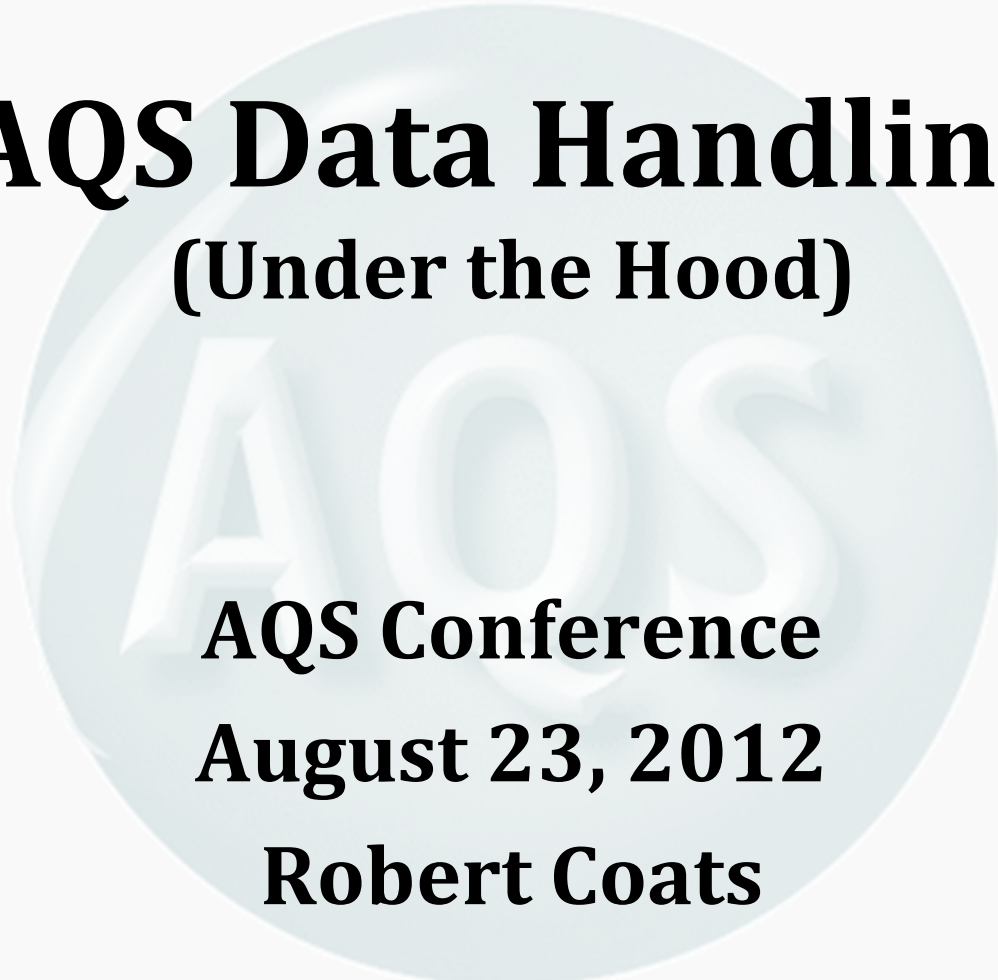




AQS Data Handling

(Under the Hood)

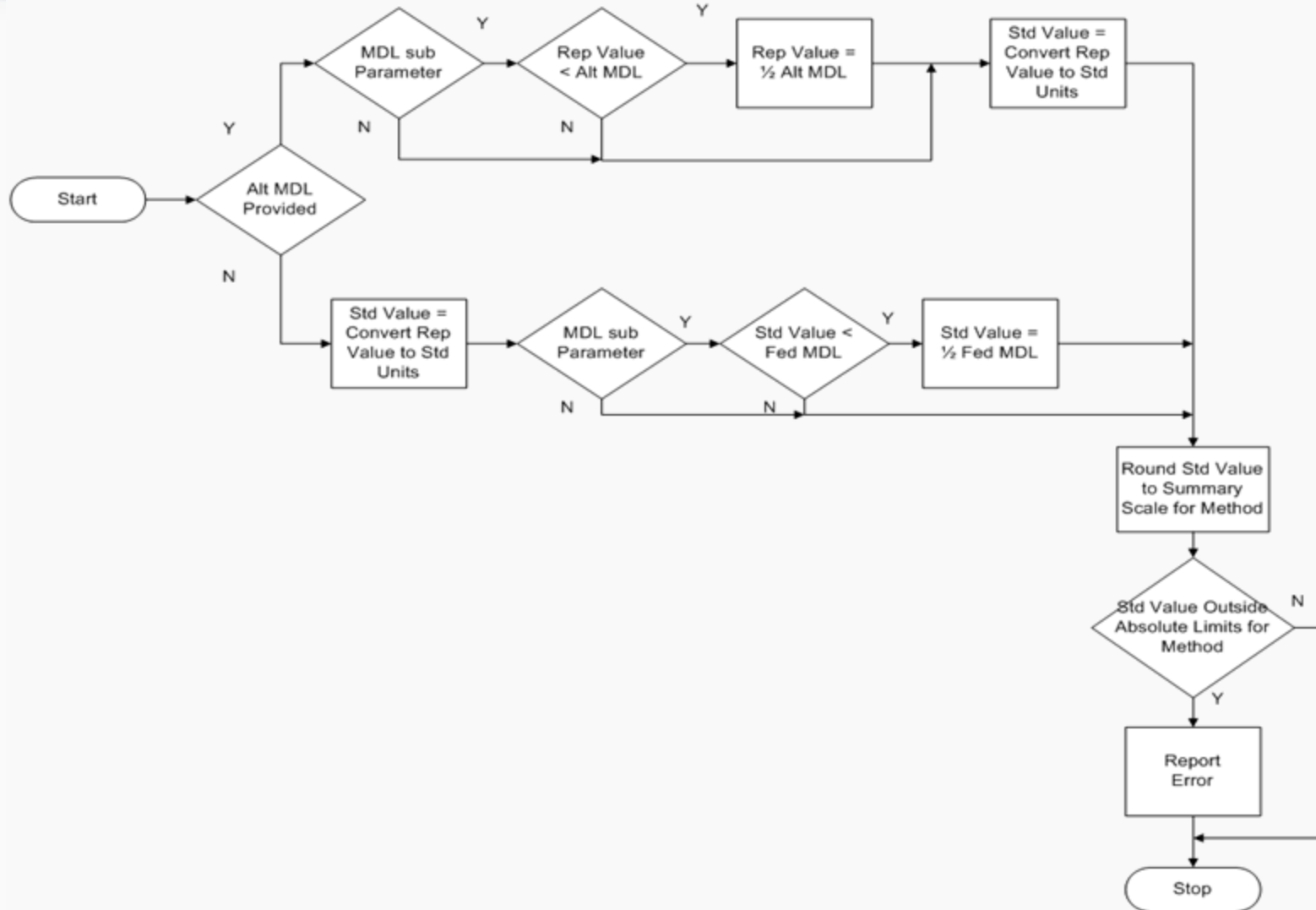


AQS Conference
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Robert Coats



- Sample measurement acceptance/rejection rules
- $\frac{1}{2}$ MDL Substitution
- Rounding and truncating
- Allowed and disallowed qualifiers
- Summary statistics – pollutant standards and exceptional data types
- Collection frequency
- Data completeness

Standard Value Calculation Process



Acceptance / Rejection Rules for Raw Data



- Site-Monitor configuration:
 - Monitor exists and is active, monitor ownership, and etc.
- Valid protocol: Combination of (parameter, method, unit, duration, collection frequency)
- No duplicates
- Value between absolute min and absolute max for method

One-Half MDL Substitution



- The default behavior for AQS is to perform $\frac{1}{2}$ MDL substitution
- As of this writing, there are 85 parameters where $\frac{1}{2}$ MDL substitution does **not** occur. They are listed at <http://www.epa.gov/ttn/airs/airsaqs/manuals/codedescs.htm> under the name parameters_nomdlsb.xls.
- If an alternate MDL is provided on the RD transaction, it is used instead of the Federal MDL for the Methodology
- The AQS Team has been directed to reverse the present configuration, so that no $\frac{1}{2}$ MDL substitution is the default.

Rounding and Truncating



- AQS allows values to be reported with up to 5 digits after the decimal as Raw Data.
- AQS calculates a value in Standard Units for the parameter
 - The number of digits after the decimal is specified by the summary scale for the method
 - Rounding or truncating is specified for the parameter.
- Depending on the parameter, AQS may compute a multi-hour rolling or block average (rounded or truncated).
- AQS computes daily, quarterly, and annual statistics from the “Standard Value” or above average (not rounded or truncated).
- The statistic (e.g., annual mean) used for comparison to the NAAQS standard is rounded or truncated as per 40 CFR Part 50.

Allowed and Disallowed Qualifiers



- AQS maintains a table of qualifiers that are allowed for each parameter (posted at <http://www.epa.gov/ttn/airs/airsaqs/manuals/codedescs.htm>)
- For Regulatory parameters, the OAQPS monitoring staff have explicitly specified qualifiers that should be disallowed by parameter
- For non-regulatory parameters, qualifiers allowed on request subject to approval by the OAQPS monitoring staff. (i.e., many are presently configured to be allowed, but not all. New ones can be requested (email AQSTeam@epa.gov)

Summaries and Pollutant Standards (1)



- Each criteria pollutant has a set of NAAQS standards:
 - Lead: 3-Month Rolling Average, Quarterly Standard (old)
 - CO: 8-Hour Standard, and 1-Hour Standard
 - SO₂: 1-Hour Standard, Annual Standard, 24-Hour Standard, Secondary 3-Hour Standard,
 - PM 10: 24-Hour Standard
 - PM 2.5: 24-hour Standard, Annual Standard
 - NO₂: 1-Hour Standard, Annual Standard
 - Ozone: 8-Hour 2008, 8-Hour 1997, 1-Hour Standard
- For each standard, separate summary records are computed at each time period (daily, annual, etc.)
 - Caveat: Only summaries that “make sense” are computed. See: http://www.epa.gov/ttn/airs/airsaqs/manuals/pollutant_summaries.xls

Summary Statistics – Exceptional Data Types



- For each summary, a record is created for each Exceptional Data type:
 - 0: No Flagged Data
 - 1: All Flagged values excluded from statistics
 - 2: Nothing excluded from statistics (i.e. ignore flags)
 - 5: Exclude regionally concurred exceptional event flags
- The net effect of the combination of Pollutant Standards and Exceptional Data types, is that there may be **many** records for a given summary period (e.g., Annual Summary)

Collection Frequency



- Collection frequency shows up in two places in AQS – At the Monitor level as “Required Collection Frequency”, and for Raw Data as the “Collection Frequency Code” on the RD transaction.
- The “Collection Frequency Code” from the RD transaction is deprecated; it is not used for any processing in AQS.
- All completeness calculations, for other than hourly data, are controlled by the Monitor Required Collection Frequency.

Data Completeness



- Annual data completeness for criteria pollutants is determined as specified by 40 CFR Part 50.
- For non-criteria pollutants with daily duration (or a longer time period), it is determined using the Monitor Required Collection Frequency (RCF).
- In the past, there have been issues with the AQS Data Completeness Report, AMP430, for non-criteria pollutants. A change is in progress to this report, so that its results will exactly agree with the annual summaries for those pollutants.



Questions?