Autoscope Intersection Volume Reader

October 2007

INTRODUCTION

This program was developed by the Advanced Traffic Analysis Center (ATAC) to store, process, and analyze volume data from Autoscope traffic cameras. Prior to using this tool, users must have Detector Volume Reports generated by Autoscope software having a .TXT extension. This tool was written in JAVA; therefore, a Java runtime environment must be installed on the computer.

The purpose of this software is to process Autoscope volume data and display the information in an organized manner for traffic operation and transportation planning analyses. A template was designed in Microsoft Excel to be used with Autoscope Solo Pro software (Network Brower). The template which was developed provides a summary sheet with daily averages in 15-minute intervals for the following information:

- Approach turning movement volumes
- Hourly intersection totals
- Intersection daily total

DEVELOPING AUTOSCOPE VOLUME DATA

Having the proper setup with the Autoscope detector files is vital to the functionality of the Volume reader. Without using the proper setup as follows, the reader will provide either inaccurate or no results at all.

Autoscope Setup

A few procedures must be performed within Autoscope regarding the detector and polling configuration. The following sections describe these requirements in more detail. It is assumed that the user has basic knowledge of correctly installing and setting up Autoscope detectors. Substandard detector placement and setup can adversely affect the volume accuracy.

Detector Configuration and Naming

To use the template, the following procedures must be performed during the detector setup:

1. Open the Autoscope Detector Editor for the desired Autoscope MVP.
2. Insert a *speed detector* in the desired lane by selecting the ⬘ icon.
3. Insert a *station detector* with the ⚏ icon.
   a. Right click on the detector and select Add/Remove Members.
   b. Attach the speed detector (not the count detector) to the station detector.
   c. After completing the previous steps the detector setup should look similar to Figure 1 when the detector station is selected.
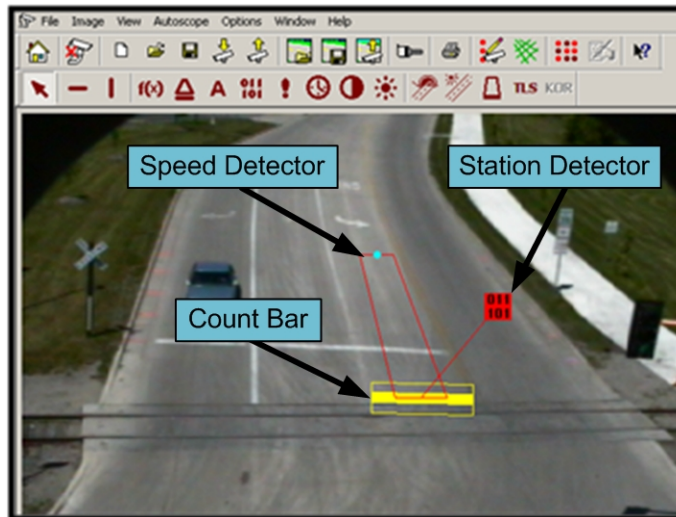
Figure 1. Autscope Detection Setup

    d. Configure the parameters of the station detector by double clicking on the station detector (Figure 2).

    e. Since the template extracts data from the Autoscope output files, care must be used when naming the detection stations. The following naming strategy is recommended.

- The detector title should include the direction, lane number and the turning movement, e.g., NB_1_T. (Note: The maximum number of detectors is eight per approach).

- Turning movement must be last and only use the first letter of the movement, i.e., L, T, and R. This is how the template organizes the Autoscope data. Inaccurate output will be produced if this naming convention is not followed.

- Other naming patterns may be applied as long as the turning movement is the last character and each detector name is unique.
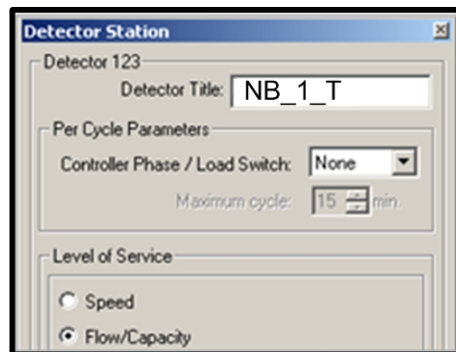

Figure 2. Station Detector Setup

    f. Continue this process for each individual lane for which volume counts will be conducted.

4. Once the speed and station detectors have been setup upload the detector file to the Autoscope MVP.

Data Collection: Polling Setup

To collect the volume data, a polling configuration will have to be setup. The configuration specifies the type of data and time intervals for data collection.

1. With the Autoscope Network Browser open, select the appropriate Autoscope MVPs.
2. Select *Data Collector* under the *Data* pull-down menu.
   - A dialog box will appear allowing you to download any data that is currently on the MVP before continuing setup for the new configuration. You may close this dialog box or download the data. (Keep in mind when setting up a new polling configuration previous polling data will be erased.)
3. Select *New* under the *File* pull-down menu. Use the same Autoscope MVPs if a dialog box asks. The polling dialog box will appear as shown in Figure 3.
   a. In the Add Poll dialog box configure the following:
      i. Select the Autoscope MVPs which are to be used by holding the Ctrl key and clicking on the Autoscope descriptions.
      ii. Select the following parameters:
         1. Detector Type – *Detector Stations*
         2. Fields – *Volume*
         3. Interval Type – *Data Interval*
         4. Data Interval – *15 minutes*
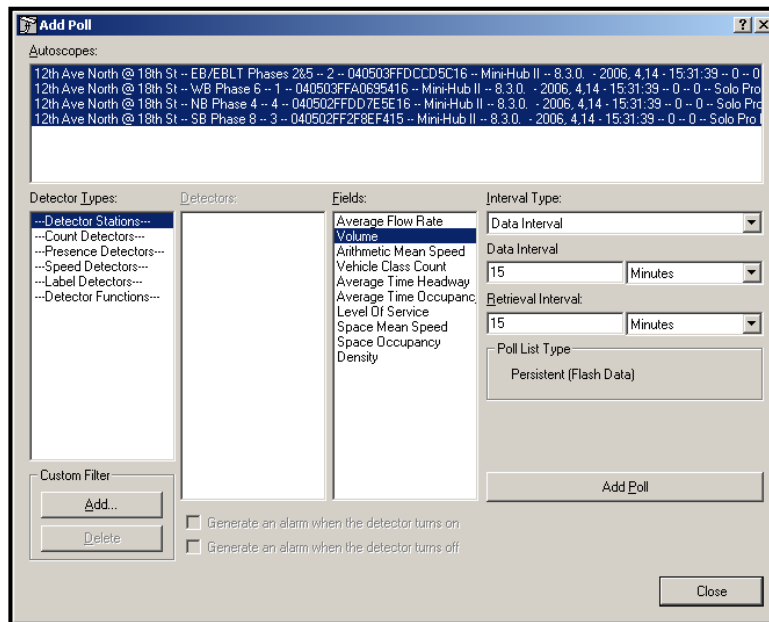   b. Click Add Poll
   c. Close the dialog box

Figure 3. Polling Configuration

4. Check that *Persistent* is selected under the *Polling* pull-down menu. This will enable the MVPs to collect data without being connected to the computer.

5. Select the *View* pull-down menu followed by *Options*.
   a. Under the Display tab select the following: *Detector Title, Date, Time and Volume* (Figure 4).
   b. Select the Data tab (Figure 5).
      i. Enable the automatic save option.
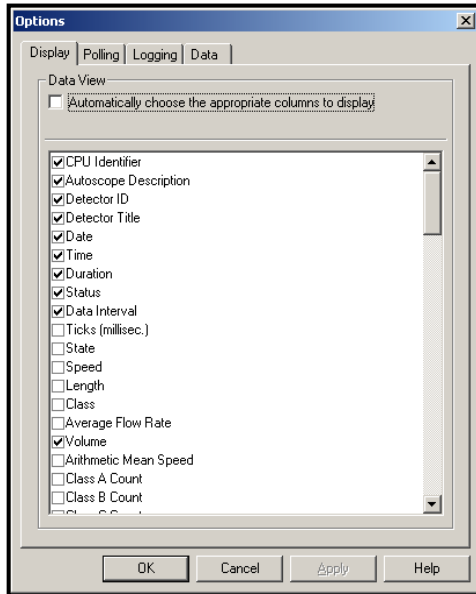   ii. Select the desired base storage folder for storing the data.

Figure 4. Display Options   Figure 5. Data Options
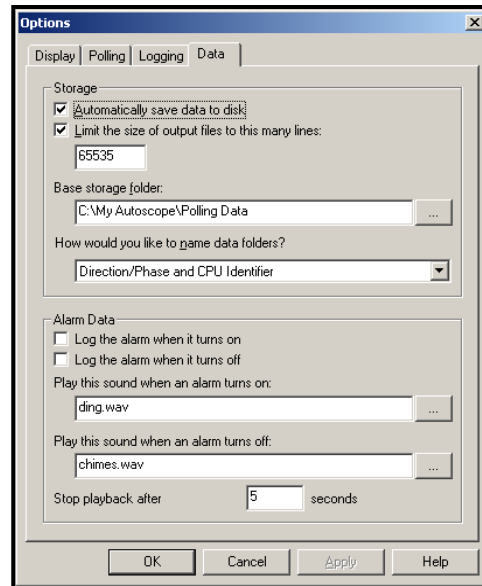
6. Click OK to apply the changes.
7. Select the [icon] icon to start polling data.

   Note: It is allowable to select any of the boxes in the Display Options window between *'Data Interval'* and *'Volume'*. However, for the Autoscope Intersection Volume Reader to correctly read the volume data, the first 9 options along with the *'Volume'* option MUST be checked.

Data Collection: Downloading Data

After polling data for the desired amount of time, the data can be downloaded for reviewing and processing. Be aware of the length of time the MVP's memory will last. Once the memory has been filled, the MVP will overwrite the oldest data in the list. (The time length is dependant on the amount of detectors which are being polled.)

From the Autoscope network browser:
1. Highlight Autoscope MVPs for the intended intersection.
2. Select Data followed by Data collector.
3. Select a Time Stamp or download all the Persistent Poll Data from the dialog box.
   • (Keep in mind when selecting times that interval _end times_ are used in Autoscope.)

- After the download is complete it will be displayed in the Data Collector window. The data is also saved in the selected base storage folder.

PROCESSING/STORING AUTOSCOPE DATA

Once the Autoscope data is downloaded, it can be processed and stored using the Autoscope Intersection Volume Reader. Using this program, Autoscope data is stored into Microsoft Access Databases. Typically each intersection would have its own database, with the ability to periodically update and add new traffic counts. The time it takes for the reader to place the counts in the database is dependent on the size of the .txt file. Multiple Volume Reader applications can operate at the same time; however, the time for completion will be increased in accordance of how many applications are being used.

1. Open the "Autoscope Volume Reader.JAR" file (Figure 6).
   - From the main screen (Figure 6), users can initially select "Import .TXT file" or "Select .MDB file". The "Select .MDB File" can be used if the data has previously been loaded into the intersection database (see Step #12).

Figure 6. Initial Autoscope Intersection Volume Reader screen.

1. Type in the direction or name of the approach in the "Name" field under "Approach1"
2. Select the "Import .TXT File" button.
3. Browse to the appropriate .TXT file containing a Detector Volume Report created by the Autoscope software.
4. Enter a database name (.MDB file), which should correspond to the intersection name and approach direction, and select Save.
   - The program will read the relevant data from the .TXT file and write the relevant data into the .MDB file. This process can take several minutes and is dependent upon how much data is stored in the .TXT file.

   Note: The reading, checking, parsing, and writing the Autoscope data is very computational intensive. Although a status display is not available, the program is processing the data (check the directory where the database file is stored to see the file size grow). Processing time as high as 30 minutes has been experienced when converting a 13 MB Autoscope output file (113 days of data with 6 detector stations equating to 65,496 rows of data).

5. Repeat Steps 2-5 for each approach in the intersection.
    *   See Figure 7 with completed approach configuration
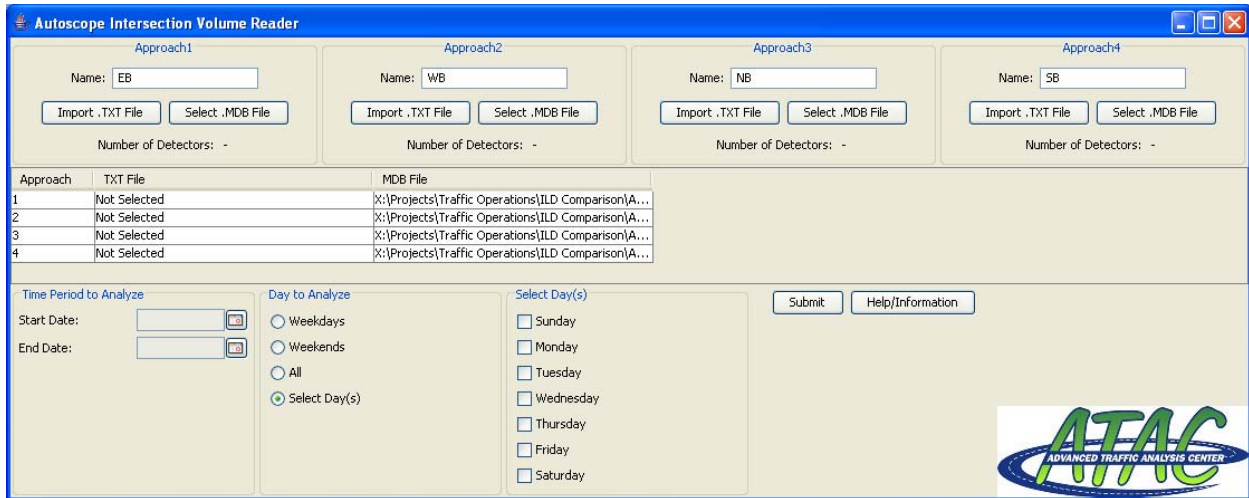
Figure 7. Reader screen after approach configuration.

Analysis Duration/Days

6. Based on the data collection dates contained in the .TXT file, select the appropriate Start Date and End Date by selecting the calendar button (Figure 8).
    *   If the start and end dates are the same, only data for the specific day will be analyzed.
7. Select the appropriate day(s) of the week to analyze.
    *   Users can analyze Weekdays, Weekends, All, or Select Day(s).
    *   If Select Day(s) is active, any combination of the days of the week may be selected for analysis.
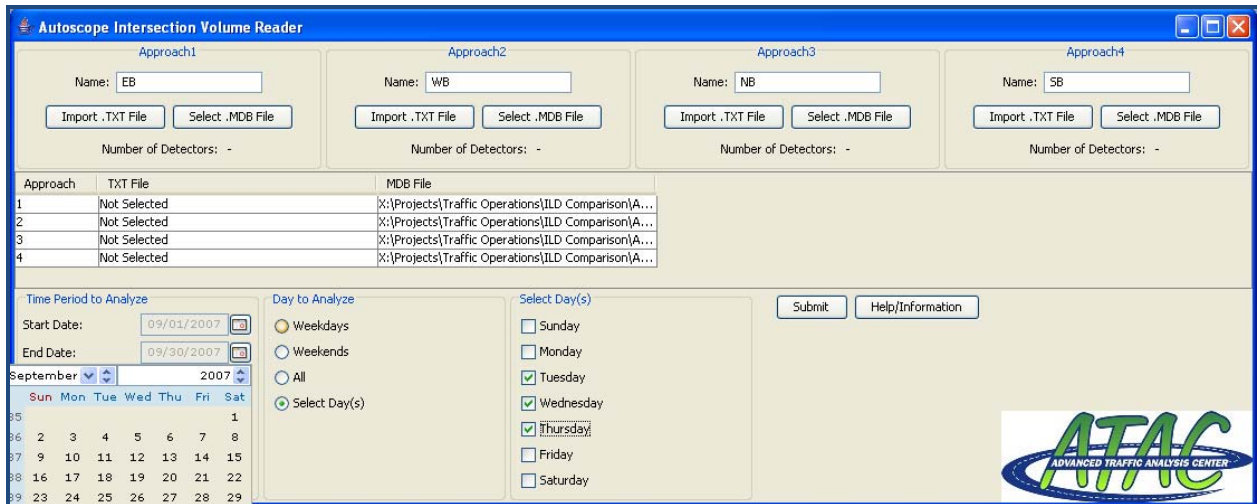
Figure 8. Analysis duration and days of the week.

Processing Volume Data

8. Select the "Submit" button to process the detector volume data.
   - Once this is performed, a "Results" window will be generated showing the traffic volume data (Figure 9).
   - The 1st column shows the start time of the row of data.
   - The preceding column headings show the intersection turning movements based on the user input (labeled the same order as approaches specified earlier, as well as by movement Left, Thru, and Right. Total columns are illustrated for each approach, as well as the total intersection.
   - If an approach or movement is not used, it is simply not displayed.
   - If more than one day of data were selected, the cell values represent the average for that time interval and the selected day(s) of the week.
   - If communication were lost to the controller causing gaps in the recorded data, the averages would be based on the available data.

Start T...	EB				WB				NB				SB				Int Total
	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
0:00 AM	13	20	2	34	1	14	3	18	3	1	1	5	2	2	8	12	69
0:15 AM	11	15	1	27	1	12	1	14	2	1	2	4	0	2	6	8	53
0:30 AM	9	17	1	28	0	11	3	14	0	2	1	3	1	2	4	7	52
0:45 AM	8	8	2	18	1	12	1	13	1	1	0	2	0	0	5	5	38
1:00 AM	5	8	1	15	0	11	1	12	1	1	1	3	1	1	3	5	35
1:15 AM	4	8	1	13	0	7	1	8	1	1	1	2	0	1	2	3	26
1:30 AM	5	7	1	12	0	7	1	8	2	0	0	2	0	1	2	4	26
1:45 AM	3	7	0	10	0	7	2	9	1	0	1	3	0	1	2	3	25
2:00 AM	5	10	1	15	0	5	1	6	0	0	0	0	0	0	3	3	24
2:15 AM	3	7	0	9	0	4	1	6	1	0	0	1	0	1	4	5	21
2:30 AM	3	8	0	12	0	3	1	5	1	0	0	1	0	1	0	1	19
2:45 AM	2	8	0	10	0	2	0	2	1	0	0	1	0	0	1	2	15
3:00 AM	4	4	0	8	0	5	0	5	3	1	0	4	0	2	2	4	21
3:15 AM	2	3	0	6	0	3	2	5	1	1	0	2	0	1	2	2	15
3:30 AM	2	4	0	6	0	4	0	4	1	1	0	2	0	1	1	2	14
3:45 AM	3	2	0	5	0	2	0	2	1	0	0	1	0	0	2	2	10
4:00 AM	3	4	0	7	0	4	0	4	1	0	0	1	0	1	1	2	14
4:15 AM	2	3	0	5	0	7	0	8	1	2	0	3	0	2	2	3	19
4:30 AM	3	6	0	9	0	10	0	10	2	2	0	4	0	1	2	3	26
4:45 AM	7	4	0	11	1	8	1	10	1	3	0	4	0	1	2	3	28
5:00 AM	8	8	0	16	1	9	1	11	4	2	0	6	0	2	2	4	37
5:15 AM	15	8	0	23	1	26	3	30	2	3	0	6	1	3	7	11	70
5:30 AM	19	10	0	29	0	45	4	49	4	4	0	8	0	5	20	26	112
5:45 AM	18	11	0	29	1	29	3	32	2	3	0	6	0	2	13	16	83
6:00 AM	23	18	1	43	0	49	1	51	9	8	1	18	0	5	9	14	126
6:15 AM	34	26	1	61	0	44	4	48	6	6	0	12	0	1	14	15	136
6:30 AM	40	29	1	70	0	58	6	64	2	3	0	5	1	1	17	19	158
6:45 AM	61	41	2	103	1	66	5	72	6	9	1	16	1	5	21	27	218
7:00 AM	51	51	1	103	0	60	4	64	8	4	0	12	0	3	21	25	204
7:15 AM	76	78	3	157	1	69	10	80	6	7	1	13	4	3	29	36	286
7:30 AM	127	168	9	304	1	86	17	105	9	18	5	32	8	10	40	58	499
7:45 AM	133	184	6	322	1	84	20	105	12	23	2	37	5	9	40	53	517
8:00 AM	93	88	4	185	2	50	13	66	8	8	2	17	5	6	34	44	312
8:15 AM	83	92	3	179	1	63	17	82	5	14	1	20	2	5	22	29	310
8:30 AM	97	126	5	228	1	75	17	93	10	12	2	24	5	5	30	40	385
8:45 AM	82	123	5	209	2	66	14	81	9	15	2	26	6	6	33	45	361
9:00 AM	75	146	6	227	2	56	14	72	8	10	2	19	7	6	27	41	359
9:15 AM	69	118	6	193	2	61	18	81	10	12	5	26	5	5	33	44	344
9:30 AM	70	95	6	171	0	55	15	71	6	4	6	16	6	5	32	43	301
9:45 AM	53	76	4	133	1	70	9	79	6	5	2	13	5	6	39	50	275
10:00 AM	37	49	4	90	1	46	12	59	8	3	1	12	5	9	28	42	203

Figure 9. Processed data in Result Window.

9. Print the displayed information using the File menu pull-down. Once "Print" is selected, a dialog box (Figure 10) will be displayed for entering the intersection name. Next, select the desired printer for printing the results.
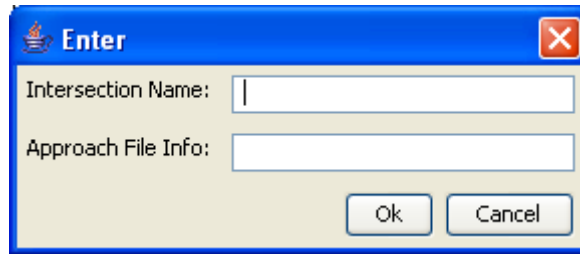
Figure 10. Intersection Name dialog box

10. To graph or perform statistical analyses with the data, select (left mouse click) the 0:00 AM interval. While holding down the left mouse button, drag the mouse cursor to the bottom right interval so all of the data are highlighted. Using the keyboard press and hold the "Ctrl" key while selecting the letter "c". This will copy the data to the computer's memory. Open Excel (or equivalent) and paste the data (press and hold the "Ctrl" key while selecting the letter "v").

- The user can select portions or all of the data to copy and paste into a spreadsheet program.

DATABASE INFORMATION

- If users have previously imported a .TXT file and wish to perform additional analyses with the data, select "Select .MDB file".
- Browse to the appropriate .MDB file that was previously created by the Autoscope Intersection Volume Reader program.

  NOTE: The database (.MDB) file should correlate to the intersection name. Additional volume information from the .TXT files is added to the current .MDB file. Only new volume data (based on the Date/Time field) will be added to the .MDB file and overlapping data will be disregarded.

SYSTEM REQUIREMENTS

- Autoscope Network Browser
- J2SE (Java 2, Standard Edition) Runtime Environment can be downloaded free of charge from http://java.sun.com.

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Updated: October 14, 2008