
6	Α	С	В	D	А	С	В	D	Α	С	В	D	А	С	В	D
7	В	Α	С	D	В	Α	С	D	В	Α	С	D	В	Α	С	D
8	Α	В	С		А	В	С		Α	В	С		Α	В	С	
9	В	С	Α	D	В	С	Α	D	В	С	Α	D	В	С	Α	D
10	Α	В	D	С	Α	В	D	С	Α	В	D	С	Α	В	D	С
11	С	D	D	Α	С	D	D	Α	С	D	D	Α	С	D	D	Α
12	В	Α	D	С	В	Α	D	С	В	Α	D	С	В	Α	D	С
13	С	В			С	В			С	В			С	В		
14	D	В	Α		D	В	Α		D	В	Α		D	В	Α	
15	А	В	D	С	А	В	D	С	А	В	D	С	А	В	D	С
Candidate	Total	%	Transfer		Total	%	Transfer		Total	%	Transfer		Total	%	Transfer	
Α	5	33%			5	33%			5	36%	0		5	42%	0	
В	4	27%			4	27%			5	36%	1		7	58%	2	
С	4	27%			4	27%			4	29%	0		0	0%	-4	
D	2	13%			2	13%			0	0%	-2		0	0%	0	
Votes Counted	15				15				14				12			
Inactive									1		1		3		2	
Total Ballots	15				15				15				15			
Overvote	0															
Undervote	0	1														
total Ballots																
liminated Choice/																
kipped ranking																

Test Set 7	Duplicate choice - Skip to next continuing candidate. 15 ballots listed. 2nd choice a duplicate of 1st choice on ballot 1. 3rd choice a duplicate of 1st choice on ballot 2. 3rd choice a duplicate of 2nd choice on ballot 14.
Description round 0	Shows what a tabulator tape would report for totals of the 15 ballots. Only 1st choices would be reported thus 2nd thru 4th choices grayed out. Overvotes and undervotes are shown to account for votes not assigned to candidates. (0 overvotes and 0 undervotes)
Description round 1	This matches round 0 since all ballots have valid 1st choice votes. This round does not produce a winner and candidate D, having the least votes, will be eliminated.
Description round 2	A new count is determined after Candidate D is eliminated on ballots 1 and 14. Candidate A, the 3rd choice, is selected on ballot 1 as the 2nd choice is skipped being a duplicate of the eliminated 1st choice. On ballot 14 the 2nd choice, candidate B, is selected. There still is no winner and candidate C will now be eliminated, having the least votes.
Description round	A new count is determined after candidate C is eliminated on ballots 2, 3, 11 and 13. Candidate A is selected on ballot 2, being the 4th choice after skipping eliminated 2nd choice and the duplicate 3rd choice. Candidate B is selected on ballots 3 and 13, being the 2nd choice on both. Candidate A is selected on ballot 12, being the 4rd choice after skipping the eliminated 2nd choice and the duplicate 3rd choice. Candidate A is the winner having more than 50% of the total remaining votes cast.

		Ballot advanced to next highest ranked continuing candidate														
		ed designate			Round 1				Round 2				Round 3			
Ballot #	1st Choice	2nd Choice	3rd Choice	4th Choice	1st Choice	2nd Choice	3rd Choice	4th Choice	1st Choice	2nd Choice	3rd Choice	4th Choice	1st Choice	2nd Choice	3rd Choice	4th Choi
1	D	D	Α		D	D	Α		D	D	А		D	D	А	
2	С	D	С	Α	С	D	С	Α	С	D	С	Α	С	D	С	А
3	С	В	Α	D	С	В	Α	D	С	В	Α	D	С	В	Α	D
4	Α	С	В	D	Α	С	В	D	Α	С	В	D	Α	С	В	D
5	В	С	Α	D	В	С	Α	D	В	С	Α	D	В	С	Α	D
6	Α	С	В	D	Α	С	В	D	Α	С	В	D	Α	С	В	D
7	В	Α	С	D	В	Α	С	D	В	Α	С	D	В	Α	С	D
8	Α	В	С		Α	В	С		Α	В	С		Α	В	С	
9	В	С	Α	D	В	С	Α	D	В	С	Α	D	В	С	Α	D
10	Α	В	D	С	Α	В	D	С	Α	В	D	С	Α	В	D	С
11	С	D	D	А	С	D	D	Α	С	D	D	Α	С	D	D	Α
12	В	Α	D	С	В	Α	D	С	В	Α	D	С	В	Α	D	С
13	С	В			С	В			С	В			С	В		
14	D	В	Α		D	В	Α		D	В	Α		D	В	Α	
15	Α	В	D	С	Α	В	D	С	А	В	D	С	Α	В	D	С
Candidate	Total	%	Transfer		Total	%	Transfer		Total	%	Transfer		Total	%	Transfer	
Α	5	33%			5	33%			6	40%	1		8	53%	2	
В	4	27%			4	27%			5	33%	1		7	47%	2	
С	4	27%			4	27%			4	27%	0		0	0%	-4	
D	2	13%			2	13%			0	0%	-2		0	0%	0	
Votes Counted	15				15				15				15			
Inactive	0								0		0		0		0	
Total Ballots	15				15				15				15			
Overvote	0															
Undervote	0															
Current Active choice																
minated Choice/ ipped ranking																