Risk Limiting Audits (RLAs)

Standard Operating Procedures

Issued by The Elections Group

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Introduction

A risk-limiting audit (RLA) is a post-election tabulation audit in which a random sample of voted ballots is manually examined for evidence that the originally reported outcome of the election is correct. As its name suggests, an RLA limits the risk of certifying a contest with the wrong winner.

An RLA gives statistical evidence that the machine-tabulated results are consistent with what a full hand count of ballots would reveal. Unlike fixed percentage audits, an RLA limits the risk that the wrong election result will be certified because of a tabulation error. They also allow jurisdictions to strategically allocate resources to check more ballots when needed in close contests, and fewer ballots in contests with wider margins.

There are three main methods for conducting an RLA. Where and how ballots are scanned will be factored into the decision of which method(s) will work best.

	Ballot Comparison	Ballot Polling	Batch Comparison
Where do ballots get scanned?	Central location	Individual polling locations or a central location	Individual polling locations or a central location
Ballot information needed from the voting system	Cast vote records generated by the election management system (EMS)	None	Batch sub-total reports generated by the election management system (EMS)
Ballot batch size	The smaller the better. 100 ballots are a good average size	Not so large that a person cannot hold them on their own	The smaller the better
Ballots need unique, printed identifier	Yes	No	No
How are ballots validated?	RLA software	RLA software and/or manual tally sheets	RLA software and manual tally sheets

In a **ballot comparison audit**, specific ballots are identified and retrieved. The audit team examines the ballot and enters the voter markings for the audited contest(s) exactly the way they appear on the ballot. In some cases, hand-marked paper ballots may require the audit team to make decisions about voter intent. The RLA software compares the voter markings entered by the audit team to the cast vote record created by the voting system. **The audit is looking for discrepancies between the two**.

In a **ballot polling audit**, individual ballots are retrieved. The audit team examines the ballot and records the voter markings for the audited contest(s) on a tally sheet. Once all the ballots have been examined and voter markings recorded, the votes are totaled and the margin of victory for the winner(s) is compared to the margin of victory originally reported. **The audit is looking for a similar or greater margin**.

In a **batch comparison audit**, specific batches of ballots are identified and retrieved. The audit team examines the ballot and records the voter markings for the audited contest(s) on a tally sheet. Once all the ballots in the batch have been examined and voter markings recorded, the votes are totaled. The audit compares the manually recorded subtotals to the originally reported subtotals from the voting system. **The audit is looking for discrepancies between the two**.

Keep in mind that there is some tolerance for discrepancies depending on the margin of the target contest(s) and the risk limit that has been set.

Pre-Election Preparation

> **State Responsibilities:** Designate uniform contest names for all statewide races.

Room Preparation

- Designate a secure area for staging ballot storage containers for all scanned ballots that have been verified, sealed, and added to the ballot manifest.

Supplies

- Reconciliation reports/tally sheet (for ballots scanned in-person)
- Batch tracking forms (for ballots scanned centrally)
- Batch labels (header sheets, folder labels, etc.)
- Ballot storage containers and container labels
- Ballot manifest

Staffing

- Staff assigned to verify ballot container labels are completed correctly
- Staff assigned to enter information from ballot containers into the ballot manifest
- Staff assigned to validate data in the ballot manifest by performing a reconciliation

Ballot Accounting

- Review the ballot accounting practices conducted in your jurisdiction.
    - This includes batch tracking forms, reconciliation/tally sheets, and chain of custody forms and procedures.
    - Should also include a review of how and where ballots will be stored.
- These practices are the foundation of your RLA paper trail and ensure ballots have not been lost or added as a result of human error. **They provide evidence the paper trail is trustworthy**.
- Polling location reconciliation forms, mail/absentee ballot batch tracking forms, and chain of custody logs should be reviewed, or audited, prior to an RLA or in conjunction with it.
    - This includes verifying the information from these forms gets transferred to batch and container labels.

RLAs rely on jurisdictions locating a single batch of ballots and having an accurate count of the number of individual ballots in each batch.

You must have a reliable system that:

- Assigns a unique number to every batch; this applies to ballots cast in person and by mail.
- Verifies the total number of ballots in each batch independent of the voting system.
- Assigns a number to the container (box, bag, bin) ballots are stored in.

For Ballots Scanned at Polling Locations

1. Poll workers must complete a ballot reconciliation form.
   a. Reconciliation forms should validate the number of ballots issued and/or voters checked in equals the number of ballots scanned.
   b. Provisional or emergency ballots that are segregated for scanning at a later time should be included somewhere on the reconciliation form.
   c. Each reconciliation form should have a place for poll workers to record information explaining any discrepancies in the reconciliation to aid with additional research.

2. When ballots are transferred from the polling location to the central election facility, they should be locked and sealed in a storage container (bag, box, or bin) that is labeled with the following:
   a. polling location name or number (such as a precinct number)
   b. container ID number (unique number assigned to the ballot storage container)
   c. total number of ballots sealed in the container (taken from the reconciliation form or closing reports)
   d. security seal number
   e. name or initials of the individual(s) who verified the quantity of ballots and sealed the container
   f. optional: precinct scanner ID number(s)

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The two examples below illustrate what a ballot storage container label might look like.

Container Label Example 1

CONTAINER LABEL	
Polling Location #: North Library	
Ballot Bag: 60	
TOTAL BALLOTS: 984	
Seal # A95162	
Poll Worker Initials: TP	
Poll Worker Initials: JM	

Container Label Example 2

CONTAINER LABEL	
PRECINCT #: 6273803212	
Ballot Box: 27	
Scanner Name	**Total Ballots**
4567	236
4568	507
TOTAL BALLOTS: 743	
Seal # A95162	
Poll Worker Initials: TP	
Poll Worker Initials: JM	

There are situations where ballots scanned at polling locations remain in the large ballot receptacles attached to the precinct scanner. Often, these containers hold thousands of ballots and may need to be subdivided into smaller batches for ease in retrieval and review. Subdividing the ballots in this way limits you to performing a ballot polling audit as there will be no way to compare a ballot or batch to information from the voting system.

For Ballots Scanned Centrally

- Ballots scanned centrally should have batch tracking forms that are part of an overall plan to account for ballots – from the time they are initially received in the facility to the point they are received in the scanning room.
  - Batch tracking should include any ballots removed from the original batch and sent for duplication.
- Strive to scan batches in uniform batch sizes.
  - Typically 100-200 ballots per batch but no larger than 500 ballots

1. Record the total number of ballots and who took custody on the batch tracking form each time they are moved or change hands.

2. Once received for scanning, verify the total number of ballot cards scanned (as indicated

by the central scanner) equals the number of ballot cards in the batch (as indicated by the batch tracking form).

   a. If there are issues, delete the batch and re-scan or manually count the batch to confirm the quantity.
   b. Attach a header sheet or label to the batch.

3. Each batch should be labeled or have a header sheet to indicate:
   a. batch size (total number of ballot cards scanned)
   b. unique ID number assigned to the scanner
   c. unique ID number for each batch
   d. individual(s) who scanned the batch.

4. Transfer scanned ballots to a ballot storage container that is labeled with a unique ID number.

5. Record information from the batch header sheet/batch label onto the storage container label:
   a. scanner ID number
   b. batch ID number
   c. total number of ballot cards

Container Label Example

CONTAINER NAME: TC-5		
Tabulator Name	**Batch Number**	**Total Ballots**
03	16	100
03	17	100
03	18	98
03	19	100
03	20	99
TOTAL BALLOTS:		497
Seal # A95162		
Staff Initials: TP/JM		

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Ballot Manifest

A ballot manifest is a useful and important document that makes reconciliation in preparation for your canvass much easier. The manifest form should be created prior to the election. Entries in the manifest are made during and after the election. A reconciliation of the manifest is done prior to the start of the audit. The ballots to be audited are randomly selected from the manifest once the audit begins.

- A ballot manifest is used to randomly select the ballots to be audited and indicates where those ballots and batches of ballots are physically stored for easy retrieval.
- The ballot manifest should never be generated by the voting system.
- The format for the ballot manifest (column headers) will be provided by the state.
    - The ballot manifest will most likely be a simple spreadsheet, but the data can be retrieved and formatted from an inventory management system (common in larger jurisdictions).
    - Use a naming convention that will help you locate the container of ballots.

When and how ballots are prepared for permanent storage will vary, but when incorporating a ballot manifest, should follow a process similar to the following:

1. Verify the batches inside the container match what is recorded on the container label.
2. Seal the container and record the security seal number and individual(s) who verified the quantity and sealed the container.
3. Enter the container name/ID, tabulator ID, batch number, and total number of ballots into the ballot manifest spreadsheet. The ballot manifest must be saved as a .csv file.
4. Place a checkmark on the container label to indicate the entry has been completed.

Example Ballot Manifest Spreadsheet

Container Name/ID	Tabulator ID	Batch Number	Number of Ballots
Box 1	1	1	99
Box 1	2	1	100
Box 1	2	2	100
Box 3	IP003	1	273

Note: When ballots are scanned prior to election day, perform a daily reconciliation by comparing the totals from the ballot manifest to the cast vote record (CVR) or some other sub-totals report generated by the voting system.

Audit Preparation

State Responsibilities:

Determine the risk limit.

Enter the risk limit into the audit software.

Set up target contest in the audit software.

Room Preparation

- N/A

Supplies

- Summary results report from the tabulation system
- CVR files from the tabulation system
- Ballot manifest

Staffing

- Resources and staff should be assigned well before the RLA date.
  - Extra staffing may be required to help retrieve and review ballots.
- The number of ballots being audited will help determine the number of teams required.
- Teams of "auditors" called Audit Boards are required; they should be bipartisan teams of two
- All staff participating should be trained prior to the day of the audit.

Reconciliation

1. Finish tabulating all valid ballots that will be included in the audit.
2. Generate a summary results report from the voting system for all ballots that will be audited.
   a. Be sure to include overvotes, undervotes, blank-voted contests, and valid write-in votes.
   b. For the batch comparison method, generate a summary results report by batch, showing subtotals for each batch.
   c. For the ballot comparison method, generate a summary results report and a CVR report. Be sure the CVR includes the unique identifier imprinted on the ballot.

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3. Verify the total number of ballots shown in the CVR, summary results, or batch sub-totals report equals the aggregate number of ballots in the ballot manifest.
    a. Research the discrepancy.
    b. Correct when possible.
    c. Do not force the numbers to match.
4. (Optional Additional Reconciliation)
    a. Verify total number of ballots in the ballot manifest equals the number of vote histories in the voter database.
    b. Batch comparison - verify that the total number of ballots cast in each subtotal report equals the total number of ballots in the corresponding batch in the ballot manifest.

Prepare for Ballot Retrieval

1. Upload the ballot manifest into the audit software.
    a. Ballots are randomly selected for audit from the ballot manifest.
2. Upload the CVR/summary report/batch subtotals report into the audit software.
3. Publish the ballot manifest on the election website (can be done by the state in lieu of county).

Conducting the Audit

Room Preparation

- Generally, the audit should be conducted in the location where ballots are stored.
- Ensure there is enough room in the facility to accommodate both staff and observers while retrieving and examining ballots.
    - If space is limited, consider retrieving ballots where they are stored and transferring the ballots selected for audit to an alternate location for the examination and recording portion of the audit. Be sure to follow all chain of custody protocols.
- If entering voter markings directly into the audit software, it will be helpful to have a location with a projector and screen, or large monitors, connected to the computer running the audit software.
    - This allows observers and participants to view the audit team(s) entries into the RLA software.
    - A document projector can be helpful for allowing observers to view audited ballots.

Supplies

In addition to the ballots and ballot accounting documentation mentioned in the previous sections, you will need the following for the day of the audit:

- Chain of custody logs and extra seals for verifying sealed ballot containers, resealing ballot containers, and recording new seal numbers
    - In some jurisdictions, the label on the container has been designed to double as the chain of custody log.
- Scissors (if needed to cut plastic security seals on ballot containers)
- Tally sheets (used only for conducting ballot polling and batch comparison methods)
- Voter intent guides for each Audit Board team
- Printer (for printing ballot retrieval lists and audit reports)
- Pens for checking off ballots retrieved for audit
    - Pens and ballots in the same work area can be viewed as a security risk. Consider limiting any pens used during the audit to something unique, like gold, or a color

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such as red that may not be recognized as a mark by the ballot scanner.
- Tubs or folders to house ballots or batches of ballots selected for audit
- Rubber fingers
- *Colored cardstock to be used as placeholder sheets by the audit teams to identify ballots or batches of ballots removed from storage containers for audit
- *Removable colored labels used to identify ballots or batches retrieved (generally these are only needed for ballot polling audits).

Quantities are determined by projected sample size plus extra if additional rounds of auditing are required.

Staffing

This is the part of the process where the ballots selected for audit are examined for votes. This process should be done by a minimum of two people, an Audit Board. The Audit Board will retrieve the ballots and enter the information required of the audit into the audit software or onto a tally sheet. There can be more than one Audit Board, based on the number of ballots to be audited. Each Audit Board member will designate themselves as Auditor #1 and Auditor #2.

Download and Print Retrieval Documents

RLA software randomly selects ballots for the audit from the ballot manifest. Election staff overseeing the audit will log in to the audit software to download and print the materials needed to retrieve ballots for the audit, including:

- The list of individual ballots or batches of ballots to be audited
  - List should include the corresponding container ID
  - Have a unique name or identifier for each audit board (when using more than one)
  - Be formatted in a way that allows the retrieval teams to check off the ballots or batches that have been retrieved for the audit
- Placeholder sheets
- Ballot labels (only for ballot polling)
- Audit Board certification.

Retrieve Ballots for Audit

- Provide each Audit Board with their corresponding ballot retrieval list and placeholder sheets.
  - Include removable labels if performing a ballot polling audit or batch comparison audit.

- Audit Boards retrieve ballots together using the steps outlined below.
- Ballots/batches should always be kept in the same order as they are listed on the retrieval list.
- The steps for retrieving ballots are repeated until all the ballots or batches have been retrieved and checked off the list.

1. Locate the storage container for the ballot batch you are looking for.
2. Verify the seals on the ballot storage container match the seals recorded on the chain-of-custody log (if a separate log is maintained).
3. Locate the batch you are looking for within the storage container.
4. This step depends on the method of audit being performed:
   a. Ballot Polling – Place the pre-printed, removable label onto the ballot selected to provide identifying information.
   b. Batch Comparison – N/A
5. Replace the ballot or batch being removed with its corresponding placeholder sheet.
6. Place the retrieved ballot/batch in the designated audit folder or tub.
7. Check or initial the ballot/batch retrieval list to indicate the ballot/batch has been pulled for the audit.
8. Re-seal the ballot container and record the seal numbers on the chain-of-custody log. (Some jurisdictions opt to wait until the conclusion of the audit to reseal ballot containers in the event the wrong ballot/batch was retrieved or additional rounds of auditing are required).

Ballot Review and Verification

- Hand-marked paper ballots may require the audit team to make decisions about voter intent.
    - Each auditing team should have a copy of the approved voter intent guidelines to use when making that determination.
    - This ensures ballots are adjudicated during the audit the same way they were adjudicated for the election.
- Ensure all Audit Board teams are aware which contests need to be examined and recorded.
- If the voter's choices are not clear, and the Audit Boards cannot agree on what constitutes a valid mark, they can indicate "disagreement" in the software or on the tally sheet.

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Step	Ballot Comparison	Ballot Polling	Batch Comparison
1	Auditor#1: Log in to the RLA software.	Auditor#1: Enter or verify the information on the tally sheets for your audit board team.	Auditor#1: Enter or verify the information on the tally sheets for your audit board team.
2	Auditor#2: Read off the imprint ID from the audited ballot.	Auditor#2: Read off the information from the label attached to the ballot.	Auditor#2: Read off the information from the label attached to the batch folder.
3	Auditor#1: Use the RLA software to verify the correct ballot was retrieved.	Auditor#1: Record the label information (batch and ballot #) on the tally sheet.	Auditor#1: Record the label information on the tally sheet.
4	Auditor#2: Read out loud the voter selection(s) for each audited contest.	Auditor#2: Read out loud the voter selection(s) for each audited contest.	Auditor#2: Read out loud the voter selection(s) for each audited contest.
5	Auditor#1: Record the voter selections in the RLA software as they are read.	Auditor#1: Record the voter selections on the tally sheet for that specific ballot as they are read.	Auditor#1: Record the voter selections on the tally sheet for that specific ballot as they are read.
6	Auditor#1: Review the recorded selections by reading them out loud from the review screen.	Auditor#1: Review the recorded selections by reading them out loud from the tally sheet.	Auditor#1: Review the recorded selections by reading them out loud from the tally sheet.
7	Auditor#2: Compare what has been recorded in the RLA software to what is marked on the ballot.	Auditor#2: Compare what has been recorded on the tally sheet to what is marked on the ballot.	Auditor#2: Compare what has been recorded on the tally sheet to what is marked on the ballot.
8			Audit Board: Continue recording and reviewing votes for all ballots in the batch.
9			Audit Board: Tally all the votes for each contest once all ballots in the batch have been audited and recorded.
10	Auditor#2: Indicate on the checklist or attached label that the ballot has been audited.	Auditor#2: Indicate on the checklist or attached label that the ballot has been audited.	Auditor#2: Indicate on the checklist or attached label that the batch has been audited.

Step	Ballot Comparison	Ballot Polling	Batch Comparison
11		Audit Board: Tally all the votes for each contest once all ballots have been audited and recorded.	
12		Audit Board: Enter the tallies for each contest into the RLA software.	Audit Board: Enter the tallies for each batch into the RLA software.
13	Auditor#1: Log out of the RLA software once all ballots have been audited and recorded.	Auditor#1: Log out of the RLA software once all ballots have been audited and recorded.	Auditor#1: Log out of the RLA software once all ballots have been audited and recorded.

Conclude the Audit

1. Use the RLA software to confirm that all ballots or batches selected have been audited.
2. RLA software will determine whether the risk limit has been met, or if additional rounds of auditing will be required.
   a. If the risk limit has been met, election officials will review the results in the audit software.
   b. If the risk limit has not been met, the audit software will generate another list of ballots to be audited and the procedures for conducting the audit will be repeated.
3. Generate and review the audit reports from the RLA software.
4. State and/or jurisdictions should make the final audit reports available on their website.

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