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AQSP&A Transaction Generator

Users' Guide

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About AQSP&A

AQSP&A is a stand-alone PC tool to build precision and accuracy transactions for uploading P&A data into the Air Quality System (AQS). The intent of this tool is to provide you with a simple way to create the 2 AQS data input transactions used for uploading accuracy data (transaction type RA) and precision data (transaction type RP). The transactions are created in the AQS format with pipe delimiters (vertical bars), or in XML format to comply with the AQS XML Schema version 2.

AQSP&A is a Microsoft Excel workbook. You must have Excel software to use AQSP&A. The minimum version of Excel required is Excel 97.

Note: An Excel file is also called a Workbook. A workbook can include many worksheets. Each worksheet has a tab name. In the AQSP&A workbook, there are 7 worksheets, named Help, TransactionRA, TransactionRP, Valid Methods, Code Values, Audit Protocols, and Coding Manual.

We have created 10 workbooks, one for each USEPA region. Each workbook contains reference tables for active criteria pollutant monitors for every reporting organization in the USEPA region. You need only one of the workbooks; the one appropriate to your USEPA region. More information about this can be found in Chapter 2 of this guide.

To fulfill the intent of providing you with a simple way to create precision and accuracy transactions, we have included the following capabilities:

- Lists of values for data entry are provided whenever practical. The lists of values provided for data entry are taken from the reference worksheets, which have been loaded with AQS data. The lists of values are presented in drop down menus, and are available for most fields, including Method, Units, and Sampling Duration.
- Descriptions of codes and monitors are provided by “right-clicking” the field in question. A date-picker (calendar) is available by right-clicking date fields.
- The P&A data you enter in the worksheet are validated prior to creation of transaction. The use of valid monitors, methods, durations, units, various code values, and acceptable observation values are checked. Feedback is provided to you, enabling error corrections. **Note:** The existence of corresponding raw data values is not checked, however.
- Help is provided for each field on each transaction by including the appropriate information from the AQS Data Coding Manual.
- A report can be generated for each transaction (as a Microsoft Word document). The generated report includes the % difference calculated value for each transaction, as well as a subset of the transaction fields.
- The ability to “toggle” between Tribal and non-tribal modes is included. In Tribal mode, monitors are identified using the Tribal code in place of the State + County code.

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- The use of Excel is considered to provide a user-friendly aspect to this application. Because this application is an Excel file, you can create multiple copies of the file, move it to different directories, and also use the many built-in capabilities provided by the Excel program.

2. Set up

Setting up this application consists of copying the appropriate file to your hard drive. Following this, you may also choose to run the **Set Up Screening Group** utility from the Help worksheet to include only the monitors in one screening group.

Copy the file

Log onto USEPA's Technology Transfer Network (TTN), go to the AQS page, and then go to the "Precision and Accuracy Data" page. The URL is:

<http://www.epa.gov/ttn/airs/airsaqs/padata/padata.htm>

Ten similar files have been "posted" on the TTN... one for each USEPA Region. Choose the file for the Region in which your agency resides. For example, if you are an agency in Region 1, then you would download the file named "AQSP&A RO1 v10.42.zip".

You must decide on a target drive and folder (directory) to download the file into. As a default suggestion, you could create a folder named "AQSP&A" on your hard drive. Then download the file from the TTN into this directory. You must then "unzip" the file. Be sure to unzip it, and then open the "unzipped" file. If you run the file from within WinZip or some other decompression utility program, the spreadsheet macros may not run properly.

Enable Macros

After unzipping the file, double click it to open it with Excel, or start Excel and then open the file from Excel. Because the file contains "macros", you must be sure that the security setting in Excel is set to let you run macros. If you do not get a prompt window to "Enable Macros" when the file is opening, then change the security setting in Excel.

To change the security setting in Excel, first close the AQSP&A file if open. Start Excel, and then from the Excel menu, choose Tools / Macro / Security. There are 3 settings (4 in Excel 2003 and higher), Low, Medium, and High. If security is set to High, you will not be able to run macros. In this case, change the level to "Medium". With this setting, Excel will prompt you every time you open a file; asking whether you want to enable macros, or not. You can still choose to disable macros when opening other Excel files.

Once you have opened the file from Excel and "Enabled Macros", you will see the Help worksheet.

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Set Up Screening Group

- The Help worksheet contains a green button labeled “Set Up Screening Group”. This button runs a procedure that prompts you for your screening group, and then deletes all of the extraneous data for other screening groups from the look up worksheets (Valid Methods and Code Values) in the workbook. This helps ensure that you build transactions only for the monitors belonging to your screening group. You only need to run this utility one time.
- The “Set Up Screening Group” button does not have to be used. If you want all of the lookup data available for all agencies in the EPA Region, then ignore the “Set Up Screening Group” button.

Note about multiple screening groups

If you submit precision and accuracy data to AQS for more than one screening group, then you can create copies of the AQSP&A file with a different name for each screening group that you use. The AQSP&A files must have different names, of course, or else reside in different directories. Then run the Set Up Screening Group utility for each copy, and choose a different screening group for each copy.

Different versions of Excel

With AQSP&A versions 4.3 and later, version incompatibilities of Excel no longer create compile errors when first running the spreadsheet.

- However, if you run into problems, please give NADG a call so that we can address the problem in future releases. Our contact numbers are included in the back of this Users' Guide.

3. Entering Data into AQSP&A

Creating input data transactions consists of entering values into the columns of two worksheets; TrnasactionRA or TransactionRP. For accuracy transactions (type RA), use the TransactionRA worksheet. For precision transactions, (type RP), use the TransactionRP worksheet.

Each transaction worksheet has a column header area that contains the names of the fields in the order in which they appear in the transaction format for that transaction type. To create a transaction, populate a row with appropriate values in each column. If you want to create multiple transactions, populate multiple rows with the required data. Mandatory fields have black column headings; optional fields have blue headings. Right clicking the heading will jump you to the field definition as contained in the AQS Coding manual.

Drop down lists are available for most fields. For fields that have a set of allowable codes or values, drop down lists will appear in each cell containing the allowable choices. The left mouse button is used to select the appropriate value from the list. In all cases, warnings are given if values not on the list are typed in; however you can proceed with those values if so desired. But if you generate a transaction with non-valid values, you will receive an error when attempting to load the transaction into AQS.

In cases where values are dependent upon other values, such as duration, units, and method, the drop down list of values will contain only the appropriate choices for the specific monitor. The most recently used method code will appear as the first value (at the top) of the method code drop down list.

To populate the monitor id fields, you can type the appropriate values into the monitor id columns (State – County – Site ID – Parameter – POC;
or Tribal Code-Site ID-Parameter-POC when you are in Tribal mode)

Another way to populate the monitor id fields is to use the “Look Up Monitor” button on the Excel menu. To add a monitor in this way, first select (left click) a cell in a blank row under one of the monitor id columns. Then click the “Look Up Monitor” button on the Excel menu. A procedure will run that asks you to first select a county code, or Tribal code in Tribal mode. When you select the code, a list of monitors is displayed in the dialogue window. You can then click on a monitor, and the monitor id will be filled in on the worksheet.

To quickly copy recurring monitor data (state-county-site-parameter-POC-precision/accuracy id-duration, units, and method) data from the last populated row to the next blank row, you can right click the first un-populated row following the data you have entered; and follow the prompts. This function can help speed up data input and reduce transcription errors.

4. Using Lookups

In addition to the drop down list of values for selection, look ups are available for validating monitors and for displaying code descriptions. Look ups are performed by using the right mouse button.

After entering data, you can right-click the values for duration, units, or method to see a description of the code value. For example, right clicking on a unit code of "001" will display a message box with "UG/CU METER (25)".

If you enter values for the monitor id fields directly into the spreadsheet, rather than using the look up monitor function, you can check the validity of the monitor id by right-clicking any one of the monitor id fields you just populated. A message window will be displayed informing you whether or not the monitor exists on the reference worksheet (Valid Methods). The validation routines that run during transaction generation will also check for valid monitors as well.

Note about using the mouse

Because the right mouse button is used for look ups on the two transaction worksheets, the default right-click function menu will not appear. To perform those functions (e.g. cut/copy/paste), you will have to use the menu at the top of the worksheet.

Important Note: If you use cut/copy/paste, always use paste special and paste only the values to prevent overwriting the specific cell validation formulas.

For the three date fields, a right click will open a pop-up calendar from which you can graphically choose the date. When picking dates for multiple records, the calendar's selected date will default to the last date picked, so that you do not have to toggle back through months when entering multiple records with older data.

For more information about validation, see the Help Worksheet in AQSP&A.

5. Adding a new monitor or method to lookup worksheets

You may need to build a transaction for a monitor, or use a method, that is not included in the lookup worksheets. To provide for this possibility, a menu button labeled “Add New Monitor / Method” is provided. This procedure will present a form requiring you to enter the monitor, method, duration, and units for a new entry. After filling in the form, the appropriate lookup worksheets are updated with the new monitor or method. From then on the new values will be available in the drop down lists of values and the look ups in the transaction worksheets.

You may choose to use this button rather than downloading a newer version of AQSP&A if the lookup worksheets start to get “out of sync” with AQS.

Check our website for a newer version of AQSP&A, which will always include refreshed lookup tables. If a newer version is not yet available, then you may contact NADG, and we will send you a refreshed file. Additional pollutants can also be included.

6. Assigning and Revising Tribal Codes

Tribal codes are included as part of the monitor id when you are in Tribal mode (similar to AQS). These codes are included in the look up tables for monitors that have had raw, criteria data reported.

Tribal codes can be added or deleted using the Look Up Monitor menu item. When in Tribal mode, a couple of new buttons appear on the Look Up Monitor form that allow you to add or delete a Tribal code for a specific monitor.

7. Generating a transaction file

The Generate Text File of Transactions button is used to create transactions for uploading via CDX to AQS for loading into the database. The button has 2 submenus... one choice creates a text file of transactions in the new vertical bar delimited format, and the other choice will generate an XML file of input transactions formed to comply with the AQS schema document version 2.

Select one or more rows on the transaction worksheet for generating transactions and then choose the transaction type to be generated by pressing the button “Generate Transactions”, and choosing either AQS format or XML format from the submenu.

When selecting rows to create input transactions, you do not have to be precise regarding which columns you have selected. All of the appropriate columns will be used by the transaction generation procedure. The procedure will reselect all columns in rows with highlighted cells.

You will then be prompted for the path and file name for saving the text file, or xml file. To enable your PC to open the file in the application you normally use for text editing, you may want to add the appropriate file extension to the name (e.g. “.txt” or “.xml”).

Edit checks are performed for mandatory fields, values within ranges, max values, and percent differences. For certain fields, the errors are highlighted with red text. Message boxes are used to inform you of the condition generating the error. When an error is encountered, you can choose to continue file generation, or to stop file generation and return to the field in error to fix the value. If you choose to generate the file with errors, you can also choose to receive an error report. After file generation, the rows for which you generated the text file are set to a gray background as a reminder to you. The error report will refer to transaction lines produced in the generated AQS format transaction text file – not the xml format file. You can generate both transaction formats if you want to use the error report when submitting xml format.

Tribal codes will be used when in Tribal mode, or State-County codes if not in Tribal mode.

Separate files must be generated for each transaction type. You can append them together later after they have been created, but AQSP&A will not generate both transaction types in one file.

You may want to develop a file naming convention, and use certain directories, to stay organized and provide some audit trail capabilities.

8. Creating a Report

Some limited reporting capability is available. A "Create Report" menu choice allows you to create a report as a Microsoft Word document for the rows selected on either of the 2 transaction worksheets. The main benefit of running the reports is that you will be able to see the calculated percent differences for each transaction. Errors will be flagged with red text. So although the complete statistical summarization is not performed, one of the key indicators (the percent difference) is provided as a tool. (Note that % difference checks are also included in the validation routines when you generate a text transaction file).

Reports can be generated for one transaction type at a time. Not all fields are included on the reports in order to make the report easier to print (and read).

9. Tips for using Excel

Various tips to help with using this workbook:

- You can hide look up sheets, and unhide them, as desired. The coding manual worksheet must not be hidden if you want to access it via right clicking the field names.
- You should always use Paste – Special when copying and pasting. Choose Paste Values only; this will keep the cells' data validation formulae in place for the selected cells.
- Deleting rows on the transaction spreadsheets is OK. The data validations are still in place.
- You can use Excel filters and sorting if helpful.
- The default “right-click” menu of commands is not active on the worksheets (cut, copy, paste, insert, delete, clear, format, etc.), because the right click event is used for providing look ups. You can still perform these functions by using the Excel menu, or shortcut keys (Cntl A, Cntl C, Cntl X, Cntl V).
- If you do not use the “Set Up Screening Group” button, all of the active criteria monitors in the USEPA Region will remain on the look up worksheets. You can use the application in this way, but you must remember which monitors are appropriate for the screening group you will use to submit data input transactions.

10. How do I get the generated transactions into AQS?

- After you have generated one or several transaction files using AQSP&A, you are ready to load them into AQS.
 1. The first step is to log into USEPA's Central Data Exchange (or CDX for short). The CDX home page can be accessed from the AQS TTN Website at the following address:

<http://www.epa.gov/ttn/airs/airsaqs/aqsweb/>

2. After logging into CDX, you will see a menu with the option:

[AQS: Air Quality System - File Transfer](#)

Clicking on the link will open up a dialog box allowing you to select the files on your hard drive that you want to upload to CDX.

3. After selecting the file(s) and uploading them, you can log on to AQS, and navigate to the batch load screen. You will see them listed as ready for loading; they have been sent by CDX to the AQS application automatically and are ready for loading.
4. A few notes:
 - Use Internet Explorer as your browser.
 - You may have to install ActiveX objects the first time you try to upload files to CDX. You will have to allow pop-ups (this is true for AQS as well)
 - There is a CDX helpline as well as an AQS helpline. Use the AQS helpline for any questions, including CDX questions.

11. Miscellaneous Information

The lookup tables referred to throughout this user guide are the data on the sheets called Valid Methods, Code Values, and Audit Protocols. These sheets contain downloads of data from various queries against the AQS data base that are refreshed as needed. The selection logic used to create the list of monitors includes the following:

- Monitors for the following parameters:
11101,12128,14128,14129,42101,42401,42600,42601,42602,42603,44201,81102,85101
85128,85129,88101,88500,88501,88502,88503

met parms
61101,61102,61103,61104,61105,61106,61107,61109,61110,61111,61112,61120,61202
61301,61302,62101,62102,62103,62104,62105,62106,62108,62201,62604,63101,63301,63302,
63303,63304,63305,64101,65101,65102,65103,66101
- The monitors must be active (sampling end date not null).
- The monitors must be owned by screening groups in the USEPA Region that the AQSP&A file is named for, as follows:

Screening Groups by Region

These are screening group numbers (not agency ids).

Region 1

26,27,28,29,45,55,68,70,78,88,94,157,158,164,172,201,204,207,234

Region 2

79,81,101,102,112,155,286

Region 3

35,36,56,57,69,87,95,97,113,159,160,169,187

Region 4

2,3,33,34,37,38,39,41,49,58,59,66,73,82,89,91,114,129,130,145,147,162,197,249

Region 5

30,40,46,62,63,71,72,84,98,122,202

Region 6

52,67,80,85,92,115,131,132,133,134,135,136,137,138,150,151,174,208,242

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Region 7

24,25,47,64,65,74,76,200,203,243,244,289

Region 8

48,54,75,83,90,93,99,139,175,176,177,178,179,180,181,182,183,186,188

Region 9

4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,31,32,51,53,60,77,100,116,120,124,125,126,127,128,140,141,142,143,144,156,166,167,171,196,198,205,226,227,230,236,237,239,245,250,251,252,253,254,255,256,257,258,288,290

Region 10

50,61,86,96,117,161,163,165,168,173,185

- New Audit Level Ranges

The current accuracy audit level ranges are as follows (since January 2007):

The audit levels selected should represent or bracket 80 percent of ambient concentrations measured by the analyzer being evaluated:

Audit Level	Concentration Range (ppm)			
	O₃	SO₂	NO₂	CO
1	0.02-0.05	0.0003-0.005	0.0002-0.002	0.08-0.10
2	0.06-0.10	0.006-0.01	0.003-0.005	0.50-1.00
3	0.11-0.20	0.02-0.10	0.006-0.10	1.50-4.00
4	0.21-0.30	0.11-0.40	0.11-0.30	5-15
5	0.31-0.90	.41-0.90	0.31-0.60	20-50

- Use of collocated data pairs:

At low concentrations, agreement between the measurements of collocated samplers, expressed as relative percent difference or percent difference, may be relatively poor. For this reason, collocated measurement pairs are selected for use in the precision and bias calculations only when both measurements are equal to

or above the following limits:

- (1) TSP: 20 $\mu\text{g}/\text{m}^3$.
- (2) Pb: 0.15 $\mu\text{g}/\text{m}^3$.
- (3) PM10 (Hi-Vol): 15 $\mu\text{g}/\text{m}^3$.
- (4) PM10 (Lo-Vol): 3 $\mu\text{g}/\text{m}^3$.
- (5) PM10-2.5 and PM2.5: 3 $\mu\text{g}/\text{m}^3$.

- Reporting Requirements:

A button entitled “EPA’s QA Requirements” has been added to the Help worksheet. When clicked, this button will display Table A2 from Appendix A of 40 CFR Part 58. This table defines the quality assessments you should perform, and those that must be reported to AQS. We have included the transaction type you must use to report each assessment, and whether it is required reporting or not. We have also included the parameter codes of the pollutants referenced in each assessment description.

