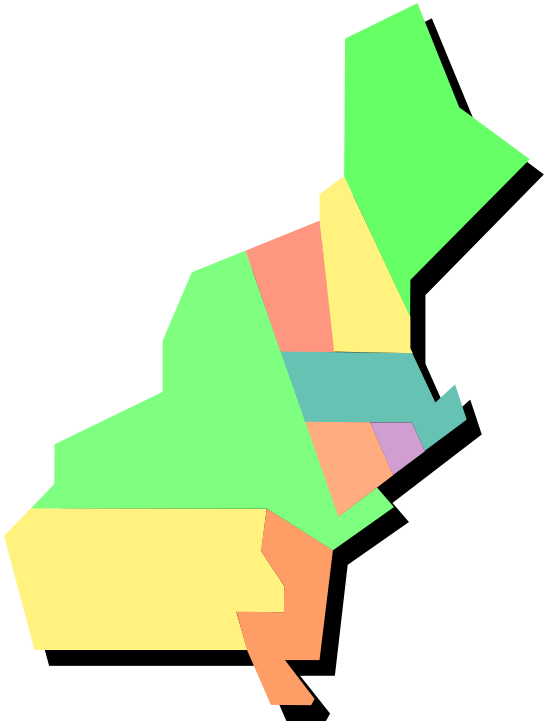
One point QC Check

NESCAUM MAC Meeting

October, 2010



Title 40: Protection of Environment
PART 58—AMBIENT AIR QUALITY SURVEILLANCE

Appendix A to Part 58—Quality Assurance Requirements for SLAMS, SPMs and PSD Air Monitoring

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3. Measurement Quality Check Requirements

From the CFR (cont'd)

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- This section provides the requirements for primary quality assurance organizations (PQAOs) to perform the measurement quality checks that can be used to assess data quality….

From the CFR (cont'd)

- 3.2.1 **One-Point Quality Control Check** for SO_2, NO_2, O_3, and CO.

  A one-point quality control (QC) check must be performed at least once every 2 weeks on each automated analyzer used to measure SO_2, NO_2, O_3 and CO. The frequency of QC checks may be reduced based upon review, assessment and approval of the EPA Regional Administrator. However, with the advent of automated calibration systems more frequent checking is encouraged. See Reference 10 of this appendix for guidance on the review procedure. The QC check is made by challenging the analyzer 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, and between 1 and 10 ppm for CO analyzers. The ranges allow for appropriate check gas selection for SLAMS sites that may be sampling for different objectives, i.e., trace gas monitoring vs. comparison to National Ambient Air Quality Standards (NAAQS). The QC check gas concentration selected should be related to the routine concentrations normally measured at sites within the monitoring network in order to appropriately reflect the precision and bias at these routine concentration ranges. To check the precision and bias of SLAMS analyzers operating at ranges either above or below the levels identified, use check gases of appropriate concentrations as approved by the appropriate EPA Regional Administrator or their designee. The standards from which check concentrations are obtained must meet the specifications of section 2.6 of this appendix.

From the CFR (zoomed in..)

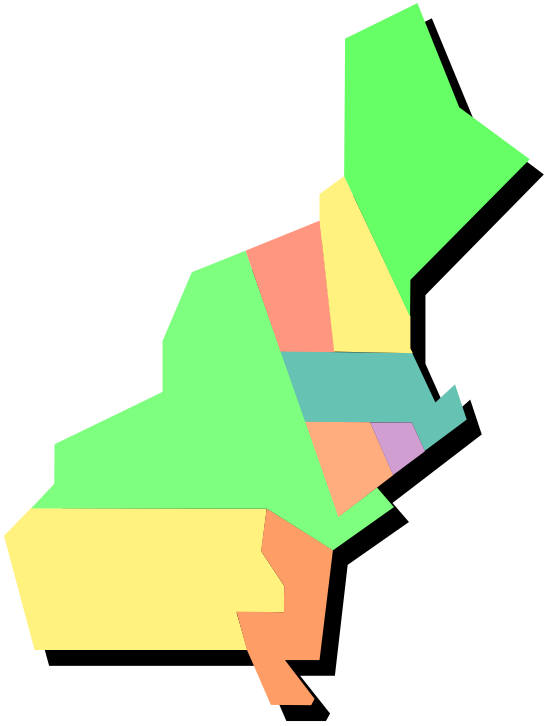
- 3.2.1 **One-Point Quality Control Check** for… SO_2, NO_2, O_3, and CO.

  A one-point quality control (QC) check must be performed at least once every 2 weeks on each automated analyzer used to measure… SO_2, NO_2, O_3, and CO … The QC check gas concentration selected should be related to the **routine concentrations normally measured at sites** within the monitoring network in order to appropriately **reflect the precision and bias at these routine concentration ranges**….

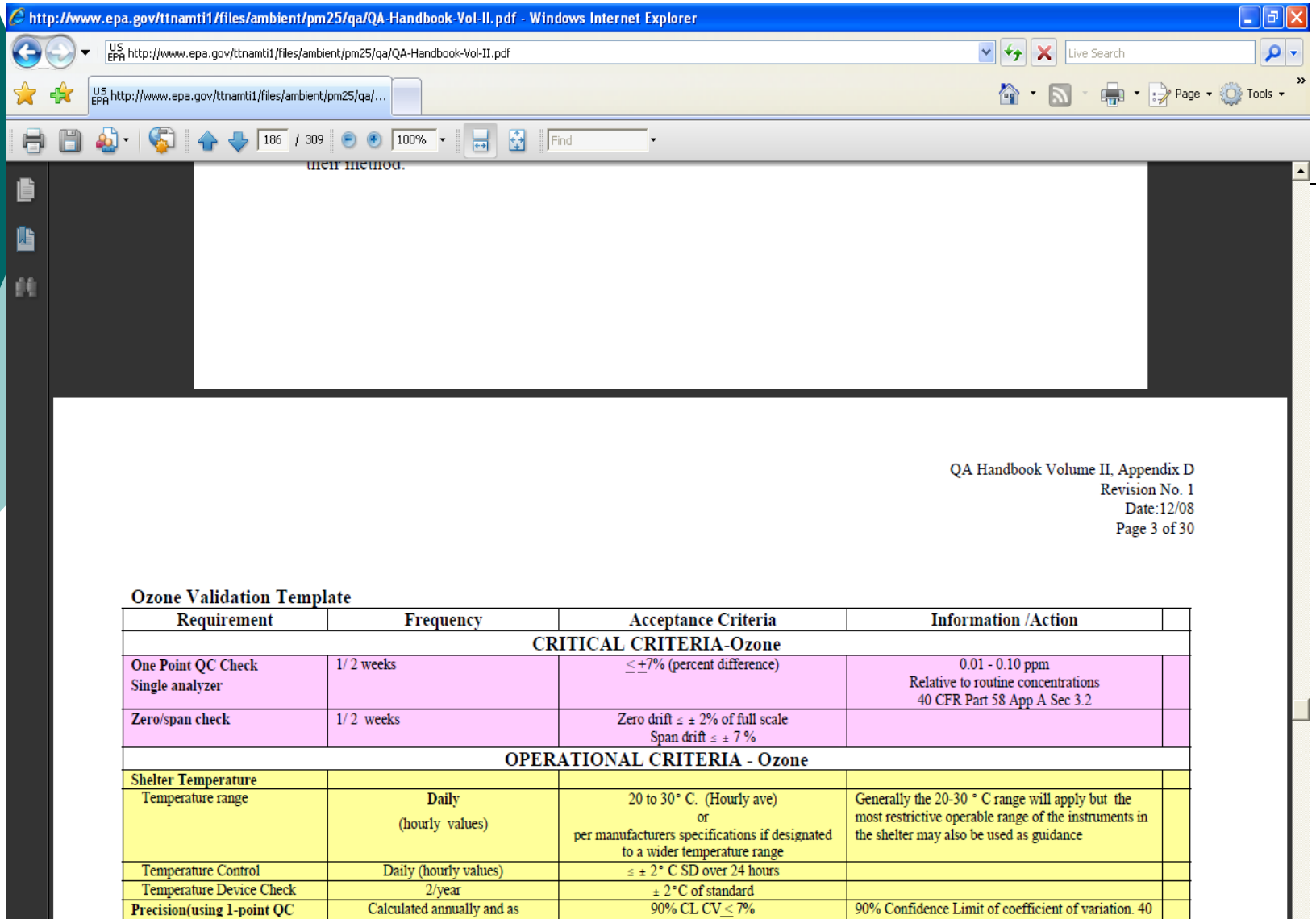
One point QC check for gaseous pollutants…

- Question 1:

"What values are you using for your one point QC check?"



1- Point QC Checks for Ozone- from “QA Handbook”



Ozone Validation Template

Requirement	Frequency	Acceptance Criteria	Information /Action	
CRITICAL CRITERIA-Ozone				
One Point QC Check Single analyzer	1/ 2 weeks	≤ ±7% (percent difference)	0.01 - 0.10 ppm Relative to routine concentrations 40 CFR Part 58 App A Sec 3.2	
Zero/span check	1/ 2 weeks	Zero drift ≤ ± 2% of full scale Span drift ≤ ± 7 %		
OPERATIONAL CRITERIA - Ozone				
Shelter Temperature				
Temperature range	**Daily** (hourly values)	20 to 30° C. (Hourly ave) or per manufacturers specifications if designated to a wider temperature range	Generally the 20-30 ° C range will apply but the most restrictive operable range of the instruments in the shelter may also be used as guidance	
Temperature Control	Daily (hourly values)	≤ ± 2° C SD over 24 hours		
Temperature Device Check	2/year	± 2°C of standard		
Precision(using 1-point QC	Calculated annually and as	90% CL CV ≤ 7%	90% Confidence Limit of coefficient of variation. 40	

Summary Statistics on Min and 99.9% Ambient Conc. by Reporting Organization (2004-2006 data)

	O3 (ppm)	SO2 (ppm)	NO2 (ppm)	CO (ppm)
Largest Spread	0.005 - 0.128	0.002 - 0.284	0.001- 0.086	0.05 - 15.6
Smallest Spread	0.006 - 0.043	0.002 - 0.004	0.005- 0.021	0.001 - 0.90
Average Spread	0.005 - 0.086	0.002 - 0.071	0.002- 0.054	0.05 - 3.10

Homer: “I want to share something with you: The three little sentences that will get you through life.

- Number 1: Cover for me.
- Number 2: Oh, good idea, Boss!
- Number 3: It was like that when I got here.”

Question 2:

"Why are you using the one point QC check value(s) you are?"

Question 3:

"What values do you "routinely" see?"

Question 4:

"What values might be appropriate for a one- point QC check?"

Questions?

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