CHAPTER 14: AUDITING

14.1 Exporting Cast Vote Record Data

This feature is designed to be used in auditing scenarios such as the Risk Limiting Audits, or other auditing of cast vote level records. The user can choose to export a set of cast vote level data (entire set or filtered), into one of two distinct formats:

1. A set of well-defined JSON files packaged together in a zip file.
2. A tabular tab-separated format, which can be opened in Excel for easy viewing.

The exported data conforms to the following:

- No compromise of voter privacy:
  - Session Code is excluded
  - Out-stack conditions are excluded
- The user can choose to export data for all results, or only results in the published batches
- Data can be filtered by the following prior to export:
  - Batch
  - Tabulator
  - Precinct
  - Ballot Type– Contest
- Each record in the export can be matched with a physical ballot or a VVPAT (Voter-Verified Paper Audit Trail).

The JSON format has two additional features not supported in the tabular format:

- Any modified data (e.g. post-adjudication or conditional vote resolution) is included alongside the original capture of the cast vote level record.
- Export can be split into different files for each batch.

1. Navigate to the Actions menu, click the Export menu item and click the CVR Export sub-menu item.

2. The CVR Export screen will appear. See Figure 14-1 .

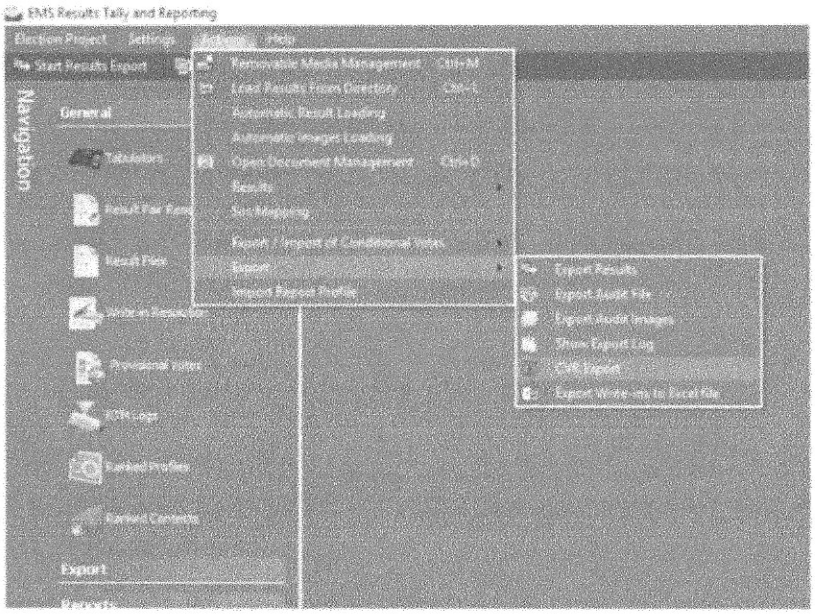


Figure 14-1: Export Data Screen

3. Select criteria for filters if applicable, or leave as ALL in case no filter is required.
4. Perform additional settings, if applicable:
   - Create separate file per batch - check this if the export should create a separate export file for each results batch being exported.

     NOTE: This setting does not apply to the tabulator format, but only is used when exporting the JSON format.

     NOTE: If the number of batches is larger than 100, we strongly recommend that this option is used, otherwise the resulting file could be too large to produce (depending on system and project configuration).
   - Published batches - only check this if the export should only contain data from published result batches.
   - Use tabular format - If this option is selected the export will be in the form of a tabular text file format, which can be opened in Excel instead of the default JSON format.

5. Click **Export**.

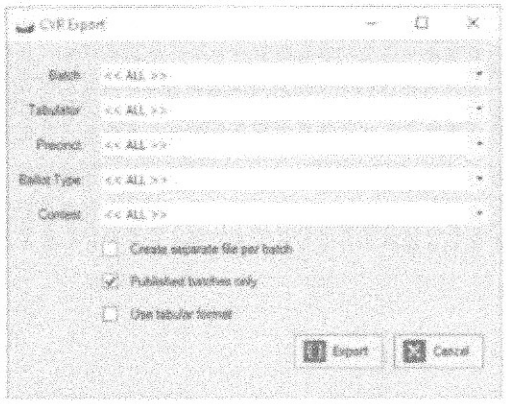


Figure 14-2: CVR Export Screen

6. When the process has completed:
   - An Information dialog will appear, see Figure 14-3 indicating where the exported data is located. Click **Close**.

Figure 14-3: CVR Export Completed Screen

   - The system will indicate if batches were encountered during the export that did not have associated cast vote record data (for example: manually entered results). The system will indicate which batches were not

included in the CVR export due to this reason. See Figure 14-4 .

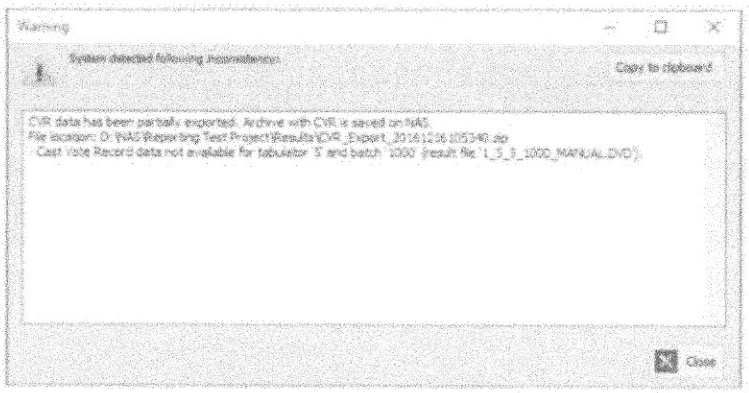


Figure 14-4: Completed CVR export where no data matches filter screen

7. The exported data in the JSON format is then usually analyzed using a third-party tool which can parse the format However, the user can still inspect the contests of the exported files in a third-party editor with a plug-in which performs the parsing.
   - A tool which can be used to inspect the content of the file is Notepad++ which can be downloaded and installed along with the default set of plug-ins.
   - The JSON Viewer plug-in should be enabled in the Plug-In Manager section of Notepad++.
   - The exported data simply needs to be opened in the Notepad++ application, and the JSON Viewer plug-in needs to be activated in order

for the data to be presented in a readable format.

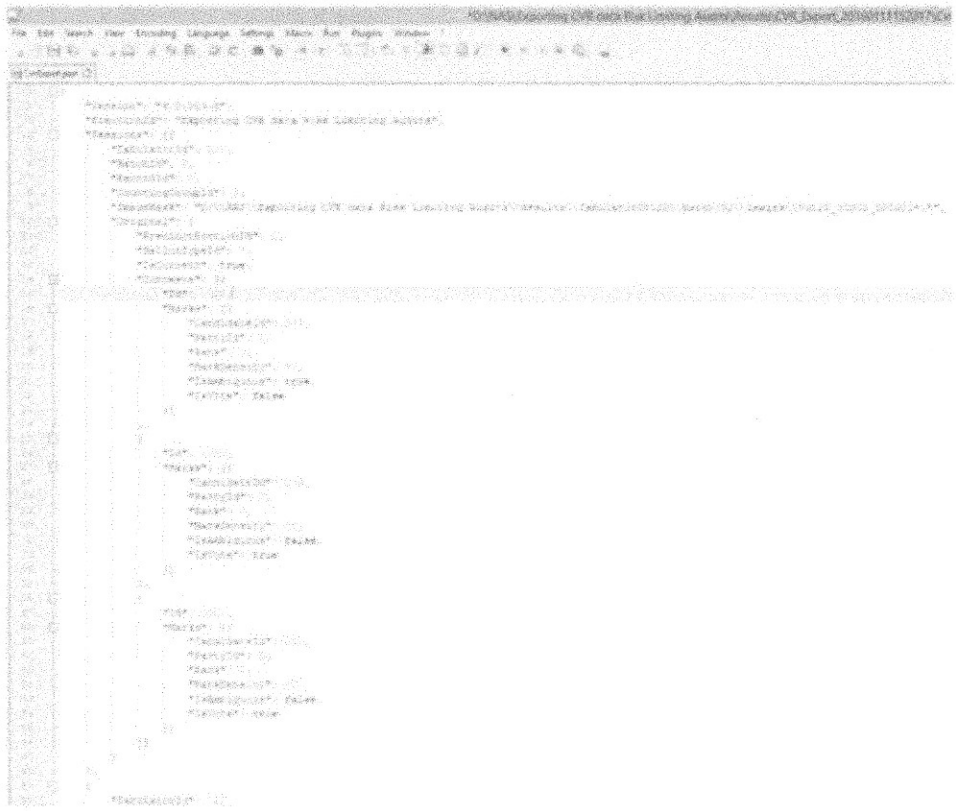


Figure 14-5: Exported data opened in Notepad screen

8. The tabular format text file can simply be dragged and dropped in Excel. This will open Excel and present the user with all cast vote records that were part in the export. See Figure 14-6 for an example. Cast vote records are placed vertically with every row representing a single cast vote record. Horizontally all contests and their containing choices are placed. If a column contains a 1 that means that there was a vote for a choice. A 0 means that this choice was no vote was made for that choice (or that it was part of an over-voted selection). An empty cell means that the contest/choice was not part of the current ballot style.

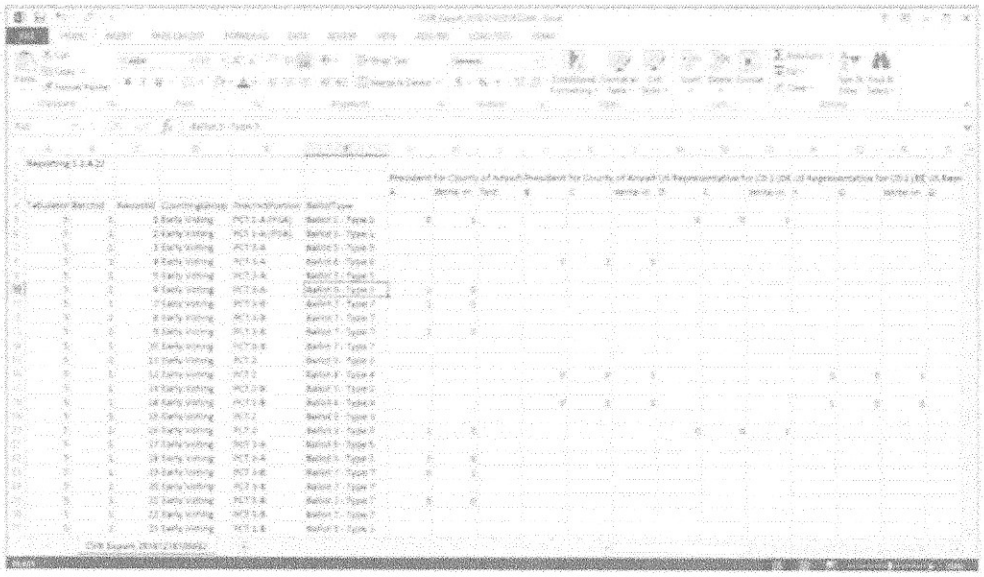


Figure 14-6: Tabular Export Format screen

NOTE: In elections where paper ballots are made up of more than one card, the export will list each card as an individual session, unless the tabulator that produced the cast vote record has a session control mechanism such as smart cards.

14.2 Exporting Audit Files

This functionality allows the user to export results audit reports for a subset of or all result files. Each result file will have its own report in simple text file format. Each report contains a list of all individually cast ballots (if this information is available). For manually entered data, the list only displays totals for that result file. Each report lists

the number of ballots cast in the result file and displays how many of those were cast within a DRE and/or provisional session. If the result file contains information for individually cast ballots, each cast ballot is listed in random order. Each ballot will have a reference to its image file, status and ballot card ID. All contests on the ballot are listed showing name of contest, number of positions, and number of valid votes, undervotes, and overvotes. Subsequently, each contest also displays a list of all marked voting boxes and whether or not they are valid votes.

1. To display a list of loaded results, click on the **Result Files** option in the Activities Navigation Panel (General group).
2. The Result Files main activity screen appears.
3. Use the Tabulator, Tabulator Type and Result State combo boxes to filter the search results.
4. Click **Search**.
5. Omit the search criteria and click **Search** to list all imported results.
6. Use the Sort functionality to list all imported results.
7. Select the desired result files from the list, and click **Export Audit File** or click on **Actions**, **Export**.
8. Click on the **Export Audit File** option.

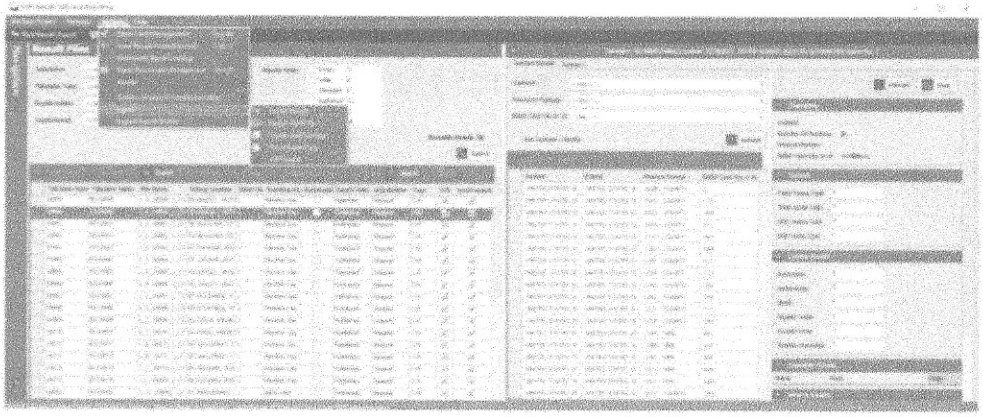
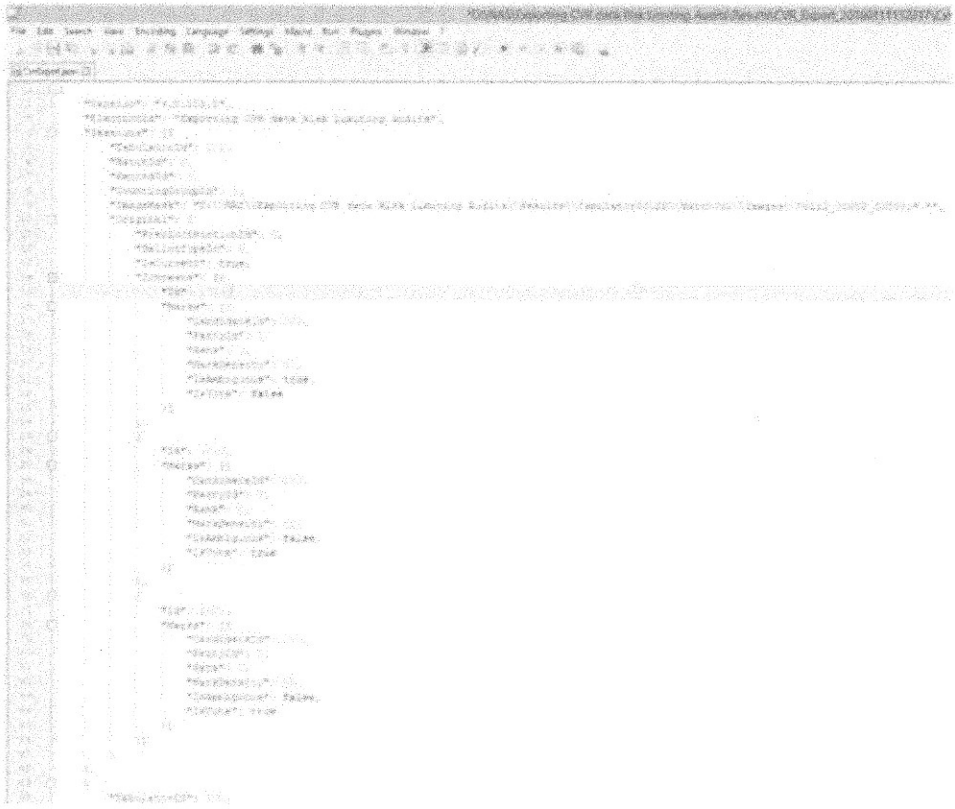


Figure 14-7: Export Results Audit File screen

9. In the Question message box, click **Yes** to confirm the action.
10. Once exporting is complete, the Success screen appears.
11. To open Document Management, go to the Main Menu, click **Actions**, and click the **Open Document Management** option.
12. The Document Management screen opens.
13. Select EMS NAS from the Target combo box and double-click on the **Results directory** to open it.
14. In the Results directory, navigate to the individual batch/result file directory to locate the .txt file (Results Audit File).
15. Select the audit file and click **Copy** to copy it to the local directory.
16. Navigate to the local directory where the Results Audit File has been copied and open the file. The Result Audit File opens in Notepad.

for the data to be presented in a readable format.



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