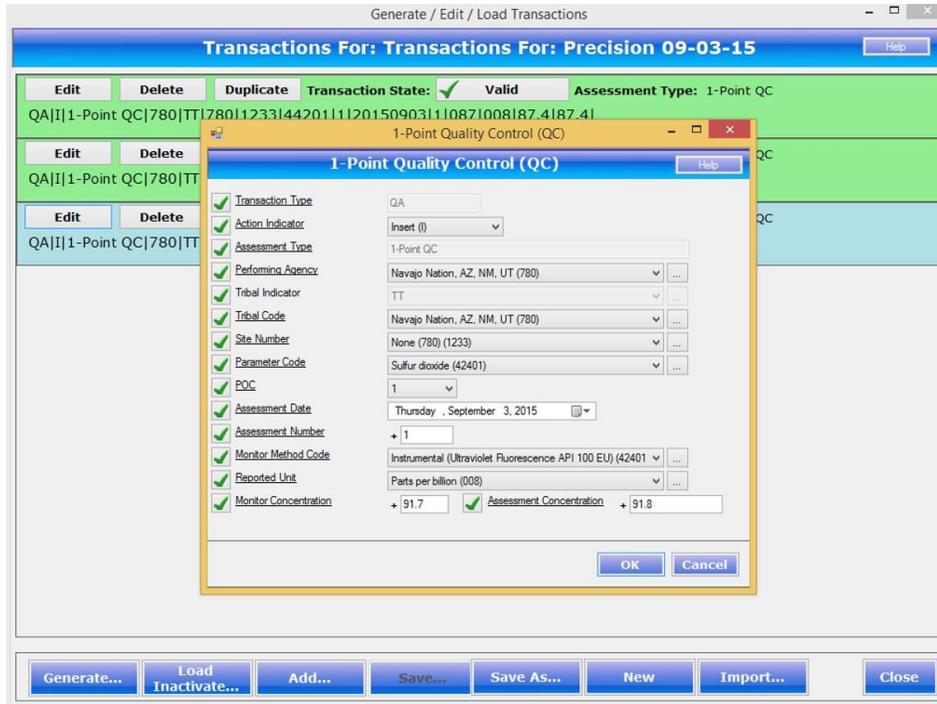**<u>Quality Assurance data formatting (preparation for uplaod to AQS)</u>**
Standard Operating Procedure

Do monthly!

1. **To format QA data we use EPA's AQS QA Transaction Generator**. This generator helps organize QA data and also creates a text file for us to load directly into the AQS database. The Generator is originally found and can be downloaded at https://19january2017snapshot.epa.gov/aqs/aqs-transaction-generator_.html. Follow the download instructions and setup the generator to tribal user. Be sure to click on "UPDATE" when you first open up the generator. This allows the generator to update with the latest monitoring information.
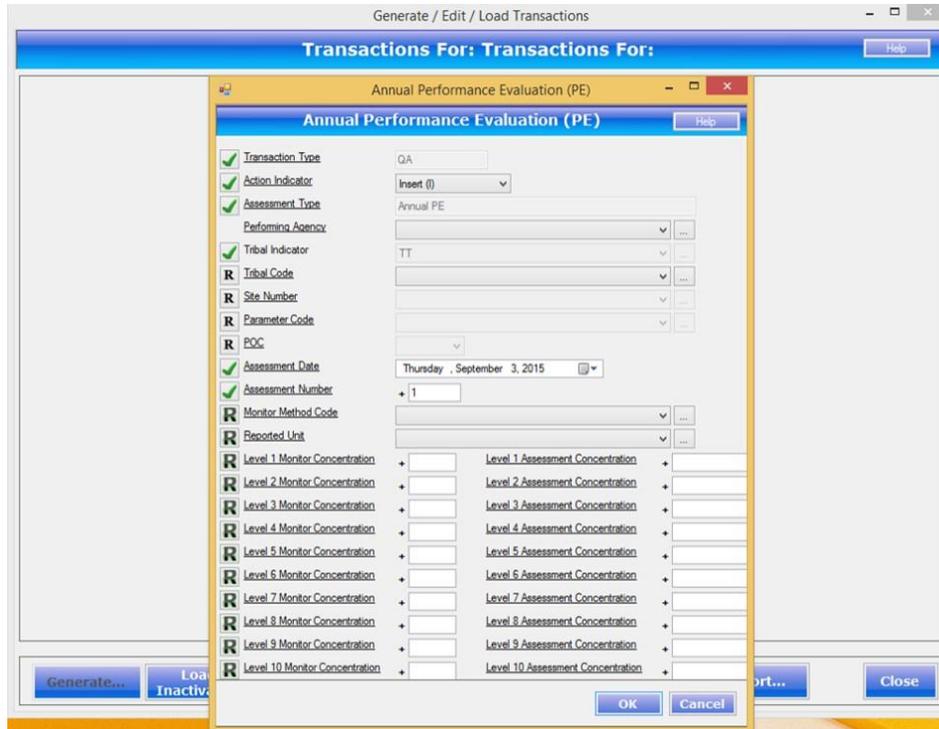
2. **One-Point Quality Control (QC) data** (e.g. 0.70 ppm NO_2, O_3, and SO_2 levels) is reported to AQS each month and should be performed at least once every 2 weeks on each analyzer used to measure SO_2, NO_2, and O_3. The QC check is made by challenging the analyzer(s) with a QC check gas of known concentration (effective concentration for open path analyzers) between 0.01 and 0.10 parts per million (ppm) for SO_2, NO_2, and O_3. The audit concentration of the QC gas and the corresponding measured concentration indicated by the analyzer is used to assess the precision and bias of the monitored data. The QA transaction generator is used to format QC data for upload to AQS by following the steps below:

   a. Open the QA transaction generator and click the **Transactions** button on the top of the page. This takes you to the transaction panel in which you will then click on the **Add** button at the bottom of the page.
   b. The **Select Transaction Type** panel should then open up. Click on the **1-Point Quality Control** button. Starting with the Shiprock site logbook, go to the first precision date necessary and enter values for **Performing Agency** (780), **Tribal Code** (780), **Site Number** (1233), **Parameter Code** (44201), **POC** (1), **Assessment Date** (date of QC check), **Assessment Number** (1), **Monitor Method Code** (007)**, and Reported Unit** (008).
   c. Then enter the **Assessment Concentration** which is the value that the dilution calibrator reads (0.70 ppm for O3) or the value that the analyzer is attempting to obtain (0.70 ppm for NO_2 and SO_2).
   d. Now enter the **Monitor Concentration** which is the value that the analyzer actually gave us.
   e. After all data is entered, click OK, and the transaction panel should show up with your recently created transaction with a green check mark indicating a valid transaction state.
   f. Repeat steps a-e for all gaseous QC data and assessment dates to be entered.
      i. Below is a screen shot of the 1-Point QC panel and input parameters within the QA transaction Generator.

g. All 1-Point QC transactions should now have been created and are within the transaction panel with highlighted valid green check marks. Click on the **Generate** button and a dialog box should appear asking to create a text file. Click **Yes** and **OK** and save the generated pipe-delimited text file to your computer for upload to AQS. Close the QA Transaction Generator.

   i. This is optional, but before exiting the generator while in the transaction panel select **Save As**, then name the newly created transactions to be saved in the QA transaction generator. As a reference refer to these saved transactions as a template for future QC data inputs. Basically access the transaction panel and select **Load Inactive Transaction** and navigate to a saved transaction and select **Edit** which enables you to edit the assessment date and input new concentrations. Then **Save As** and rename the file for AQS upload.

h. The 1-Point QC text file ready for uploaded into AQS should look something like this:

QA|I|1-Point QC|780|TT|780|1233|42602|1|20151231|1|099|008|90|92.0|
QA|I|1-Point QC|780|TT|780|1233|42401|1|20151231|1|600|008|90|91.9|
QA|I|1-Point QC|780|TT|780|1233|44201|1|20151231|1|087|008|90|89.8|

3. **Annual Performance Evaluation (PE) data** is similar to precision, but it includes all values measured, including zero, from the quarterly PE audits. Each quarter there should be one audit – so you will only have one set of audit data to report every 3 months. The PE audit is conducted by Air Resource Specialist, Inc. (ARS). ARS uses a certified Level 3 ozone transfer standard, a gas dilution system with certified mass flow controllers, a high purity zero-air supply, and a certified EPA protocol reference gas containing SO_2, and NO to challenge each analyzer. ARS introduces a reference zero and three test atmospheres to each analyzer through the normal sampling system, including the sample intake manifold, filters, and scrubbers. The selection of the three test atmospheres is intended to bracket 80 percent of the ambient data. The percent difference between the actual concentration of the audit test gas and the concentration indicated by the analyzer is used to determine whether the analyzer is operating within specified accuracy limits. Analyzers whose readings at any point differed from the test atmosphere by more than ±15% are considered out of tolerance. The QA transaction generator is used to format PE data for upload to AQS by following the steps below:

   a. Open the QA Transaction Generator and click on the **Transactions** button on top of the page. This will take you to the transaction panel in which you will then click on the **Add** button at the bottom of the page.
   b. The **Select Transaction Type** panel should then open up. Click on the **Annual Performance Evaluation** button. Enter values for **Performing Agency** (780), **Site Number** (1233), **Parameter Code** (44201), **POC** (1), **Assessment Date** (date of PE audit), **Assessment Number** (1), **Monitor Method Code** (007)**, and Reported Unit** (008).
   c. Using the Audit Report from ARS, enter values for **Assessment Concentration** which is the value that the analyzer is attempting to obtain for each audit level (e.g. Audit Level 5 Assessment Concentration is between 0.070-0.089 ppm for O_3, and between 0.0200-0.0499 ppm for NO_2 and SO_2).
   d. Now enter the **Monitor Concentration** which is the value that the analyzer actually gave us at each Audit Level.
   e. After all Audit Level values have been entered, click OK, and the transaction panel should show up with your recently created transaction with a green check mark indicating a valid transaction state.
   f. Repeat steps a-e for all gaseous PE data and assessment dates to be entered.
      i. Below is a screen shot of the Annual Performance Evaluation panel and input parameters within the QA transaction Generator.

g. Click on the **Generate** button and a dialog box should appear asking to create a text file. Click **Yes** and **OK** and save the generated pipe-delimited text file to your computer for upload to AQS. Close the QA Transaction Generator.
   i. This is optional, but before exiting the generator while in the transaction panel select **Save As**, then name the newly created transactions to be saved in the QA transaction generator. As a reference refer to these saved transactions as a template for future PE data inputs. Basically access the transaction panel and select **Load Inactive Transaction** and navigate to a saved transaction and select **Edit** which enables you to edit the assessment date and input new concentrations. Then **Save As** and rename the file for AQS upload.
h. The PE text file ready for NO_2 uploaded into AQS should look something like this:

QA|I|AnnualPE|780|TT|780|1233|42602|1|20150625|1|099|008|||||||||37.5|42.8|74.1|80|149|154.2|||||||