



Hand Counting Paper Ballots

Address to Democracy Fest
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Sheraton Wayfarer, Bedford, NH

By Anthony Stevens
Assistant Secretary of State
New Hampshire

Focus of this Presentation

**Election
Night Hand
Counting**



Why New Hampshire is relevant for hand counts

- NH has perhaps the highest volume of hand recounts conducted at state level in the nation.
 - 10-32 recounts per election cycle
 - 50-136 candidates involved per cycle
- Current Secretary of State has been involved in over 300 hand-counted recounts.
- In the 2004 general election, there were 7 hand counting polling places with over 2,500 persons registered to vote.
 - Each counted over 2,000 ballots, or over 3 X the ballots cast in an average-sized US precinct.

Counting in New Hampshire

Approx. ballots counted:

80% optical scan; 20% hand count

- 139 polling places (45%) in NH rely on hand counting
- 170 polling places (55%) in NH rely on optical scanning machines

- 138 jurisdictions (58%) in NH rely on hand counting
- 98 jurisdictions (42%) in NH rely on optical scanning machines

Wide range of situations calls for different solutions

- Individual New Hampshire polling places served as few as 18 registered voters and as many as 18,974 registered voters in 2006.
- New Hampshire has 7 polling places with over 10,000 registered voters, which is over 6 X the national average polling place size.
- Size of polling place affects decisions regarding counting methods.
- One size does not fit all.

New Hampshire Secretary of State

- Supports hand counting and optical scanning counting methods.
- Seeks to identify best practices, recognizing that all ballot counting methods are under scrutiny and will need improvement over time.
- Continues to learn from local officials and promote best practices in counting using hand counting and optical scanning methods.
- Recognizes that there is probably more than one way to count ballots correctly.

In appreciation

- **Recognition to:**

- All those election workers who give their time, often for little or no pay, to ensure democracy works

- **Special thanks to:**

- Ernest D. Vose, Moderator, Walpole
 - David Westover, Assistant Moderator
- Walter Fries, Moderator, Danville

Purpose of hand counts

- Testing of voting machines
- Election night counting
- Parallel counting on election night
- Audits
- Recounts

National use of hand counting on election night

EAC: 2004 Election Day Survey

1,734 hand count jurisdictions (26.4%)
among 6,568 jurisdictions nationwide

Hand counting used for about 1% of ballots in nation

Significant hand count states:

Wisconsin, Maine, Vermont,
New Hampshire, Texas, Massachusetts, Nebraska,
Montana, Kansas.

In New Hampshire

Selection of counting method

- **Based on a local decision – often a town meeting warrant article.**
- **Decision to use a vote counting machine is subject to NH Ballot Law Commission approval**

Focus on

Sort and Stack Method

- Secretary of State indicates a preferred method in NH Election Procedure Manual
- Use of sort-and-stack method based on observation in recounts - operating hypothesis
- Many steps similar to the read-and-mark method, also used heavily in NH
- Sort-and-stack method is not used by the SOS in recounts for multi-seat races
 - Although the method can be used by treating every candidate as a separate contest.
- Sort-and-stack method may not be used widely in New Hampshire on election night

Overview of Sort and Stack Method

- **Ballots are sorted into piles**
- **One pile for different categories**
 - Each candidate or alternative on a question
 - Overvotes (defective in that contest)
 - Undervotes (skipped races)
 - Write-ins
 - Judgment calls for the moderator (local election manager)

Hand Counting Steps

- Planning
- Recruiting
- Knowing your method & how to present it
- Preliminary organizational work
- Training
- Oath of office
- Opening ballot box, counting and distributing ballots
- Tallying votes in contests
- Entering on tally sheet
- Moderator (local election manager) review
- Dealing with discrepancies

Recruiting counters & observers

- Cost estimates of \$10 per hour here are on the high side. Many counters in NH work for between \$0 and \$5 per hour and are justly proud of their contribution.
- Locations paying \$0-\$5 per hour are some of the most effective at inspiring and recruiting good election night counters of all ages.
- Plan on using a second shift for counting. This makes it easier to recruit :
 - people with day jobs
 - students
- High school students are now required to contribute community service hours and log them.
 - 17-year olds qualify in NH & other states.
- Seek a balanced mix.
 - Managers
 - Numbers person
 - Young people
 - Middle aged
 - Older people

Recruiting

- Count your contest equivalents on the ballot.
- Know your method.
- Estimate your target number of counters & observers at each table.
- Estimate the number of sets of eyes per ballot.
- Consider using people who have worked all day as observers.

Contests per ballot

- The number of contests per ballot varies widely.
- In NH, the typical range on a primary or general election ballot is 12 contests, plus questions.
- The NH state representative contest normally is a multiple-seat race, with as many as 26 candidates running for 13 seats in the same district.
 - We would count this example as 13 contest equivalents. When added to 11 other contests on the ballot, the contest equivalents on this ballot should be estimated as $13 + 11 = 24$ contests.
- The following estimates should be adjusted according to how many contests or contest equivalents appear on the ballot.

Team availability on election night

- 3 hours available (8 PM to 11 PM) X 60 minutes X 60 seconds = 10,800 seconds per team available in one night.

Assumptions:

- Second shift (8-11 PM) brings in fresh counters.
- 20 minutes of training is included in 3 hours

Estimating hand counting staff

- Average U.S. precinct in 2006 = 936 registered voters X 67% turnout in general election = 627 ballots X 20 contests/ballot = 12,540 contests to count.
- Assumptions:
 - In NH, general election ballots may contain contests for as few as 12 positions per ballot and contests for as many as 25 position equivalents.
 - Multi-seat races are harder to count than races with single outcomes.

Estimating hand counting staff

- 12,540 contests to count X 6 seconds for a team to count a contest in NH experience = 75,240 seconds required on election night, divided by 10,800 (3-member) team seconds available per night = 7 teams needed.
- Assumption: It takes approximately 6 seconds to hand count a contest on a ballot.
 - This is based on:
 - Videos and interviews with towns that conduct hand counts efficiently
 - Secretary of State experience with hand counting
 - Experienced towns average 4 - 5 seconds to count each contest on a ballot, including training time, sorting, stacking and counting.

Estimating hand counting staff

- 7 teams X (2 counters + 1 observer = 3 persons per team)
= 21 counters/observers
+ 3 managers = 24 total staff

Estimated staff costs

21 counters/observ. X 3 hours @ \$10/hr = \$630
3 managers X 4 hours @ \$20/hr = \$240

Total **\$870**

Using 3 person counting teams:

**\$870 per polling place/627 ballots counted
@ 20 contests/ballot =**

- \$1.39/ballot, or
- \$0.07/contest on a ballot

Hand counting steps

- **Close the polls**
- **Verify all absentee ballots processed**
- **Rearrange the polling place for counting**

Ballot counting table layout



Examples shows tables for 9 teams of counters and observers



Checklist (pollbook) supervisors count those who have picked up ballots

Moderator and clerk manage process & tabulate results

Advantage of sort and stack method

- Counters and observers are looking at only one candidate or question on the ballot.
- Counters' and observers' eyes do not have to move to different locations on the ballot and on the tally sheet.
- Counters and observers have to focus on getting only one thing right. When looking for evidence of only one mark on one precise location on the ballot, it is harder to make mistakes.
- Recording the number of votes for a candidate or question is done when the stack is counted.
- Other methods rely on a separate mark on a tally sheet being made with each ballot. This requires more sets of eyes to track accurately.

Rule of thumb: 3 sets of eyes per contest per ballot

- Aim for at least 3 sets of eyes on each ballot, and each vote recording.
- Using a 2-person team, that might mean that both members watch as one member sorts the ballots.
 - At least one member checks the marks again when counting the number of ballots in the stack.
- Both members count each pile and record and check the sum on the tally sheet.

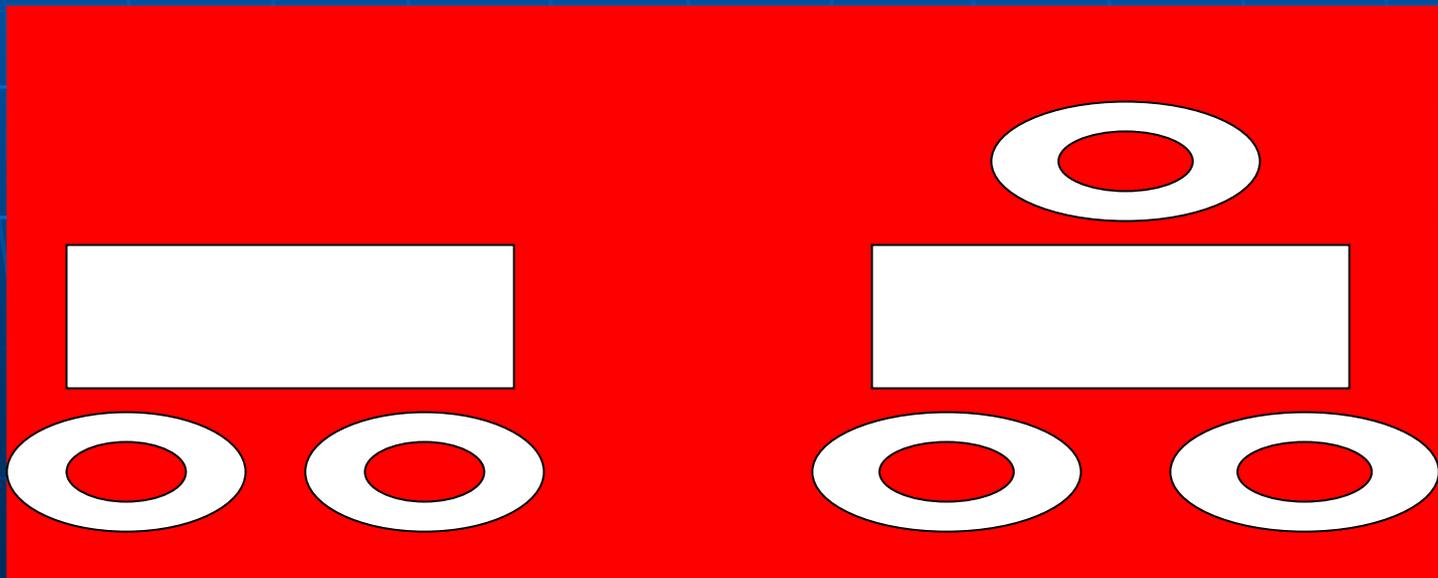
Choosing # of observers

- The more sets of eyes on a single ballot, the greater certainty in the results.
- Generally, this means the more observers, the greater degree of certainty in the results.
- (Still, using the sort and stack method, 2 counters (no observers) can apply 3-4 sets of eyes to each ballot, and still achieve accuracy.)
- An extra set of observers for 7 teams would cost \$210 (7 observers X 3 hours X \$10/hour) in an average US polling place counting a 20-contest ballot without volunteer help.
- New Hampshire recounts rely on observers selected by the candidates, often resulting in tables with 4 or 5 persons – 2 counters and 2-3 observers.

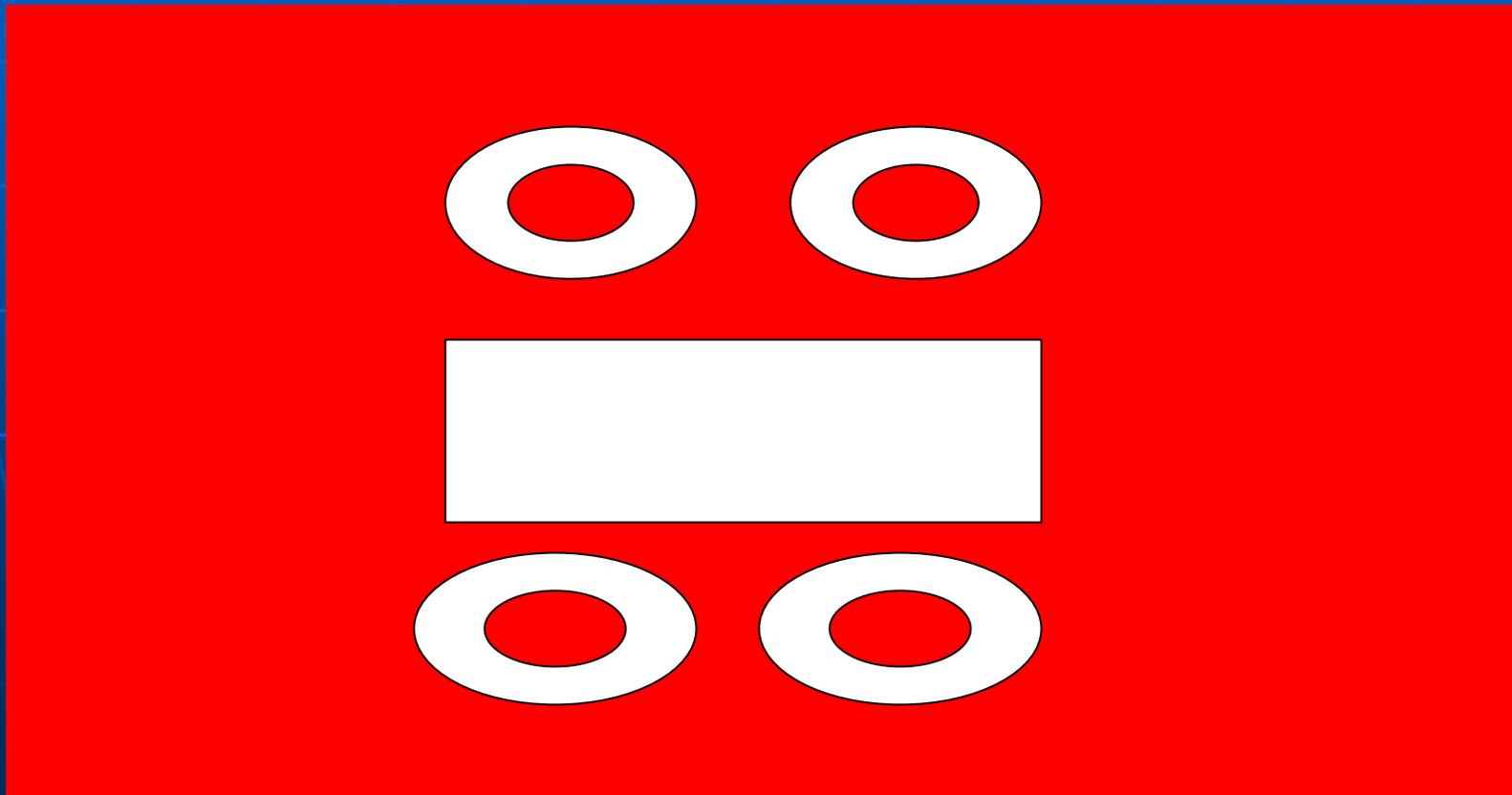
2 counters

1 observer

2 counters



2 counters & 2 observers



Preliminary Organizational Work

- Have the checklist (pollbook) supervisors count the number of voters who are checked off as having voted.
- Identify those who will be counting.
- Identify those counters who have not yet taken the oath of office.

Oath of Office

Swear in non-election officials as election officials

"I, (state your complete name), do solemnly swear (*affirm*), that I will bear faith and true allegiance to the United States of America and the State of New Hampshire, and will support the constitution thereof. So help me God. *This I do under the pains and penalties of perjury.*

Alternate language for those scrupulous of swearing, or mentioning God in this matter, is set forth in italics.

Training

- Read the instructions for counting to all the election officials who will be counting.
- Provide clear directions regarding method to achieve consistency.
- The moderator (senior local election official) has control and should exercise it.
- If people insist on using another counting method, consider asking them to act as an observer.
 - Observing the counters count is a key role and helps achieve accuracy.
- Oath of office and training take 20 minutes.

Distributing ballots to teams

- Open the ballot box in view of the public.
- Place an established quantity of ballots on the table to be used by each counting team.
- Both members count the ballots in groups of 50.
- If it becomes necessary to redo a particular part of the process because the results do not equal the number of ballots, counters can afford to recount 50.

Sort and Stack Ballots

One contest

Separate piles

Candidates

A

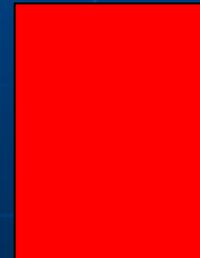
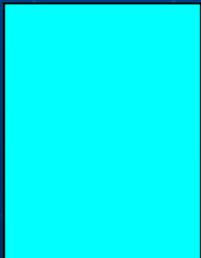
B

Over
votes

Under
votes

Write-
ins

Ques-
tions



Start counting ballots

- Team members should look at each ballot to ensure it is sorted into the correct pile.
- Once each table has the ballots assigned to it sorted into the six piles, start the counting process with the pile of ballots for the first candidate on the ballot.
- All other ballots should be set aside, but remain in public view on that table.

Counting ballots

- The team should count the ballots in the first candidate's pile into groups of ten.
- Stack each group of ten ballots and the remainder at right angles to each other on the same pile.
- Both counters count the piles of ten, plus remainders, agree on the number and enter it in the tally sheet.

Tally Sheet – single contest

	Candidate A	Candidate B	Candidate C	Under-vote	Over-vote	Write-ins	TOTAL
1st group of 50 ballots	19	17	9	4	1	0	50
2nd group of 50 ballots	17	22	8	3	0	0	50
3rd group of 50 ballots	16	18	11	3	1	1	50
4th group of 50 ballots	18	20	9	2	0	1	50
TOTALS	70	77	37	12	2	2	200

Next candidate, same contest

- Then begin counting the next candidate in the same contest.
- When all the piles have been counted and checked, that counting team is done with that set of ballots for that candidate in that contest.
- Counters agree on the number to enter on the tally sheet.
- If there is another candidate in that contest, counters count the pile for that candidate and agree on the number to enter on the tally sheet.

Same contest, counting the piles of undervotes and overvotes

- Counters count separately the piles for undervotes and overvotes and agree on the numbers to enter on the tally sheet.
- The team should add the votes for each candidate (including write-ins) and the number of undervotes (skipped/abstentions) and overvotes (defective) in that contest.
- Enter the total in the far right column of each row. It should equal 50.

Next contest

- Begin the sorting and counting process for the first candidate in the next contest.
- When all piles for that contest have been counted, checked and entered on the tally sheet, that counting team is done with that set of ballots for that contest.
- The team should add the votes for each candidate (including write-ins) and the number of undervotes (skipped/abstentions), and overvotes (defective) in that contest. That number should equal 50.

Tallying

- Tally sheets should be turned in - after the numbers equal 50 on the far right, and the aggregate of votes = 200 on the bottom right.
- Tally sheets should be signed by the counters before being turned in.
- Moderator should designate someone who routinely works with numbers to tally and check the team tally sheets.

Moderator (local election manager) Review

- The moderator (manager) should stop before announcing the results and check the final tallies.
- If a count was done of the total number of persons checked off as having voted on the checklist, the aggregate tallies for each contest (office or question) should be verified against that count.
- The total votes for all candidates (including write-ins) in a single contest, plus the undervotes (skipped/abstentions) in that contest, plus the overvotes (defective) in that contest, should equal the total number of ballots used.

Dealing with Discrepancies

- The moderator should be looking for any significant discrepancies between the totals. It may be difficult to get a perfect count from the checklist (pollbook).
- It is not essential that the total count for each office or question exactly match the total of those checked off on the checklist (pollbook).
- Provided the write-in, undervotes (skipped/abstentions) and overvotes (defective) were tallied, the totals from one contest to the next for the same set of ballots should be the same (50 per batch).

Dealing with Discrepancies

- Tally sheets from each team should be carefully checked as each contest is counted. Reconciliation should be kept current during the night.
- Any mismatch of votes per contest with number of ballots per batch should be addressed immediately.
- When the last tally sheet is handed in for the last race, reconciliation should be largely complete. Little tally work remains.
- If any discrepancies are found, the moderator should investigate and attempt to resolve the discrepancy before declaring the results.

Advantages of using tally sheets to track undervotes and overvotes

- Tally sheets permit ongoing reconciliation (number checking) as the count progresses.
- Surprises at the end are less likely.

**This is a start.
There is more to learn.**

**The State of New Hampshire plans more study on this
subject, with the help of towns and cities.**



The End