VSTOP

Voting System Technical Oversight Program

SECRETARY OF STATE

INDIANA

2024 Primary Election Post-Election Audit Summary Report

-Extended Version-

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Introduction

The Voting System Technical Oversight Program (VSTOP) was authorized by the Indiana Secretary of State (SOS) to conduct post-election audits (PEA) on the 2024 Primary Election. Upon the voluntary participation of County Election Officials and recommendation of VSTOP, five counties were granted designation as post-election audit counties by the SOS. Boone, Gibson, Grant, Johnson, and Kosciusko counties successfully completed post-election audits of their 2024 Primary Election. This memo will summarize the Primary post-election audit activities and the results of each audit completed.

Two different, audit types were used throughout these post-election audits. Boone, Grant, Johnson, and Kosciusko counties completed a Ballot Comparison Audit and Gibson County completed a Ballot Polling Audit. These two types of post-election audits, use risk-limiting audit procedures as applicable using the Stark Audit Tool developed by Dr. Philip Stark.

A Ballot Comparison Post-Election Audit is an audit procedure that is used for counties using DRE (Direct Recording Electronic) voting systems. MicroVote, Indiana's largest voting system vendor utilizes DREs with CVRs (Cast Vote Records) and VVPATs (Voter-Verified Paper Audit Trail). This audit procedure checks machine accuracy and functionality to confidently infer correctly reported election outcomes. While this audit procedure cannot check election outcomes directly, it can ensure election systems functioned properly. If the election systems functioned properly, there can be confidence in reported election outcomes. Using a random sample of ballots, the CVR (digital voting record) is inspected alongside the VVPAT (paper voting record) to ensure every vote cast digitally matches the paper record of that vote. The audit is considered successfully completed when all sample ballots have been inspected and a 100 percent match rate is confirmed. Ballot chain of custody procedures and ballot secrecy are maintained throughout this process.

A Ballot Polling Post-Election Audit is an audit procedure that is used for counties with OpScan (Optical Scan) voting systems. ES&S, Hart InterCivic, and Unisyn are Indiana's voting system vendors utilizing OpScan voting systems with paper ballots. This audit procedure samples ballot selections for specific contests until there is statistical evidence the outcome of the audit would validate the reported election outcome for those contests. Using a random sample of ballots, vote choices are recorded for three contests. Ballot sampling continues until the result of the audit reaches the intended statistical confidence level in the reported election outcome. Once that level is reached the audit is considered successfully completed. Ballot chain of custody procedures and ballot secrecy are maintained throughout this process.

In both audit procedures, ballots may need to be "skipped" in the review process. For Ballot Comparison Audits, undervotes may or may not be used for inspection. Either way, the integrity and result of the audit will not be affected. VSTOP allows county officials to make the decision on whether they would like to inspect undervoted ballots. Boone county opted to not inspect undervoted ballots, while Grant, Johnson, and Kosciusko counties opted to inspect undervotes. For Primary Ballot Comparison Audits, VVPAT Ballots are not separated by party. Since Republican contests were selected for audit, if the sample drew a Democratic ballot, it was

not inspected for audit and was skipped. Even though Democratic ballots were not inspected for audit, a CVR to VVPAT match inspection can still be completed. For every skipped ballot, a new ballot must be sampled that can be inspected for audit. All Ballot Polling Audits on contested contests, skip undervoted ballots for inspection because the audit procedure only considers ballots that have voted for that contest.

More information detailing the terminology, process, use, and benefits of risk-limiting audits can be found in *Appendix A*.

Boone County Post-Election Audit

- **Audit Date:** May 30, 2024
- **Location:** Boone County Annex - 116 W. Washington St. Lebanon, IN 46052
- **Voting System Vendor:** MicroVote
- **Total Ballots Eligible for Audit:** Election Day Ballots on VVPAT - 7,685
- **Audit Seed Number:** 03453979743945807225
- **Contests Selected for Audit:**
    - Republican U.S. House of Representatives District 4
    - Republican Boone County Commissioner District 2
    - Republican Boone County Commissioner District 3
- **Results:**
    - *Republican U.S. House of Representatives District 4*
        - A total of 101 ballots were sampled for this contest. Of the 101 ballots, 85 were able to be inspected for audit and 16 ballots were skipped due to being Democratic or under voted ballots. All 85 inspected ballots had a CVR and VVPAT match, resulting in **100 percent match rate**. The estimated sample to achieve the set risk limit and confidence level was 54 inspected ballots, but was achieved after 51 inspected ballots. The audit concludes with **99 percent confidence** that the election systems functioned properly resulting in a correctly tabulated and reported election outcome.
    - *Republican Boone County Commissioner District 2*
        - A total of 101 ballots were sampled for this contest. Of the 101 ballots, 82 were able to be inspected for audit and 19 ballots were skipped due to being Democratic or under voted ballots. All 82 inspected ballots had a CVR and VVPAT match, resulting in **100 percent match rate**. The estimated sample to achieve the set risk limit and confidence level was 55 inspected ballots, but was achieved after 52 inspected ballots. The audit concludes with **99 percent confidence** that the election systems functioned properly resulting in a correctly tabulated and reported election outcome.

- o *Republican Boone County Commissioner District 3*
  - ▪ A total of 177 ballots were sampled for this contest. Of the 177 ballots, 120 were able to be inspected for audit and 57 ballots were skipped due to being Democratic or under voted ballots. All 120 inspected ballots had a CVR and VVPAT match, resulting in **100 percent match rate**. The estimated sample to achieve the set risk limit and confidence level was 100 inspected ballots, but was achieved after 94 inspected ballots. The audit concludes with **99 percent confidence** that the election systems functioned properly resulting in a correctly tabulated and reported election outcome.

More information detailing the Boone County Post-Election Audit be found in *Appendix B*.

Johnson County Post-Election Audit

- **Audit Date:** June 3, 2024
- **Location:** Johnson County Courthouse - 5 East Jefferson Street, Franklin, IN 46131
- **Voting System Vendor:** MicroVote
- **Total Ballots Eligible for Audit:** Election Day Ballots on VVPAT – 12,389
- **Audit Seed Number:** 27653587979577033295
- **Contests Selected for Audit:**
  - o Republican President of the United States
  - o Republican Johnson County Commissioner District 3
  - o Republican Johnson County Commissioner Coroner
- **Results:**
  - o A total of 118 ballots were sampled for all three contests. Of the 118 ballots, 106 were able to be inspected for audit and 12 ballots were skipped because they were Democratic ballots. While one contest only needed to inspect 21 ballots, and another needed 34, all three contests were audited inspecting 106 ballots. All 106 inspected ballots had a CVR and VVPAT match for all three contests, resulting in **100 percent match rate**. The estimated sample to achieve the set risk limit and confidence level was 106 inspected ballots, but was achieved after 100 inspected ballots. The audit concludes with **99 percent confidence** that the election systems functioned properly resulting in correctly tabulated and reported election outcomes for all three contests.

More information detailing the Johnson County Post-Election Audit be found in *Appendix C*.

Kosciusko County Post-Election Audit

- **Audit Date:** June 5, 2024
- **Location:** Kosciusko County Justice Building - 121 N. Lake St. Warsaw, IN 46580
- **Voting System Vendor:** MicroVote
- **Total Ballots Eligible for Audit:** Election Day Ballots on VVPAT – 9,066
- **Audit Seed Number:** 48101816751361556156
- **Contests Selected for Audit:**
    - Republican Kosciusko County Coroner
    - Republican Kosciusko County Commissioner Northern District
    - Republican Kosciusko County Surveyor
- **Results:**
    - A total of 126 ballots were sampled for all three contests. Of the 126 ballots, 120 were able to be inspected for audit and 6 ballots were skipped because they were Democratic ballots. While one contest only needed to inspect 35 ballots, and another needed 39, all three contests were audited inspecting 120 ballots. All 120 inspected ballots had a CVR and VVPAT match, resulting in **100 percent match rate**. The estimated sample to achieve the set risk limit and confidence level was 120 inspected ballots, but was achieved after 113 inspected ballots. The audit concludes with **99 percent confidence** that the election systems functioned properly resulting in correctly tabulated and reported election outcomes for all three contests.

More information detailing the Kosciusko County Post-Election Audit be found in *Appendix D*.

Grant County Post-Election Audit

- **Audit Date:** June 20, 2024
- **Location:** Grant County Justice Center – 401 S. Adams St. Marion, IN 46953
- **Voting System Vendor:** MicroVote
- **Total Ballots Eligible for Audit:** Election Day Ballots on VVPAT – 6,820
- **Audit Seed Number:** 07877492564901839739
- **Contests Selected for Audit:**
    - Republican Governor of Indiana
    - Republican Judge of the Superior Court No. 2
    - Republican Grant County Commissioner District 1
- **Results:**
    - A total of 77 ballots were sampled for all three contests. Of the 77 ballots, 69 were able to be inspected for audit and 8 ballots were skipped because they were Democratic ballots. While one contest only needed to inspect 27 ballots, and another needed 64, all three contests were audited inspecting the largest sample needed: 66 ballots. Three additional ballots were inspected to finish out a machine's total number of sampled ballots. All 69 inspected ballots had a CVR and VVPAT match, resulting in **100 percent match rate**. The estimated sample to achieve the set risk limit

and confidence level was 66 inspected ballots, but was achieved after 63 inspected ballots. The audit concludes with **99 percent confidence** that the election systems functioned properly resulting in correctly tabulated and reported election outcomes for all three contests.

More information detailing the Grant County Post-Election Audit be found in *Appendix E.*

Gibson County Post-Election Audit

- **Audit Date:** August 2, 2024
- **Location:** Gibson County Courthouse – 101 N. Main St. Princeton, IN 47670
- **Voting System Vendor:** Hart InterCivic
- **Total Ballots Eligible for Audit:** All Ballots Cast in Primary – 5,355
- **Audit Seed Number:** 45021108255543500296
- **Contests Selected for Audit:**
  - Democratic Gibson County Commissioner District 3
  - Republican Governor of Indiana
  - Republican Gibson County Coroner
- **Results:**
  - *Democratic Gibson County Commissioner District 3*
    - Sampled ballots were hand counted and every 10-15 ballots, the Audit Team entered the updated totals for each candidate into the Stark Audit Tool to check for the intended confidence level. The initial sample of ballots did not achieve the intended confidence level of 97 percent. Additional ballots were required for sample. Since additional ballots were required, VSTOP again noted that the audit can confidently confirm election outcomes when the confidence level ranges 91-99 percent. Upon further discussion, VSTOP and County Election Officials then adjusted the intended risk limit from 3 to 9 percent so that the audit would complete once the sample reaches within the target range of 91-99 percent. A total of 278 ballots were sampled for this contest to achieve a confidence level within range. Of the 278 ballots, 267 were able to be inspected for audit and 11 ballots were skipped because they were undervoted ballots. Of the 267 ballots that were audited, 157 were recorded for Fleetwood and 110 for Shade. This sample generated a **94 percent confidence level.** The audit concludes **with 94 percent confidence** this contest was properly tabulated resulting in a correctly reported election outcome.

  - *Republican Governor of Indiana*
    - In response to the adjusted Democratic contest risk limit, the risk limit was adjusted to 9 percent for this Republican contest as well. Sampled ballots were hand counted and every 10-15 ballots, the Audit Team entered the updated totals for each candidate into the Stark Audit Tool to check for the initially intended confidence level. The initial sample of ballots achieved above the intended confidence level of 97 percent. Additional ballots were

not required for this sample. A total of 117 ballots were sampled for this contest to achieve the confidence level range. Of the 117 ballots, 112 were able to be inspected for audit and 5 ballots were skipped because they were undervoted ballots. Of the 117 ballots that were audited, 64 were recorded for Braun, 17 for Chambers, 24 for Crouch, 2 for Doden, 3 for Hill, and 2 for Reitenour. This sample generated a **greater than 99 percent confidence level.** The achieved risk limit was less than 1 percent, but the confidence level can be no greater 99.99 percent because a sample's confidence level can never equal 100 percent. Rounded down to the nearest whole percentage, the audit concludes **with 99 percent confidence** this contest was properly tabulated resulting in a correctly reported election outcome.

- o Republican Gibson County Coroner
  - ▪ In response to the adjusted Democratic contest risk limit, the risk limit was adjusted to 9 percent for this Republican contest as well. Sampled ballots were hand counted and every 10-15 ballots, the Audit Team entered the updated totals for each candidate into the Stark Audit Tool to check for the initially intended confidence level. The initial sample of ballots achieved the intended confidence level of 97 percent. Additional ballots were not required for sample. A total of 117 ballots were sampled for this contest to achieve the confidence level range. Of the 117 ballots, 103 were able to be inspected for audit and 14 ballots were skipped because they were undervoted ballots. Of the 103 ballots that were audited, 65 were recorded for Doyle, and 38 Harbison. This sample generated a **97 percent confidence level.** The audit concludes **with 97 percent confidence** this contest was properly tabulated resulting in a correctly reported election outcome.

More information detailing the Gibson County Post-Election Audit be found in *Appendix F*.

In Closing

        Completion of these post-election audits present statistical confidence confirming that the election systems used in the 2024 Primary Election by Boone, Gibson, Grant, Johnson, and Kosciusko Counties functioned properly resulting in correctly reported election outcomes for audited contests in all five counties.

        The attached Post-Election Audit Information & Resources *(Appendix A)* provides additional information on post-election audits and the procedures utilized by the State of Indiana. The Post-Election Audit Reports (*Appendix B-F*) detail all activities relating to a county's respective post-election audit. Reviewing this information and these reports can assist in gaining a full-scope understanding of post-election audits in Indiana.

        VSTOP would like to thank the Boone, Gibson, Grant, Johnson, and Kosciusko County Clerk's Offices for their coordination, the County Election Boards for their voluntary request for audit designation, and the Indiana Secretary of State's Office for approving designation of these five counties. VSTOP is appreciative to the SOS's Office for their authorization and support of VSTOP to conduct these initiatives.

        For any questions or concerns regarding Indiana's Post-Election Audit Procedures, or information contained in this report, contact VSTOP's Election Systems Audit Specialist, at vstop@bsu.edu.

APPENDIX A
Post-Election Audit Information & Resources

Post-Election Audit Resources & Information

- [2024 Indiana Election Code Audit Statutes – IC 3-12-13 1-7](#)

- [A Gentle Introduction to Risk-Limiting Audits – Dr. Mark Lindeman and Dr. Philip Stark](#)

- [Stark Ballot Comparison Risk-Limiting Audit Tool](#)

- [Stark Ballot-Polling Risk-Limiting Audit Tool](#)

- [U.S. Election Assistance Commission 2022 Report: Election Audits Across the United States](#)

- [National Conference of State Legislatures 2022 Report: Risk-Limiting Audits](#)

- [Verified Voting – What is an RLA?](#)

- [The Carter Center Risk-Limiting Audit Guide](#)

APPENDIX B
Boone County Audit Report

TO: Boone County Clerk's Office and County Election Board

CC: Election Board Chair, Rebecca McClure
Election Board Member, Brian Jones
Election Board Secretary & County Clerk, Lisa Bruder

DATE: 6/28/2024

SUBJECT: Summary of 2024 Boone County Primary Post-Election Audit

On May 30, 2024, the VSTOP team successfully completed a post-election audit in Boone County, Indiana, for the 2024 Primary Election. The following memo will summarize the pre-audit process, explain the execution of the audit, and present the audit results.

Pre-Audit Process

VSTOP has been authorized by the Indiana Secretary of State to conduct post-election audits. At this time, Indiana does not have mandated post-election audits, and participation is voluntary by the county, and designated by the Secretary of State. Boone County formally requested designation on May 7, 2024 via a County Election Board Resolution. Boone County was granted designation and audit prep began.

An initial audit meeting was held to review the post-election audit process, and answer any questions Boone County Election Officials had about the process. From there, the audit date, time, location and selection of audited contests were coordinated by the County Clerk and VSTOP and were finalized.

Using the Stark Audit Tool, VSTOP proceeded to run ballot sample size estimates on the selected contests based on the initial election night reports found on the county website. While these may not have been the final vote totals (pre-certification), they work appropriately for estimating expected sample sizes and approximating how long it would take to complete the audit.

Boone County was advised by VSTOP to select only Republican contests for audit due to the overwhelming margin of Republican to Democratic ballots cast, and the inability to separate primary ballots by party when using direct-record electronic (DRE) voting systems. For example, auditing a Democratic race may require a sample of 25 ballots. Since the ballots cannot be separated, and Republican votes held over 80% of the vote share, it can be expected the random sample would pull many more Republican ballots. It could take exorbitant sample sizes to reach the 25 Democratic ballots that were needed for sample because of the significant disparities in party vote share. While no Democratic contests were selected for audit, the integrity of ballots cast and machine accuracy can be confirmed because the Republican ballots being sampled are from machines used by both parties on Election Day.

In consultation with VSTOP and Boone County Election Officials, it was determined the post-election audit will be inspecting Election Day ballots, so audit estimations and ballot manifests/inventories were generated using only Election Day ballots and reported Election Day totals. It was also determined this audit would be completed with a 1 percent risk limit and 99 percent confidence level. This means there is 99 percent confidence the audit would catch an outcome error if there was one, and only 1 percent risk the audit would not catch any outcome errors. The only way a 100 percent confidence level can be achieved is through a contest's full recount, and an audit is not a recount. The 1 percent risk limit represents the lowest possible risk, and the 99 percent level represents the highest confidence level, that can be achieved in Indiana's post-election audit process.

The ballot manifest/inventory was generated by Boone County's Voting System Vendor, MicroVote, and included all votes cast on Election Day that were recorded via Cast Vote Record (CVR) with Voter-Verified Paper Audit Trails (VVPAT). VSTOP then checked the manifest for functionality in the Stark Audit Tool and confirmed it functioned properly. All pre-audit prep was complete and the audit was ready to be conducted.

The information above is detailed below:

- **Audit Date:** May 30, 2024
- **Audit Time:** VSTOP Set-up and Pre-Audit Meeting 8:30 AM – Audit Begins 10:00 AM
- **Location:** Boone County Annex - 116 W. Washington St. Lebanon, IN 46052
- **Total Ballots Selected for Audit:** Election Day Ballots on VVPAT - 7,685
- **Estimated Ballot Sample Sizes for Contests Selected for Audit:**

    o U.S. House of Representatives District 4 (REP)
        ▪ Diluted Margin – 19.05%
        ▪ Estimated Sample Size – 54

    o Boone County Commissioner District 2 (REP)
        ▪ Diluted Margin – 18.56%
        ▪ Estimated Sample Size – 55

    o Boone County Commissioner District 3 (REP)
        ▪ Diluted Margin – 10.21%
        ▪ Estimated Sample Size – 100

Execution of Post-Election Audit

The VSTOP Audit Team, led by VSTOP's Election System Audit Specialist, Matt Housley, arrived in Boone County at approximately 8:00 AM and began audit set-up. As the VSTOP Team set-up, Matt had a pre-audit meeting for all County Election Officials participating in the audit. The meeting covered the post-election audit process and responsibilities, reviewed

and confirmed contest selection and election result totals, and completed a final review of the public post-election audit presentation that will be given just prior to the conducting of the audit. By approximately 9:30 AM the pre-audit meeting was concluded and the audit set-up was complete. Boone County's public, post-election audit officially began at 10:00 AM.

The VSTOP team members who participated in this audit included:
- Dr. Jay Bagga and Dr. Chad Kinsella, VSTOP Co-Directors
- Matt Housley, Election Systems Audit Specialist
- Marc Chatot, Program Manager
- Alisa Gray, Election Training and Assessment Specialist
- Duncan Klemm, IT Specialist
- Gina Caravaglia, Graduate Assistant for Training and Assessment

The Boone County Election Officials who participated in this audit included:
- Lisa Bruder, Boone County Clerk
- Rebecca McClure, County Election Board Member

The Boone County Voting System Vendor, members of MicroVote, who participated in this audit included:
- Steve Shamo, General Manager
- Jessica Fouts, Employee

VSTOP conducted a Ballot Comparison Audit using the Stark Audit Tool built for this type of post-election audit. This audit type is meant to inspect ballots for a match between the CVR and VVPAT. Every ballot's CVRs should match its VVPAT counterpart, resulting in a 100% match rate. Boone County Election Officials alongside the VSTOP Team manually inspect the ballot's CVR to the VVPAT for the selected contests and track the match rate through the required number of ballots to sample. After the required number of ballots (or more) have been sampled, the VSTOP Team enters the match information into the Stark Audit Tool and as long as there are zero non-matches the audit will be successfully completed.

The audit began with an introductory presentation given by Matt Housley, Dr. Chad Kinsella and Dr. Jay Bagga to all persons in attendance. This presentation provided general information about the post-election audit process and methodology used, specific information relating to Boone County's audit, and allowed for a Q&A to address any questions or concerns. After this presentation concluded, execution of the audit began. A 20-digit seed number was generated to assist the Stark Audit Tool in selecting the random sample of ballots. This number was generated live-time through 20 rolls of a 10-sided die by audit participants and members of the public. The live-time generation of the seed number assures the sample is truly random and no-one could know what ballots were going to be selected for sample prior to the audit beginning. The seed number also becomes a control for this audit, so should the audit ever need to be replicated, it can be done so in its entirety.

The seed number for the Boone County Post-Election Audit is as follows:
03453979743945807225

The seed number was entered into the Stark Audit Tool and a random sample of ballots was generated. VSTOP drew an initial sample size of 200 ballots. All three contests were reviewed using ballots from this initial sample. While it is highly unlikely all 200 ballots would be inspected, 200 ballots were drawn to account for the expected need to sample more than the required amount due to the following factors:

- Ballots are not separated by party. Since Republican contests are selected for audit, if the sample draws a Democratic ballot, it will not be inspected for audit and will be skipped. Even though Democratic ballots were not inspected for audit, a CVR to VVPAT match inspection can still be completed. For every skipped ballot, a new ballot must be sampled that can be inspected for audit.

- For Ballot Comparison Audits, undervotes may or may not be used for inspection. Either way, the integrity and result of the audit will not be affected. VSTOP allows county officials to make the decision on whether they would like to inspect undervoted ballots. Boone County Election Officials determined they would not use undervotes in the ballot inspection process. This means if the contest had been undervoted by the voter, then the ballot sampled will be skipped, and only ballots with votes for the contest would be inspected.

Random sampling

Pseudo-Random Sample of Ballot Cards
Seed: 03453979743945807225
Number of ballot cards: 7685
Current sample number: 200
Draw this many ballot cards: 200   [draw sample] [reset]

Above: Stark Audit Tool Screen Shot of Seed Number and Initial Ballot Sample

The contest requiring the largest sample size for audit was Republican Boone County Commissioner District 3 at 100 ballots. Republican Boone County Commissioner District 2 required 55 ballots and Republican U.S. House of Representative District 4 required 54 ballots. All three contests were inspected on each ballot sampled for audit if needed and applicable. Inspected by at least one County Election Official and one member of the VSTOP Audit Team, each ballot was reviewed for the CVR to VVPAT match for the selected contests. Inspection continued until at least the minimum number of ballots required for inspection were met to achieve the set 1 percent risk limit and 99 percent confidence level. The inspection of the sample of ballots generated the following results.

Above: Stark Audit Tool Screenshot of County Commissioner 3 Sample Size

Above: Stark Audit Tool Screenshot of County Commissioner 2 Sample Size

Above: Stark Audit Tool Screenshot of U.S. Rep District 4 Sample Size

Audit Results

- Republican Boone County Commissioner District 3
    - A total of 177 ballots were sampled for this contest. Of the 177 ballots, 120 were able to be inspected for audit and 57 ballots were skipped due to being Democratic or under voted ballots. All 120 inspected ballots had a CVR and VVPAT match, resulting in **100 percent match rate**. The estimated sample to achieve the set risk limit and confidence level was 100 inspected ballots, but was achieved after 94 inspected ballots. The audit concludes with **99 percent confidence** that the election systems functioned properly resulting in a correctly tabulated and reported election outcome.

Above: Stark Audit Tool showing Risk Limit and Confidence Level were met after 94 ballots inspected ballots

- Republican Boone County Commissioner District 2
    - A total of 101 ballots were sampled for this contest. Of the 101 ballots, 82 were able to be inspected for audit and 19 ballots were skipped due to being Democratic or under voted ballots. All 82 inspected ballots had a CVR and VVPAT match, resulting in **100 percent match rate**. The estimated sample to achieve the set risk limit and confidence level was 55 inspected ballots, but was achieved after 52 inspected ballots. The audit concludes with **99 percent confidence** that the election systems functioned properly resulting in a correctly tabulated and reported election outcome.

Above: Stark Audit Tool showing Risk Limit and Confidence Level were met after 52 ballots inspected ballots

- Republican U.S. House of Representatives District 4
  - A total of 101 ballots were sampled for this contest. Of the 101 ballots, 85 were able to be inspected for audit and 16 ballots were skipped due to being Democratic or under voted ballots. All 85 inspected ballots had a CVR and VVPAT match, resulting in **100 percent match rate**. The estimated sample to achieve the set risk limit and confidence level was 54 inspected ballots, but was achieved after 51 inspected ballots. The audit concludes with **99 percent confidence** that the election systems functioned properly resulting in a correctly tabulated and reported election outcome.

Above: Stark Audit Tool showing Risk Limit and Confidence Level were met after 51 inspected ballots

In Closing

     VSTOP would like to thank the Boone County Clerk, Lisa Bruder for her coordination, the Boone County Election Board for their voluntary request for audit designation, and The Indiana Secretary of State's Office for approving Boone County's audit designation and their support of VSTOP to conduct these initiatives.

     Upon completion of all 2024 Primary Post-Election Audits, a full summary report of all post-election audit activities and their respective results will be prepared and submitted to the Indiana Secretary of State and all counties involved in a 2024 Primary Post-Election Audit.

     For any questions or concerns regarding Indiana's Post-Election Audit Procedures, or information contained in this memo, contact Matt Housley, Election Systems Audit Specialist, at vstop@bsu.edu.

Matt Housley, MPA

Election Systems Audit Specialist
Voting System Technical Oversight Program

Dr. Jay Bagga

Co-Director
Voting System Technical Oversight Program

Dustin Renner

Election Director
Indiana Secretary of State

Dr. Chad Kinsella

Co-Director
Voting System Technical Oversight Program

APPENDIX C
Johnson County Audit Report

TO: Johnson County Clerk's Office and County Election Board

CC: Election Board Member, Doug Lechner
          Election Board Member, R. Kevin Service
          Election Board Secretary & County Clerk, Trena McLaughlin
          First Deputy Clerk, Amy Briggs

DATE: 7/17/2024

SUBJECT: Summary of 2024 Johnson County Primary Post-Election Audit

On June 3, 2024, the VSTOP team successfully completed a post-election audit in Johnson County, Indiana, for the 2024 Primary Election. The following memo will summarize the pre-audit process, explain the execution of the audit, and present the audit results.

Pre-Audit Process

VSTOP has been authorized by the Indiana Secretary of State to conduct post-election audits. At this time, Indiana does not have mandated post-election audits, and participation is voluntary by the county, and designated by the Secretary of State. Johnson County formally requested designation on May 2, 2024 via a County Election Board Resolution. Johnson County was granted designation and audit prep began.

An initial audit meeting was held to review the post-election audit process, and answer any questions Johnson County Election Officials had about the process. From there, the audit date, time, location and selection of audited contests were coordinated by the County Clerk and VSTOP and were finalized.

Using the Stark Audit Tool, VSTOP proceeded to run ballot sample size estimates on the selected contests based on the initial election night reports found on the county website. While these may not have been the final vote totals (pre-certification), they work appropriately for estimating expected sample sizes and approximating how long it would take to complete the audit.

Johnson County was advised by VSTOP to select only Republican contests for audit due to the overwhelming margin of Republican to Democratic ballots cast, and the inability to separate primary ballots by party when using direct-record electronic (DRE) voting systems. For example, auditing a Democratic race may require a sample of 25 ballots. Since the ballots cannot be separated, and Republican votes held just over 85% of the vote share, it can be expected the random sample would pull many more Republican ballots. It could take exorbitant sample sizes to reach the 25 Democratic ballots that were needed for sample because of the significant disparities in party vote share. While no Democratic contests were selected for audit, the integrity of ballots cast and machine accuracy can be confirmed because the Republican ballots being sampled are from machines used by both parties on Election Day.

In consultation with VSTOP and Johnson County Election Officials, it was determined the post-election audit will be inspecting Election Day ballots, so audit estimations and ballot manifests/inventories were generated using only Election Day ballots and reported Election Day totals. It was also determined this audit would be completed with a 1 percent risk limit and 99 percent confidence level. This means there is 99 percent confidence the audit would catch an outcome error if there was one, and only 1 percent risk the audit would not catch any outcome errors. The only way a 100 percent confidence level can be achieved is through a contest's full recount, and an audit is not a recount. The 1 percent risk limit represents the lowest possible risk, and the 99 percent level represents the highest confidence level, that can be achieved in Indiana's post-election audit process.

The ballot manifest/inventory was generated by Johnson County's Voting System Vendor, MicroVote, and included all votes cast on Election Day that were recorded via Cast Vote Record (CVR) with Voter-Verified Paper Audit Trails (VVPAT). VSTOP then checked the manifest for functionality in the Stark Audit Tool and confirmed it functioned properly. All pre-audit prep was complete and the audit was ready to be conducted.

The information above is detailed below:

- **Audit Date:** June 3, 2024
- **Audit Time:** VSTOP Set-up and Pre-Audit Meeting 9:00 AM – Audit Begins 11:00 AM
- **Location:** Johnson County Courthouse - 5 East Jefferson Street, Franklin, IN 46131
- **Total Ballots Selected for Audit:** Election Day Ballots on VVPAT – 12,389
- **Estimated Ballot Sample Sizes for Contests Selected for Audit:**

  - President of the United States (REP)
    - Diluted Margin – 50.03%
    - Estimated Sample Size – 21 Ballots

  - Johnson County Commissioner District 3 (REP)
    - Diluted Margin – 9.62%
    - Estimated Sample Size – 106 Ballots

  - Johnson County Commissioner Coroner (REP)
    - Diluted Margin – 30.05%
    - Estimated Sample Size – 34 Ballots

Execution of Post-Election Audit

The VSTOP Audit Team, led by VSTOP's Election System Audit Specialist, Matt Housley, arrived in Johnson County at approximately 9:00 AM and began audit set-up. As the VSTOP Team set-up, Matt had a pre-audit meeting for all County Election Officials participating in the audit. The meeting covered the post-election audit process and responsibilities, reviewed

and confirmed contest selection and election result totals, and completed a final review of the public post-election audit presentation that will be given just prior to the conducting of the audit. By approximately 10:00 AM the pre-audit meeting was concluded and the audit set-up was complete. Johnson County's public, post-election audit officially began at 11:00 AM.

The VSTOP team members who participated in this audit included:
- Dr. Jay Bagga and Dr. Chad Kinsella, VSTOP Co-Directors
- Matt Housley, Election Systems Audit Specialist
- Marc Chatot, Program Manager
- Austin Bilbrey, Logistics Specialist
- Spencer Drumm, Election Systems Certification Specialist

The Johnson County Election Officials who participated in this audit included:
- Trena McLaughlin, County Clerk
- Amy Briggs, First Deputy Clerk
- Doug Lechner, Election Board Member
- Kevin Service, Election Board Member

The Johnson County Voting System Vendor, members of MicroVote, who participated in this audit included:
- Steve Shamo, General Manager
- Reagan Higdon, Employee
- Mike Yaggi, Employee

VSTOP conducted a Ballot Comparison Audit using the Stark Audit Tool built for this type of post-election audit. This audit type is meant to inspect ballots for a match between the CVR and VVPAT. Every ballot's CVRs should match its VVPAT counterpart, resulting in a 100% match rate. Johnson County Election Officials alongside the VSTOP Team manually inspect the ballot's CVR to the VVPAT for the selected contests and track the match rate through the required number of ballots to sample. After the required number of ballots (or more) have been sampled, the VSTOP Team enters the match information into the Stark Audit Tool and as long as there are zero non-matches the audit will be successfully completed.

The audit began with an introductory presentation given by Matt Housley, Dr. Chad Kinsella and Dr. Jay Bagga to all persons in attendance. This presentation provided general information about the post-election audit process and methodology used, specific information relating to Johnson County's audit, and allowed for a Q&A to address any questions or concerns. After this presentation concluded, execution of the audit began. A 20-digit seed number was generated to assist the Stark Audit Tool in selecting the random sample of ballots. This number was generated live-time through

20 rolls of a 10-sided die by audit participants and members of the public. The live-time generation of the seed number assures the sample is truly random and no-one could know what ballots were going to be selected for sample prior to the audit beginning. The seed number also becomes a control for this audit, so should the audit ever need to be replicated, it can be done so in its entirety.

The seed number for the Johnson County Post-Election Audit is as follows:
27653587979577033295

The seed number was entered into the Stark Audit Tool and a random sample of ballots was generated. VSTOP drew an initial sample size of 150 ballots. The Audit Tool drew two duplicates, meaning it chose two ballots for inspection twice. Those two duplicates were removed so every ballot is inspected once, resulting in 148 total ballots drawn. All three contests were reviewed using ballots from this initial sample. For Ballot Comparison Audits, undervotes may or may not be used for inspection. Either way, the integrity and result of the audit will not be affected. VSTOP allows county officials to make the call on whether they would like to inspect undervoted ballots. Johnson County Election Officials determined they would use undervotes in the ballot inspection process. This means if the contest had been undervoted by the voter, then the ballot sampled will be inspected for an under voted CVR to VVPAT match. While it is highly unlikely all 148 ballots would be inspected, 148 ballots were drawn to account for the expected need to sample more than the required amount due to the following factor:

- Ballots are not separated by party. Since Republican contests are selected for audit, if the sample draws a Democratic ballot, it will not be inspected for audit and will be skipped. Even though Democratic ballots were not inspected for audit, a CVR to VVPAT match inspection can still be completed. For every skipped ballot, a new ballot must be sampled that can be inspected for audit.

Random sampling

Above: Stark Audit Tool Screen Shot of Seed Number and Initial Ballot Sample

The contest requiring the largest sample size for audit was Republican Johnson County Commissioner District 3 at 106 ballots. Republican President of the United States required 21 ballots and Republican Johnson County Coroner required 34 ballots. All three contests were inspected on each ballot sampled for audit if needed and applicable.

Inspected by at least one County Election Official and one member of the VSTOP Audit Team, each ballot was reviewed for the CVR to VVPAT match for the selected contests. Inspection continued until at least the minimum number of ballots required for inspection were met to achieve the set 1 percent risk limit and 99 percent confidence level. The inspection of the sample of ballots generated the following results.

Above: Stark Audit Tool Screenshot of County Commissioner 3 Sample Size

Above: Stark Audit Tool Screenshot of President of the U.S. Sample Size

Above: Stark Audit Tool Screenshot of County Coroner Sample Size

Audit Results

- Republican Johnson County Commissioner District 3
- Republican President of the United States
- Republican Johnson County Coroner

  o A total of 118 ballots were sampled for all contests. Of the 118 ballots, 106 were able to be inspected for audit and 12 ballots were skipped because they were Democratic ballots. While one contest needed only 21 ballots, and another needed 34, all three contests were audited inspecting 106 ballots. All 106 inspected ballots had a CVR and VVPAT match, resulting in **100 percent match rate**. The estimated sample to achieve the set risk limit and confidence level was 106 inspected ballots, but was achieved after 100 inspected ballots. The audit concludes with **99 percent confidence** that the election systems functioned properly resulting in correctly tabulated and reported election outcomes.

Above: Stark Audit Tool showing Risk Limit and Confidence Level were met after 100 inspected ballots

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In Closing

VSTOP would like to thank the Johnson County Clerk's Office, Trena McLaughlin and Amy Briggs for their coordination, the Johnson County Election Board for their voluntary request for audit designation, and The Indiana Secretary of State's Office for approving Johnson County's audit designation and their support of VSTOP to conduct these initiatives.

Upon completion of all 2024 Primary Post-Election Audits, a full summary report of all post-election audit activities and their respective results will be prepared and submitted to the Indiana Secretary of State and all counties involved in a 2024 Primary Post-Election Audit.
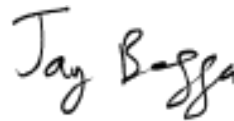
For any questions or concerns regarding Indiana's Post-Election Audit Procedures, or information contained in this memo, contact Matt Housley, Election Systems Audit Specialist, at vstop@bsu.edu.

Matt Housley, MPA

Election Systems Audit Specialist
Voting System Technical Oversight Program

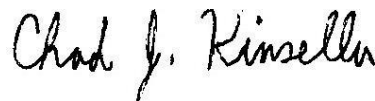**Dr. Jay Bagga**

Co-Director
Voting System Technical Oversight Program

Dustin Renner

Election Director
Indiana Secretary of State

Dr. Chad Kinsella

Co-Director
Voting System Technical Oversight Program

APPENDIX D
Kosciusko County Audit Report

TO: Kosciusko County Clerk's Office and County Election Board

CC: Election Board Member, Bill Morton
          Election Board Member, Austin Rovenstine
          Election Board Secretary & County Clerk, Ann Torpy
          Chief Deputy Clerk, Melissa Boggs

DATE: 7/17/2024

SUBJECT: Summary of 2024 Kosciusko County Primary Post-Election Audit

On June 5, 2024, the VSTOP team successfully completed a post-election audit in Kosciusko County, Indiana, for the 2024 Primary Election. The following memo will summarize the pre-audit process, explain the execution of the audit, and present the audit results.

Pre-Audit Process

VSTOP has been authorized by the Indiana Secretary of State to conduct post-election audits. At this time, Indiana does not have mandated post-election audits, and participation is voluntary by the county, and designated by the Secretary of State. Kosciusko County formally requested designation on April 25, 2024 via a County Election Board Resolution. Kosciusko County was granted designation and audit prep began.

An initial audit meeting was held to review the post-election audit process, and answer any questions Kosciusko County Election Officials had about the process. From there, the audit date, time, location and selection of audited contests were coordinated by the County Clerk and VSTOP and were finalized.

Using the Stark Audit Tool, VSTOP proceeded to run ballot sample size estimates on the selected contests based on the initial election night reports found on the county website. While these may not have been the final vote totals (pre-certification), they work appropriately for estimating expected sample sizes and approximating how long it would take to complete the audit.

Kosciusko County was advised by VSTOP to select only Republican contests for audit due to the overwhelming margin of Republican to Democratic ballots cast, and the inability to separate primary ballots by party when using direct-record electronic (DRE) voting systems. For example, auditing a Democratic race may require a sample of 25 ballots. Since the ballots cannot be separated, and Republican votes held nearly 90% of the vote share, it can be expected the random sample would pull many more Republican ballots. It could take exorbitant sample sizes to reach the 25 Democratic ballots that were needed for sample because of the significant disparities in party vote share. While no Democratic contests were selected for audit, the integrity of ballots cast and machine accuracy can be confirmed because the Republican ballots being sampled are from machines used by both parties on Election Day.

In consultation with VSTOP and Kosciusko County Election Officials, it was determined the post-election audit will be inspecting Election Day ballots, so audit estimations and ballot manifests/inventories were generated using only Election Day ballots and reported Election Day totals. It was also determined this audit would be completed with a 1 percent risk limit and 99 percent confidence level. This means there is 99 percent confidence the audit would catch an outcome error if there was one, and only 1 percent risk the audit would not catch any outcome errors. The only way a 100 percent confidence level can be achieved is through a contest's full recount, and an audit is not a recount. The 1 percent risk limit represents the lowest possible risk, and the 99 percent level represents the highest confidence level, that can be achieved in Indiana's post-election audit process.

The ballot manifest/inventory was generated by Kosciusko County's Voting System Vendor, MicroVote, and included all votes cast on Election Day that were recorded via Cast Vote Record (CVR) with Voter-Verified Paper Audit Trails (VVPAT). One voting system used on Election Day had a VVPAT error where votes cast were digitally recorded but did not print on the VVPAT. The issue was reported and addressed by the system's vendor, MicroVote. Based on a review of the issue, VSTOP has full confidence that all votes cast were counted and this system anomaly did not impact vote totals, election outcomes, or the integrity of the post-election audit. The full statement from MicroVote, confirmed by Kosciusko County, is below for the record.

"As we were removing VVPAT rolls in preparation for the audit one roll had not (no) votes and no election header on it. Both test print buttons on the unit itself worked correctly. We then tested the VVPAT with combinations of the same voting machine and red communication cable that was in the booth with it and a different voting machine and communication cable and all combinations of components worked correctly in each test.

There was an entry in the audit logs on the Election Day voting machine that was in the booth with the VVPAT that confirmed the voting machine was programmed for use with VVPAT. At least one entry showed that a VVPAT paper ballot was voided. This is also a possible indication the voter saw a paper ballot. One explanation is the VVPAT unit, or the paper roll, was changed after the last ballot cast on the machine but Ann and her team were confident that this didn't happen.

Therefore, we have no explanation for the cause of the issue. If this were an equipment malfunction, we have not seen this type of malfunction before where a voting machine programmed for use with VVPAT was not printing to a VVPAT yet there were no error messages and voters were allowed to cast ballots. Also, this seems unlikely as the poll workers would have ignored the message on the screen that asks them to verify a VVPAT election header printed when starting the election. Poll workers would have also had to not realize ballot headers weren't printing for each voter. Finally, all of the voters would have had to ignore the instructions on the screen to verify their paper ballot before casting their vote."

- Mike Miller – President, MicroVote

With that being said, the total VVPAT count for Election Day ballots that were eligible for audit was 9,066. VSTOP then checked the manifest for functionality in the Stark Audit Tool and confirmed it functioned properly. All pre-audit prep was complete and the audit was ready to be conducted.

The information above is detailed below:

- **Audit Date:** June 5, 2024
- **Audit Time:** VSTOP Set-up and Pre-Audit Meeting 10:00 AM - Audit Begins 11:00 AM
- **Location:** Kosciusko County Justice Building - 121 N. Lake St. Warsaw, IN 46580
- **Total Ballots Selected for Audit:** Election Day Ballots on VVPAT – 9,066
- **Estimated Ballot Sample Sizes for Contests Selected for Audit:**

    o Kosciusko County Coroner (REP)
      - Diluted Margin – 26.52%
      - Estimated Sample Size – 39 Ballots

    o Kosciusko County Commissioner Northern District (REP)
      - Diluted Margin – 8.49%
      - Estimated Sample Size – 120 Ballots

    o Kosciusko County Surveyor (REP)
      - Diluted Margin – 29.15%
      - Estimated Sample Size – 35 Ballots

Execution of Post-Election Audit

The VSTOP Audit Team, led by VSTOP's Election System Audit Specialist, Matt Housley, arrived in Kosciusko County at approximately 10:00 AM and began audit set-up. As the VSTOP Team set-up, Matt had a pre-audit meeting for all County Election Officials participating in the audit. The meeting covered the post-election audit process and responsibilities, reviewed and confirmed contest selection and election result totals, and completed a final review of the public post-election audit presentation that will be given just prior to the conducting of the audit. By approximately 10:55 AM the pre-audit meeting was concluded and the audit set-up was complete. Kosciusko County's public, post-election audit officially began at 11:00 AM.

The VSTOP team members who participated in this audit included:
- Dr. Jay Bagga and Dr. Chad Kinsella, VSTOP Co-Directors
- Matt Housley, Election Systems Audit Specialist
- Marc Chatot, Program Manager
- Austin Bilbrey, Logistics Specialist
- Duncan Klemm, IT Specialist

The Kosciusko County Election Officials who participated in this audit included:
- Ann Torpy, County Clerk
- Melissa Boggs, Chief Deputy Clerk
- Kelly Moorman, Deputy Clerk
- Ashlee Faulkner, Deputy Clerk
- Bill Morton, Election Board Member
- Austin Rovenstine, Election Board Member

The Kosciusko County Voting System Vendor, members of MicroVote, who participated in this audit included:
- Steve Shamo, General Manager
- Dan Haas, Employee

VSTOP conducted a Ballot Comparison Audit using the Stark Audit Tool built for this type of post-election audit. This audit type is meant to inspect ballots for a match between the CVR and VVPAT. Every ballot's CVRs should match its VVPAT counterpart, resulting in a 100% match rate. Kosciusko County Election Officials alongside the VSTOP Team manually inspect the ballot's CVR to the VVPAT for the selected contests and track the match rate through the required number of ballots to sample. After the required number of ballots (or more) have been sampled, the VSTOP Team enters the match information into the Stark Audit Tool and as long as there are zero non-matches, the audit will be successfully completed.

The audit began with an introductory presentation given by Matt Housley, Dr. Chad Kinsella and Dr. Jay Bagga to all persons in attendance. This presentation provided general information about the post-election audit process and methodology used, specific information relating to Kosciusko County's audit, and allowed for a Q&A to address any questions or concerns. After this presentation concluded, execution of the audit began. A 20-digit seed number was generated to assist the Stark Audit Tool in selecting the random sample of ballots. This number was generated live-time through 20 rolls of a 10-sided die by audit participants and members of the public. The live-time generation of the seed number assures the sample is truly random and no-one could know what ballots were going to be selected for sample prior to the audit beginning. The seed number also becomes a control for this audit, so should the audit ever need to be replicated, it can be done so in its entirety.

The seed number for the Kosciusko County Post-Election Audit is as follows:
48101816751361556156

The seed number was entered into the Stark Audit Tool and a random sample of ballots was generated. VSTOP drew an initial sample size of 150 ballots. All three contests were reviewed using ballots from this initial sample. For Ballot Comparison Audits, undervotes may or may not be used for inspection. Either way, the integrity and result of the audit will not be affected. VSTOP allows county officials to make the decision on whether they would like to inspect undervoted ballots. Kosciusko County Election Officials determined they would use undervotes in the ballot inspection process. This means if the contest had been under voted by the voter, then

the ballot sampled will be inspected for an undervoted CVR to VVPAT match. While it is highly unlikely all 150 ballots would be inspected, 150 ballots were drawn to account for the expected need to sample more than the required amount due to the following factor:

- Ballots are not separated by party. Since Republican contests are selected for audit, if the sample draws a Democratic ballot, it will not be inspected for audit and will be skipped. Even though Democratic ballots were not inspected for audit, a CVR to VVPAT match inspection can still be completed. For every skipped ballot, a new ballot must be sampled that can be inspected for audit.

Random sampling

┌─Pseudo-Random Sample of Ballot Cards──────────────────
│ Seed: 48101816751361556156
│ Number of ballot cards: 9066
│ Current sample number: 150
│ Draw this many ballot cards: 150   [draw sample] [reset]
└

Above: Stark Audit Tool Screenshot of Seed Number and Initial Ballot Sample

The contest requiring the largest sample size for audit was Republican Kosciusko County Commissioner Northern District at 120 ballots. Republican Kosciusko County Surveyor required 35 ballots and Republican Kosciusko County Coroner required 39 ballots. All three contests were inspected on each ballot sampled for audit if needed and applicable. Inspected by at least one County Election Official and one member of the VSTOP Audit Team, each ballot was reviewed for the CVR to VVPAT match for the selected contests. Inspection continued until at least the minimum number of ballots required for inspection were met to achieve the set 1 percent risk limit and 99 percent confidence level. The inspection of the sample of ballots generated the following results.

Above: Stark Audit Tool Screenshot of County Commissioner Northern District Sample Size

Above: Stark Audit Tool Screenshot of County Surveyor Sample Size

Above: Stark Audit Tool Screenshot of County Coroner Sample Size

Audit Results

- Republican Kosciusko County Commissioner Northern District
- Republican Kosciusko County Surveyor
- Republican Kosciusko County Coroner
  - A total of 126 ballots were sampled for all contests. Of the 126 ballots, 120 were able to be inspected for audit and 6 ballots were skipped because they were Democratic ballots. While one contest needed only 35 ballots, and another needed 39, all three contests were audited inspecting 120 ballots. All 120 inspected ballots had a CVR and VVPAT match, resulting in **100 percent match rate**. The estimated sample to achieve the set risk limit and confidence level was 120 inspected ballots, but was achieved after 113 inspected ballots. The audit concludes with **99 percent confidence** that the election systems functioned properly resulting in correctly tabulated and reported election outcomes.

Above: Stark Audit Tool showing Risk Limit and Confidence Level were met after 113 inspected ballots

In Closing

       VSTOP would like to thank the Kosciusko County Clerk's Office, Ann Torpy and Melissa Boggs for their coordination, the Kosciusko County Election Board for their voluntary request for audit designation, and The Indiana Secretary of State's Office for approving Kosciusko County's audit designation and their support of VSTOP to conduct these initiatives.

       Upon completion of all 2024 Primary Post-Election Audits, a full summary report of all post-election audit activities and their respective results will be prepared and submitted to the Indiana Secretary of State and all counties involved in a 2024 Primary Post-Election Audit.
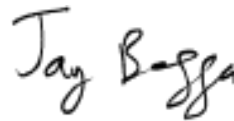
       For any questions or concerns regarding Indiana's Post-Election Audit Procedures, or information contained in this memo, contact Matt Housley, Election Systems Audit Specialist, at vstop@bsu.edu.

Matt Housley, MPA

Election Systems Audit Specialist
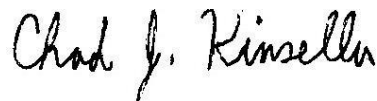**Voting System Technical Oversight Program**

Dr. Jay Bagga

Co-Director
Voting System Technical Oversight Program

Dustin Renner

Election Director
Indiana Secretary of State

Dr. Chad Kinsella

Co-Director
Voting System Technical Oversight Program

APPENDIX E
Grant County Audit Report

TO: Grant County Clerk's Office and County Election Board

CC: Election Board Member, Craig Persinger
            Election Board Member, Tom Roop
            Election Board Secretary & County Clerk, Pamela Harris
            Election Deputy, Nancy Bryant

DATE: 8/5/2024

SUBJECT: Summary of 2024 Grant County Primary Post-Election Audit

On June 20, 2024, the VSTOP team successfully completed a post-election audit in Grant County, Indiana, for the 2024 Primary Election. The following memo will summarize the pre-audit process, explain the execution of the audit, and present the audit results.

Pre-Audit Process

VSTOP has been authorized by the Indiana Secretary of State to conduct post-election audits. At this time, Indiana does not have mandated post-election audits, and participation is voluntary by the county, and designated by the Secretary of State. Grant County formally requested designation on April 12, 2024 via a County Election Board Resolution. Grant County was granted designation and audit prep began.

An initial audit meeting was held to review the post-election audit process, and answer any questions Grant County Election Officials had about the process. From there, the audit date, time, location and selection of audited contests were coordinated by the County Clerk and VSTOP and were finalized.

Using the Stark Audit Tool, VSTOP proceeded to run ballot sample size estimates on the selected contests based on the initial election night reports found on the county website. While these may not have been the final vote totals (pre-certification), they work appropriately for estimating expected sample sizes and approximating how long it would take to complete the audit.

Grant County was advised by VSTOP to select only Republican contests for audit due to the overwhelming margin of Republican to Democratic ballots cast, and the inability to separate primary ballots by party when using direct-record electronic (DRE) voting systems. For example, auditing a Democratic race may require a sample of 25 ballots. Since the ballots cannot be separated, and Republican votes held just over 85% of the vote share, it can be expected the random sample would pull many more Republican ballots. It could take exorbitant sample sizes to reach the 25 Democratic ballots that were needed for sample because of the significant disparities in party vote share. While no Democratic contests were selected for audit, the integrity of ballots cast and machine accuracy can be confirmed because the Republican ballots being sampled are from machines used by both parties on Election Day.

In consultation with VSTOP and Grant County Election Officials, it was determined the post-election audit will be inspecting Election Day ballots, so audit estimations and ballot manifests/inventories were generated using only Election Day ballots and reported Election Day totals. It was also determined this audit would be completed with a 1 percent risk limit and 99 percent confidence level. This means there is 99 percent confidence the audit would catch an outcome error if there was one, and only 1 percent risk the audit would not catch any outcome errors. The only way a 100 percent confidence level can be achieved is through a contest's full recount, and an audit is not a recount. The 1 percent risk limit represents the lowest possible risk, and the 99 percent level represents the highest confidence level, that can be achieved in Indiana's post-election audit process.

The ballot manifest/inventory was generated by Grant County's Voting System Vendor, MicroVote, and included all votes cast on Election Day that were recorded via Cast Vote Record (CVR) with Voter-Verified Paper Audit Trails (VVPAT). VSTOP then checked the manifest for functionality in the Stark Audit Tool and confirmed it functioned properly. All pre-audit prep was complete and the audit was ready to be conducted.

The information above is detailed below:

- **Audit Date:** June 20, 2024
- **Audit Time:** VSTOP Set-up and Pre-Audit Meeting 9:00 AM – Audit Begins 10:00 AM
- **Location:** Grant County Justice Center - 401 S. Adams St. Marion, IN
- **Total Ballots Selected for Audit:** Election Day Ballots on VVPAT – 6,820
- **Estimated Ballot Sample Sizes for Contests Selected for Audit:**

    o Governor of Indiana (REP)
        ▪ Diluted Margin – 15.92%
        ▪ Estimated Sample Size – 64 Ballots

    o Grant County Commissioner District 1 (REP)
        ▪ Diluted Margin – 15.41%
        ▪ Estimated Sample Size – 66 Ballots

    o Judge for the Superior Court No. 2 (REP)
        ▪ Diluted Margin – 37.52%
        ▪ Estimated Sample Size – 27 Ballots

Execution of Post-Election Audit

The VSTOP Audit Team, led by VSTOP's Election System Audit Specialist, Matt Housley, arrived in Grant County at approximately 9:00 AM and began audit set-up. As the VSTOP Team set-up, Matt had a pre-audit meeting for all County Election Officials participating in the audit. The meeting covered the post-election audit process and responsibilities, reviewed

and confirmed contest selection and election result totals, and completed a final review of the public post-election audit presentation that will be given just prior to the conducting of the audit. By approximately 10:00 AM the pre-audit meeting was concluded and the audit set-up was complete. Grant County's public, post-election audit officially began at 10:00 AM.

The VSTOP team members who participated in this audit included:
- Dr. Jay Bagga, VSTOP Co-Director
- Matt Housley, Election Systems Audit Specialist
- Marc Chatot, Program Manager
- Austin Bilbrey, Logistics Specialist
- Spencer Drumm, Election Systems Certification Specialist
- Alisa Gray, Election Training and Assessment Specialist
- Gina Caravaglia, Graduate Assistant for Training and Assessment

The Grant County Election Officials who participated in this audit included:
- Pamela Harris, County Clerk
- Nancy Bryant, Election Deputy
- Tom Roop, Election Board Member

The Grant County Voting System Vendor, members of MicroVote, who participated in this audit included:
- Steve Shamo, General Manager

VSTOP conducted a Ballot Comparison Audit using the Stark Audit Tool built for this type of post-election audit. This audit type is meant to inspect ballots for a match between the CVR and VVPAT. Every ballot's CVRs should match its VVPAT counterpart, resulting in a 100% match rate. Grant County Election Officials alongside the VSTOP Team manually inspect the ballot's CVR to the VVPAT for the selected contests and track the match rate through the required number of ballots to sample. After the required number of ballots (or more) have been sampled, the VSTOP Team enters the match information into the Stark Audit Tool and as long as there are zero non-matches the audit will be successfully completed.
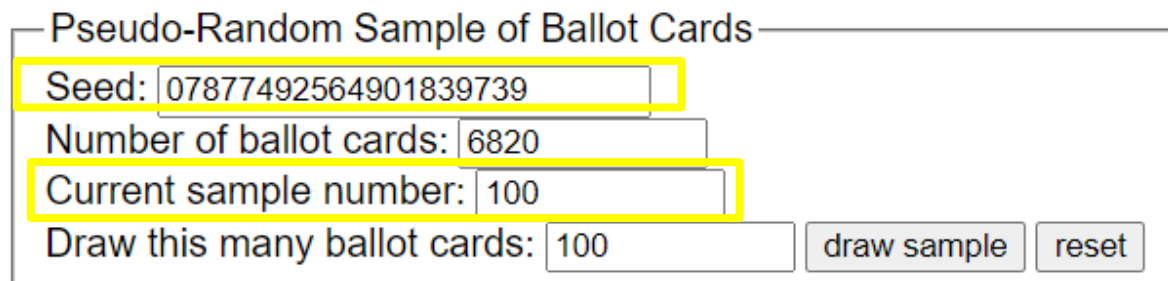
The audit began with an introductory presentation given by Matt Housley and Dr. Jay Bagga to all persons in attendance. This presentation provided general information about the post-election audit process and methodology used, specific information relating to Grant County's audit, and allowed for a Q&A to address any questions or concerns. After this presentation concluded, execution of the audit began. A 20-digit seed number was generated to assist the Stark Audit Tool in selecting the random sample of ballots. This number was generated live-time through 20 rolls of a 10-sided die by audit participants and members of the public. The live-time generation of the seed number assures the sample is truly random and no-one could know what ballots were going to be selected for sample prior to the audit beginning. The seed number also becomes a control for this audit, so should the audit ever need to be replicated, it can be done so in its entirety.

The seed number for the Grant County Post-Election Audit is as follows:
07877492564901839739

    The seed number was entered into the Stark Audit Tool and a random sample of ballots was generated. VSTOP drew an initial sample size of 100 ballots. All three contests were reviewed using ballots from this initial sample. For Ballot Comparison Audits, undervotes may or may not be used for inspection. Either way, the integrity and result of the audit will not be affected. VSTOP allows county officials to make the decision on whether they would like to inspect undervoted ballots. Grant County Election Officials determined they would use undervotes in the ballot inspection process. This means if the contest had been undervoted by the voter, then the ballot sampled will be inspected for an undervoted CVR to VVPAT match. While it is highly unlikely all 100 ballots would be inspected, 100 ballots were drawn to account for the expected need to sample more than the required amount due to the following factor:

- Ballots are not separated by party. Since Republican contests are selected for audit, if the sample draws a Democratic ballot, it will not be inspected for audit and will be skipped. Even though Democratic ballots were not inspected for audit, a CVR to VVPAT match inspection can still be completed. For every skipped ballot, a new ballot must be sampled that can be inspected for audit.

Random sampling

Pseudo-Random Sample of Ballot Cards

Seed: 07877492564901839739

Number of ballot cards: 6820

Current sample number: 100

Draw this many ballot cards: 100   [draw sample] [reset]

Above: Stark Audit Tool Screen Shot of Seed Number and Initial Ballot Sample

    The contest requiring the largest sample size for audit was Republican Grant County Commissioner District 1 at 66 ballots. Republican Governor of Indiana required 64 ballots and Republican Judge of Superior Court No. 2 required 27 ballots. All three contests were inspected on each ballot sampled for audit if needed and applicable. Inspected by at least one County Election Official and one member of the VSTOP Audit Team, each ballot was reviewed for the CVR to VVPAT match for the selected contests. Inspection continued until at least the minimum number of ballots required for inspection were met to achieve the set 1 percent risk limit and 99 percent confidence level. The inspection of the sample of ballots generated the following results.

Above: Stark Audit Tool Screenshot of County Commissioner District 1 Sample Size

Above: Stark Audit Tool Screenshot of Governor of Indiana Sample Size

Above: Stark Audit Tool Screenshot of Judge of the Superior Court No. 2 Sample Size

Audit Results

- Republican Grant County Commissioner District 1
- Republican Governor of Indiana
- Republican Judge of the Superior Court No. 2

  - A total of 77 ballots were sampled for all contests. Of the 77 ballots, 69 were able to be inspected for audit and 8 ballots were skipped because they were Democratic ballots. While one contest needed only 27 ballots, and another needed 64, all three contests were audited inspecting the largest sample needed: 66 ballots. Three additional ballots were inspected to finish out a machine's total number of sampled ballots. All 69 inspected ballots had a CVR and VVPAT match, resulting in **100 percent match rate**. The estimated sample to achieve the set risk limit and confidence level was 66 inspected ballots, but was achieved after 63 inspected ballots. The audit concludes with **99 percent confidence** that the election systems functioned properly resulting in correctly tabulated and reported election outcomes.

Above: Stark Audit Tool showing Risk Limit and Confidence Level were met after 63 inspected ballots

In Closing

        VSTOP would like to thank the Grant County Clerk's Office, Pam Harris and Nancy Bryant for their coordination, the Grant County Election Board for their voluntary request for audit designation, and The Indiana Secretary of State's Office for approving Johnson County's audit designation and their support of VSTOP to conduct these initiatives.

        Upon completion of all 2024 Primary Post-Election Audits, a full summary report of all post-election audit activities and their respective results will be prepared and submitted to the Indiana Secretary of State and all counties involved in a 2024 Primary Post-Election Audit.
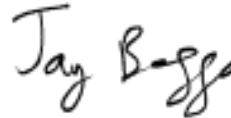
        For any questions or concerns regarding Indiana's Post-Election Audit Procedures, or information contained in this memo, contact Matt Housley, Election Systems Audit Specialist, at vstop@bsu.edu.

Matt Housley, MPA

Election Systems Audit Specialist
Voting System Technical Oversight Program
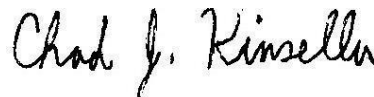
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APPENDIX F
Gibson County Audit Report

TO: Gibson County Clerk's Office and County Election Board

CC: Election Board Member, Stephen "Ed" Richardson
Election Board Member, Gerald Bledsoe
Election Board Secretary & County Clerk, Sherri Smith
Election/Voter Registration Deputies, Leather Chavis and Kellie Landers

DATE: 9/16/2024

SUBJECT: Summary of 2024 Gibson County Primary Post-Election Audit

On August 2, 2024, the VSTOP team successfully completed a post-election audit in Gibson County, Indiana, for the 2024 Primary Election. The following memo will summarize the pre-audit process, explain the execution of the audit, and present the audit results.

Pre-Audit Process

VSTOP has been authorized by the Indiana Secretary of State to conduct post-election audits. At this time, Indiana does not have mandated post-election audits, and participation is voluntary by the county, and designated by the Secretary of State. Gibson County formally requested designation on April 17, 2024 via a County Election Board Resolution. Gibson County was granted designation and audit prep began.

An initial audit meeting was held to review the post-election audit process, and answer any questions Gibson County Election Officials had about the process. From there, the audit date, time, location and selection of audited contests were coordinated by the County Clerk and VSTOP and were finalized. The post-election audit was originally scheduled for June 17th, but was rescheduled to July 18th due to a county level recount requested for one of their contested contests. There were procedural delays in the recount process which required to VSTOP and Gibson County to again reschedule the audit. The audit was then scheduled for August 2nd and was conducted on that day.

Using the Stark Audit Tool, VSTOP proceeded to run ballot sample size estimates on the selected contests based on the initial election night reports found on the county website. While these may not have been the final vote totals (pre-certification), they work appropriately for estimating expected sample sizes and approximating how long it would take to complete the audit.

Gibson County was advised by VSTOP to select at least one Democratic and one Republican contest for Audit. The third contest selected could be from either political party. Gibson County chose to audit one Democratic contest and two Republican contests because the majority of their vote share was made up of Republican Primary ballots. In consultation with VSTOP, Gibson County Election Officials, determined the post-election audit will encompass inspecting all types of Primary Election ballots, including absentee mail-in, absentee early voting, and election day ballots. So, audit estimations and ballot manifests/inventories were

generated using all ballot types and their precinct reported totals. The ballot manifest/inventory for each Primary was generated by the Gibson County Clerk's Office and included all votes cast in the Primary Election. VSTOP then checked the manifests for functionality in the Stark Audit Tool and confirmed it functioned properly.

It was also initially determined this audit would be completed with a 3 percent risk limit/97 percent confidence level. This means there is 97 percent confidence the audit would catch an outcome error if there was one, and only a 3 percent risk the audit would not catch any outcome errors. The only way a 100 percent confidence level can be achieved is through a contest's full recount, and an audit is not a recount. For this type of post-election audit, the confidence level is dependent on contest's margin are and the sample of ballots drawn. While it is intended to reach a 97 percent confidence level for this audit, VSTOP established that election outcomes can be confirmed with statistical confidence using risk-limits ranging from 9 percent to 1 percent and respective confidence levels ranging 91 to 99 percent. For an audit to significantly confirm election outcomes, the sample of audited ballots **MUST** reach 91 to 99 percent confidence. Should the confidence level not be reached in the initial sample of ballots it **DOES NOT** mean there is an error in election outcomes. It just means that more ballots will need to be sampled until there is at minimum 91 percent confidence level reported for the sample of that audited contest.

After contest selection, risk-limit definition, and ballot inventory testing, all pre-audit prep was complete and the audit was ready to be conducted.

The information above is detailed below:

- **Audit Date:** August 2, 2024
- **Audit Time:** VSTOP Set-up and Pre-Audit Meeting 8:00 AM – Audit Begins 9:00 AM
- **Location:** Gibson County Courthouse, First Floor – 101 N. Main St. Princeton, IN 47670
- **Total Ballots Selected for Audit:** All Ballots Cast in Primary – 5,355
- **Estimated Ballot Sample Sizes for Contests Selected for Audit:**

    o Governor of Indiana (REP)
      ▪ Diluted Margin – 18.85%
      ▪ Estimated Sample Size – 169

    o Gibson County Coroner (REP)
      ▪ Diluted Margin – 26.76%
      ▪ Estimated Sample Size – 92

    o Gibson County Commissioner District 3 (DEM)
      ▪ Diluted Margin – 25.99%
      ▪ Estimated Sample Size – 102

Execution of Post-Election Audit

The VSTOP Audit Team, led by VSTOP's Election System Audit Specialist, Matt Housley, arrived at the Gibson County Courthouse at approximately 8:00 AM and began audit set-up. As the VSTOP Team set-up, Matt had a pre-audit meeting for all County Election Officials participating in the audit. The meeting covered the post-election audit process and responsibilities, reviewed and confirmed contest selection and election result totals, and completed a final review of the public post-election audit presentation that will be given just prior to the conducting of the audit.

By approximately 8:45 AM the pre-audit meeting was concluded and the audit set-up was complete. Gibson County's public, post-election audit officially began at 9:00 AM.

The VSTOP team members who participated in this audit included:
- Dr. Chad Kinsella, VSTOP Co-Director
- Matt Housley, Election Systems Audit Specialist
- Alisa Gray, Election Training and Assessment Specialist
- Gina Caravaglia, Graduate Assistant for Training and Assessment

The Gibson County Election Officials who participated in this audit included:
- Sherri Smith, Gibson County Clerk
- Leather Chavis, Election/Voter Registration Deputy
- Kellie Landers, Election/Voter Registration Deputy
- Stephen "Ed" Richardson, Election Board Member
- Gerald Bledsoe, Election Board Member

The Gibson County Election Board allowed the following Election Officials to participate in this audit:
- Amy Rolfes, St. Joseph County Clerk
- Trisha Carrico, St. Joseph County Chief Deputy Clerk of Elections
- Chris Lyle, St. Joseph County Voting System Technician
- Dustin Renner, Election Director, Indiana Secretary of State's Office

VSTOP conducted a Ballot Polling Audit using the Stark Audit Tool built for this type of post-election audit. This audit type is meant to hand inspect ballots and record contest choices on sampled ballots until there is statistical evidence (at minimum a 91 percent confidence level) that a full hand count would confirm the audited outcome. VSTOP and County Election Officials set an intended risk-limit to better estimate sample sizes, but because polling-audits use a random sample of ballots, achieving a set risk limit is unpredictable. As stated previously, the intended risk-limit of 3 percent was set for Gibson County. However, the audit can stop and be considered successfully completed once the audit has hand sampled and counted enough ballots to achieve a risk limit ranging from 9 to 1 percent (91 to 99 percent confidence level). **VSTOP has significant practical confidence in reported election outcomes when statistical confidence levels ranging 91-99 percent are achieved.**
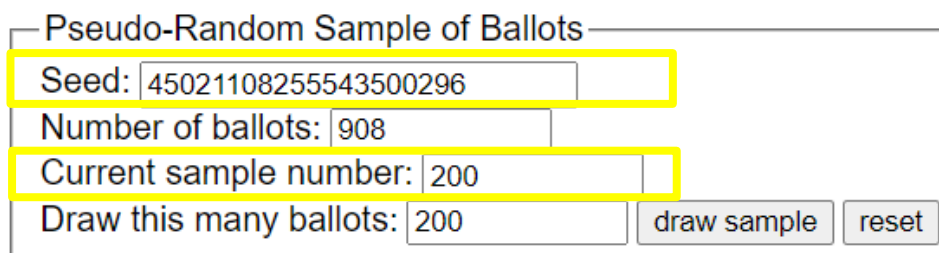
The audit began with an introductory presentation given by Matt Housley and Dr. Chad Kinsella to all persons in attendance. This presentation provided general information about the post-election audit process and methodology used, specific information relating to Gibson County's audit, and allowed for a Q&A to address any questions or concerns. After this presentation concluded, execution of the audit began. A 20-digit seed number was generated to assist the Stark Audit Tool in selecting the random sample of ballots. This number was generated live-time through 20 rolls of a 10- sided die by audit participants. The live-time generation of the seed number assures the sample is truly random and no-one could know what ballots were going to be selected for sample prior to the audit beginning. The seed number also becomes a control for this audit, so should the audit ever need to be replicated, it can be done so in its entirety.

The seed number for the Gibson County Post-Election Audit is as follows:
45021108255543500296

The seed number was entered into the Stark Audit Tool and a random sample of ballots were generated. The ballots were separated by party since this was a Primary Election. The Democratic ballot sample was drawn to audit the Democratic Primary for County Commissioner District 3 and the Republican ballot sample was drawn to audit the Republican Primaries for Governor of Indiana and County Coroner. The audit used the same seed number to draw both ballot samples.

For the Democratic contest, VSTOP drew an initial sample size of 200 ballots. The Stark Audit Tool may select a ballot for sample multiple times. VSTOP only samples every selected ballot once. When removing the duplicates, that left the initial sample total at 179 ballots. The estimated sample size was 102 ballots. Because the contest's margin was small (less than 250 votes), and the total number of Democratic ballots was also small (less than 1,000), it was expected that a large share of the total ballots would need to be sampled in order to achieve the desired confidence level of 97 percent.

Random sampling

┌─ Pseudo-Random Sample of Ballots ──────────
│ Seed: 45021108255543500296
│ Number of ballots: 908
│ Current sample number: 200
│ Draw this many ballots: 200   [draw sample] [reset]

Above: Stark Audit Tool Screen Shot of Seed Number and Democratic Initial Ballot Sample

Above: Stark Audit Tool Screenshot of County Commissioner District 3 Estimated Sample Size

For the Republican contests, VSTOP drew an initial sample size of 175 ballots. Ensuring each ballot was only sampled once, left the initial sample total at 170 ballots. While the sample is still random, there were over 4,000 Republican ballots eligible for audit. In comparison to the Democratic contest, that's a much larger sample to select from, resulting in a lesser possibility that more ballots than the estimated sample would need to be tallied in order to achieve the desired confidence level of 97 percent. Both Republican contests were audited with the same sample of ballots. The estimated sample size for Governor of Indiana was 169 ballots and the estimated sample size for County Coroner was 92 ballots. VSTOP was ready to generate additional ballot samples should the initial sample not achieve the appropriate confidence level.

Random sampling

Above: Stark Audit Tool Screen Shot of Seed Number and Republican Initial Ballot Sample

Above: Stark Audit Tool Screenshot of Governor of Indiana Estimated Sample Size


Above: Stark Audit Tool Screenshot of County Coroner Estimated Sample Size

Audit Results

- Democratic Gibson County Commissioner District 3
  - Sampled ballots were hand counted and every 10-15 ballots, the Audit Team entered the updated totals for each candidate into the Stark Audit Tool to check for the intended confidence level. The initial sample of ballots did not achieve the intended confidence level of 97 percent. Additional ballots were required for sample. Since additional ballots were required, VSTOP again noted that the audit can confidently confirm election outcomes when the confidence level ranges 91-99 percent. Upon further discussion, VSTOP and County Election Officials then adjusted the intended risk limit from 3 to 9 percent so that the audit would complete once the sample reaches within the target range of 91-97 percent. A total of 278 ballots were sampled for this contest to achieve a confidence level within range. Of the 278 ballots, 267 were able to be inspected for audit and 11 ballots were skipped because they were undervoted ballots. Of the 267 ballots that were audited, 157 were recorded for Fleetwood and 110 for Shade. This sample generated a **94 percent confidence level.** The audit concludes **with 94 percent confidence** this contest was properly tabulated resulting in a correctly reported election outcome.
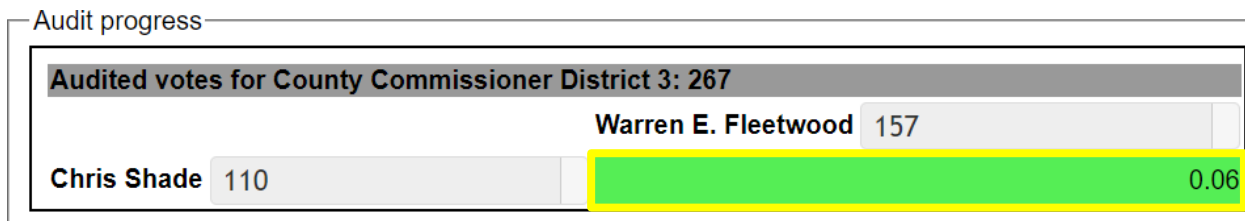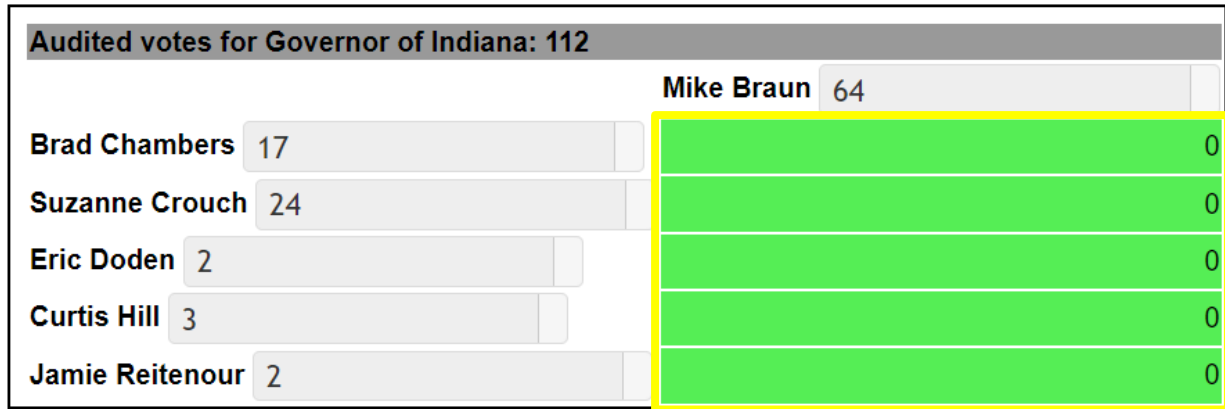

Above: Stark Audit Tool showing a 6 percent Risk Limit/94 percent Confidence Level was met after 267 ballots inspected ballots

- Republican Governor of Indiana
  - In response to the adjusted Democratic contest risk limit, the risk limit was adjusted to 9 percent for this Republican contest as well. Sampled ballots were hand counted and every 10-15 ballots, the Audit Team entered the updated totals for each candidate into the Stark Audit Tool to check for the initially intended confidence level. The initial sample of ballots achieved above the intended confidence level of 97 percent. Additional ballots were not required for sample. A total of 117 ballots were sampled for this contest to achieve the confidence level range. Of the 117 ballots, 112 were able to be inspected for audit and 5 ballots were skipped because they were undervoted ballots. Of the 117 ballots that were audited, 64 were recorded for Braun, 17 for Chambers, 24 for Crouch, 2 for Doden, 3 for Hill, and 2 for Reitenour. This sample generated a **greater than 99 percent confidence level.** The achieved risk limit was less than 1 percent, but the confidence level can be no greater 99.99 percent because a sample's confidence

level can never equal 100 percent. Rounded down to the nearest whole percentage, the audit concludes **with 99 percent confidence** this contest was properly tabulated resulting in a correctly reported election outcome.
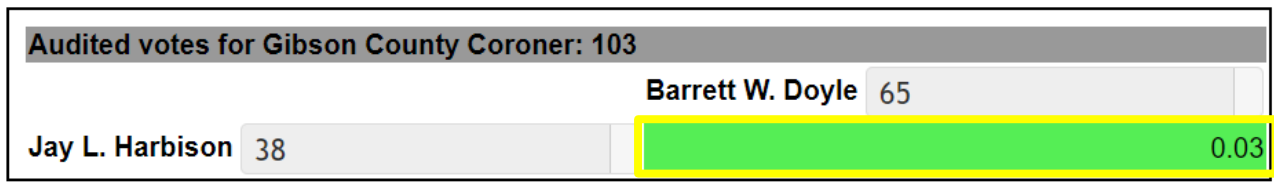

Above: Stark Audit Tool showing <1 percent Risk Limit/ >99 Confidence Level were met after 112 ballots inspected ballots

- Republican Gibson County Coroner
  - In response to the adjusted Democratic contest risk limit, the risk limit was adjusted to 9 percent for this Republican contest as well. Sampled ballots were hand counted and every 10-15 ballots, the Audit Team entered the updated totals for each candidate into the Stark Audit Tool to check for the initially intended confidence level. The initial sample of ballots achieved the intended confidence level of 97 percent. Additional ballots were not required for sample. A total of 117 ballots were sampled for this contest to achieve the confidence level range. Of the 117 ballots, 103 were able to be inspected for audit and 14 ballots were skipped because they were undervoted ballots. Of the 103 ballots that were audited, 65 were recorded for Doyle, and 38 Harbison. This sample generated a **97 percent confidence level.** The audit concludes **with 97 percent confidence** this contest was properly tabulated resulting in a correctly reported election outcome.

Above: Stark Audit Tool showing 3 percent Risk Limit/ 97 Confidence Level were met after 103 ballots inspected ballots

In Closing

VSTOP can report that all three election contest outcomes can be confirmed with significant statistical confidence through successful completion of this post-election audit. VSTOP would like to thank the Gibson County Clerk, Sherri Smith and Election/Voter Registration Deputies, Leather Chavis and Kellie Landers for their coordination, the Gibson County Election Board for their voluntary request for audit designation, and The Indiana Secretary of State's Office for approving Gibson County's audit designation and their support of VSTOP to conduct these initiatives.

Upon completion of all 2024 Primary Post-Election Audits, a full summary report of all post-election audit activities and their respective results will be prepared and submitted to the Indiana Secretary of State and all counties involved in a 2024 Primary Post-Election Audit.
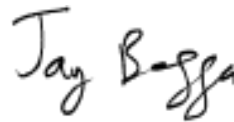
For any questions or concerns regarding Indiana's Post-Election Audit Procedures, or information contained in this memo, contact Matt Housley, Election Systems Audit Specialist, at vstop@bsu.edu.

Matt Housley, MPA

Election Systems Audit Specialist
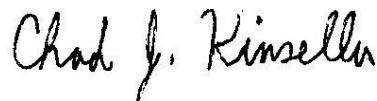**Voting System Technical Oversight Program**

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