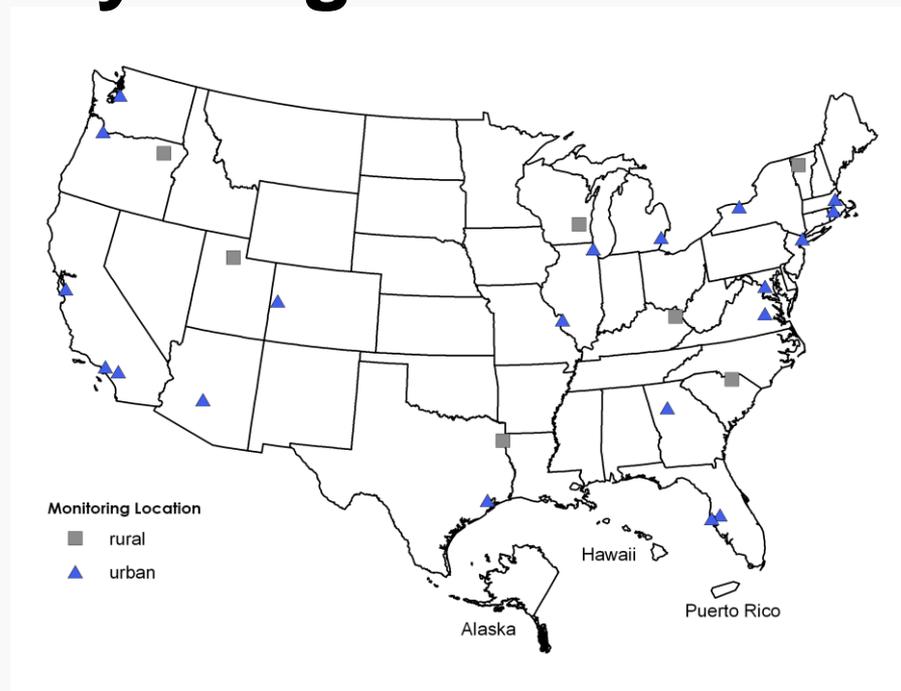




NATTS QA

(Everyone's Favorite!)

Everything NATTS Session



Greg Noah, EPA OAQPS, RTP, NC

National Ambient Air Monitoring Conference August 2014

Introductions...



Prior to 2013, Dennis Mikel was your NATTS QA lead for the national network...

However, he left NATTS for a while to go back to school at NC State

Dennis Mikel last Semester...

Introductions...



Enter the new guy... ME!
Greg Noah, your new National NATTS QA Lead





NATTS QA – *What are we going to talk about?*

- TSAs – Scheduling and follow-up
- NATTS PTs – Different ways to assess the results
- DQO summary
- Quality Assurance Annual Report





Technical Systems Audits (TSAs)

Dave and I touched base with all of you through conference calls over the past few months, TSAs are a priority

Our goals are:

- To complete a technically representative TSA at each lab and site in a 3-year period
- To encourage participation by the Regions during the audits
- To follow up on the audits and make changes where necessary





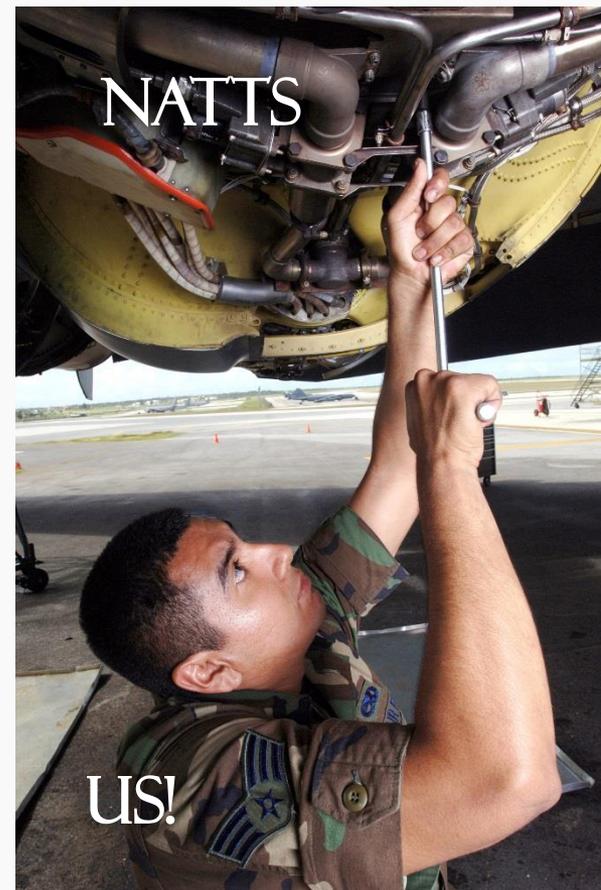
TSA Follow-up

We are putting a greater emphasis on the follow-up aspect of the audits. We're good at auditing, but we've been lacking on follow-up.

It makes no sense to spend money to keep finding the same issues.

So what do we expect?

Corrective action!





TSA Frequency and Scheduling

Battelle is our NATTS support contractor and will be coordinating the audits

- Coordination with the Region and then agency is the desired method for scheduling the audit.
- Regional participation in the TSAs is key to making NATTS better
- For each exit briefing, we will set up a conference call so we at OAQPS can be informed and aware of findings. We want to be engaged as well.





TSA Reporting and Follow-Up

Follow up and corrective action is key to improving the NATTS program

To help focus attention on priority items, OAQPS, Battelle, and the Regions are prioritizing the audit results into 3 groups

- **Findings-** those findings that the audit team felt were a major concern to the data collection activity and data quality
- **Observations-** findings that are of less immediate concern but should be thought about when revising or improving the agency's quality system
- **Recommendations-** best practices that could improve the quality system but would not appear to affect data quality



TSA Reporting and Follow-Up

We are realistic, it takes time to address the audit as whole. We want to focus attention on priority items that affect data quality.

Here's what we expect:

First, address **Findings**, the items that are of immediate concern to data quality

Next, address the **Observations**, the items that will improve the data quality

And then, consider the **Recommendations**, the things that we as a group consider "*Best Practices*"





TSA Reporting and Follow-Up

It makes no sense to spend money to conduct audits, identify issues, and not have any corrective action – So how do we do this?

- EPA Regional staff will lead in ensuring corrective action is taken
- OAQPS will monitor progress and assist when necessary
- Clear language may be put into the NATTS grants requiring corrective action and adherence to the TAD
- Follow-up audits may be needed





TSA Reporting and Follow-Up

Bottom Line – We want a high quality data set that is consistent in methodology, sample collection, and reporting that we can use to make decisions and draw conclusions.



NATTS Performance Testing (PTs)

The NATTS PT program is one of our most valuable tools for assessing the performance of our NATTS laboratories

We've heard your concerns and we've had some ideas, so we are changing a few things:

- The PT results will include a new table
- This table will summarize the results for all labs by **spike value, nominal value, and laboratory mean**
- Results will be color coded
- An MDL comparison will be included in the report
- We have been and will continue to drop the PT spike levels to mimic concentrations seen in ambient air
- We will be having conference calls to follow each PT so we can discuss as a group

PAH PT

Compared to Nominal Spike Level

								average	stdev	%RSD
Acenaphthene	75.6%	72.9%	89.1%	88.5%	83.4%	75.0%	86.6%	81.6%	6.9%	8%
Anthracene	97.5%	85.4%	94.5%	110.4%	89.2%	67.2%	95.6%	91.4%	13.2%	14%
Benzo(a)pyrene	OK	OK	OK	RL > 0.2	OK	OK	OK	NA	NA	NA
Fluoranthene	83.0%	76.2%	93.4%	86.7%	90.4%	84.4%	94.0%	86.9%	6.3%	7%
Fluorene	73.2%	71.0%	98.1%	146.9%	97.2%	OK	91.4%	96.3%	27.4%	28%
Naphthalene	81.7%	83.1%	111.1%	100.1%	109.9%	RL > T*125%	105.0%	98.5%	13.1%	13%
Phenanthrene	93.4%	83.4%	93.0%	98.8%	121.2%	74.3%	88.3%	93.2%	14.7%	16%
Pyrene	75.4%	81.2%	100.0%	113.3%	88.6%	F NEG	93.8%	92.1%	13.6%	15%

Compared to Referee Lab Result

								average	stdev	%RSD
compound										
Acenaphthene	78.5%	75.7%	92.5%	92.0%	86.6%	77.9%	90.0%	84.8%	7.2%	8%
Anthracene	103.1%	90.3%	99.9%	116.8%	94.4%	71.1%	101.1%	96.7%	14.0%	14%
Benzo(a)pyrene	OK	OK	OK	RL > 0.2	OK	OK	OK	NA	NA	NA
Fluoranthene	84.5%	77.5%	95.1%	88.3%	92.0%	86.0%	95.7%	88.4%	6.5%	7%
Fluorene	81.1%	78.7%	108.7%	162.8%	107.7%	OK	101.3%	106.7%	30.4%	28%
Naphthalene	55.0%	55.9%	74.7%	67.4%	74.0%	RL > T*125%	70.7%	66.3%	8.8%	13%
Phenanthrene	94.3%	84.2%	93.9%	99.7%	122.4%	75.0%	89.2%	94.1%	14.8%	16%
Pyrene	78.5%	84.6%	104.2%	118.1%	92.3%	MARGINAL	97.7%	95.9%	14.2%	15%

Compared to NATTS Lab Mean

								average	stdev	%RSD
compound										
Acenaphthene	92.7%	89.3%	109.2%	108.5%	102.2%	92.0%	106.2%	100.0%	8.5%	8%
Anthracene	106.7%	93.4%	103.4%	120.8%	97.6%	73.5%	104.6%	100.0%	14.5%	14%
Benzo(a)pyrene	OK	OK	OK	RL > 0.2	OK	OK	OK	NA	NA	NA
Fluoranthene	95.5%	87.7%	107.5%	99.9%	104.0%	97.2%	108.2%	100.0%	7.3%	7%
Fluorene	84.9%	82.4%	113.8%	170.5%	112.8%	OK	106.1%	111.7%	31.8%	28%
Naphthalene	82.9%	84.4%	112.8%	101.6%	111.6%	RL > T*125%	106.6%	100.0%	13.3%	13%
Phenanthrene	100.2%	89.5%	99.8%	106.0%	130.0%	79.7%	94.8%	100.0%	15.7%	16%
Pyrene	81.9%	88.2%	108.7%	123.1%	96.2%	MARGINAL	101.9%	100.0%	14.8%	15%

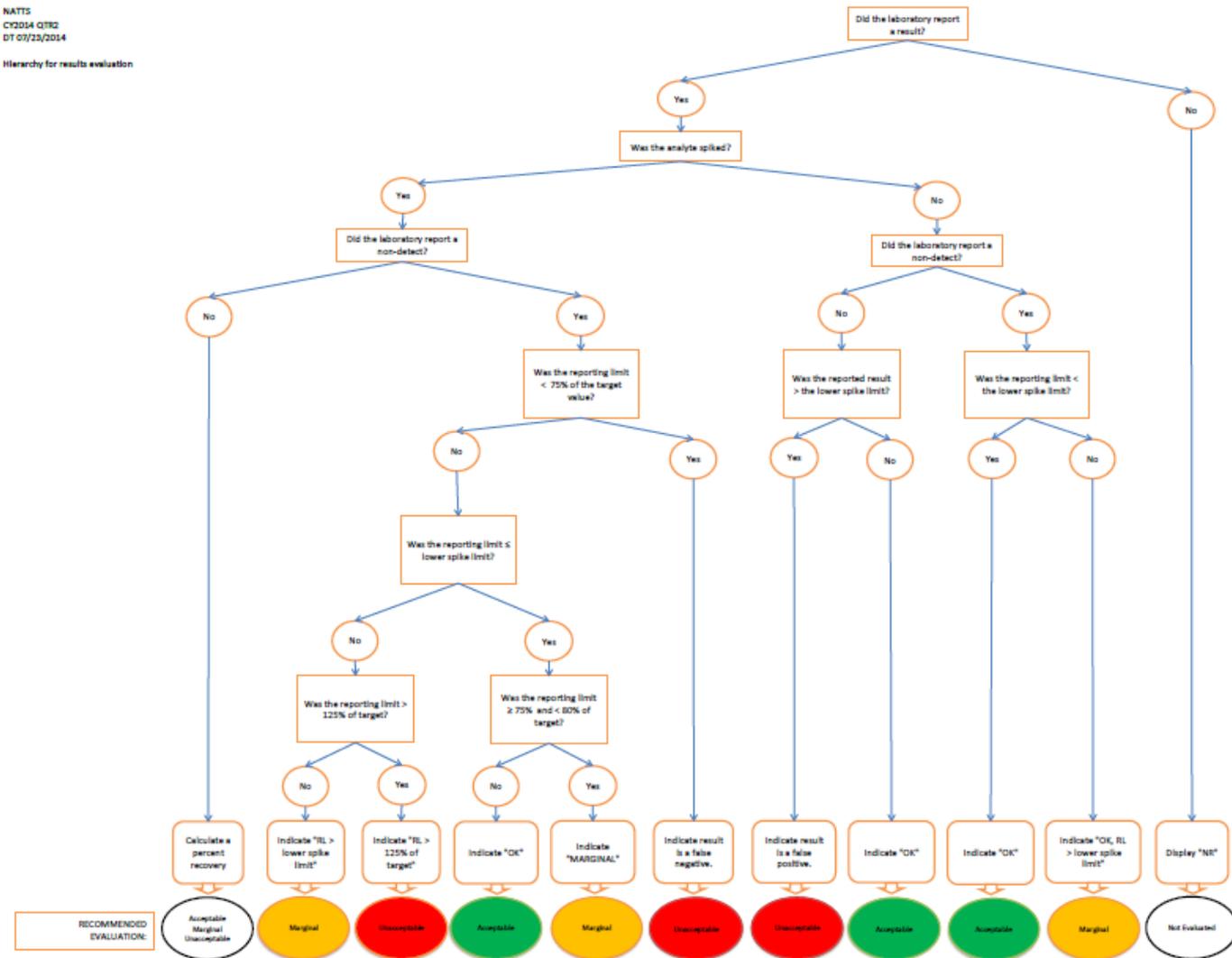
NATTS PT Program



NATTS
CY2014 QTR2
DT 07/23/2014
Hierarchy for results evaluation

Our NATTS PT Evaluation Hierarchy, the Holy Grail of NATTS PTs

This is merely an intro, we'll discuss this in detail on an upcoming call





Youden Round Robin Test

This procedure is used to evaluate the performance of laboratories by ranking them according to the magnitude of the results they report in a series of test samples. The test is used to identify laboratories that consistently report low or high results using a 95% confidence interval. The Youden procedure is discussed in detail in the June 2014 QA Eye Newsletter.

The Youden test is a tool for assessing NATTS lab trends over time.

What it does:

- Test to determine long term trends
- Does not take our acceptance criteria for the pollutants into account
- Give a sense of comparability

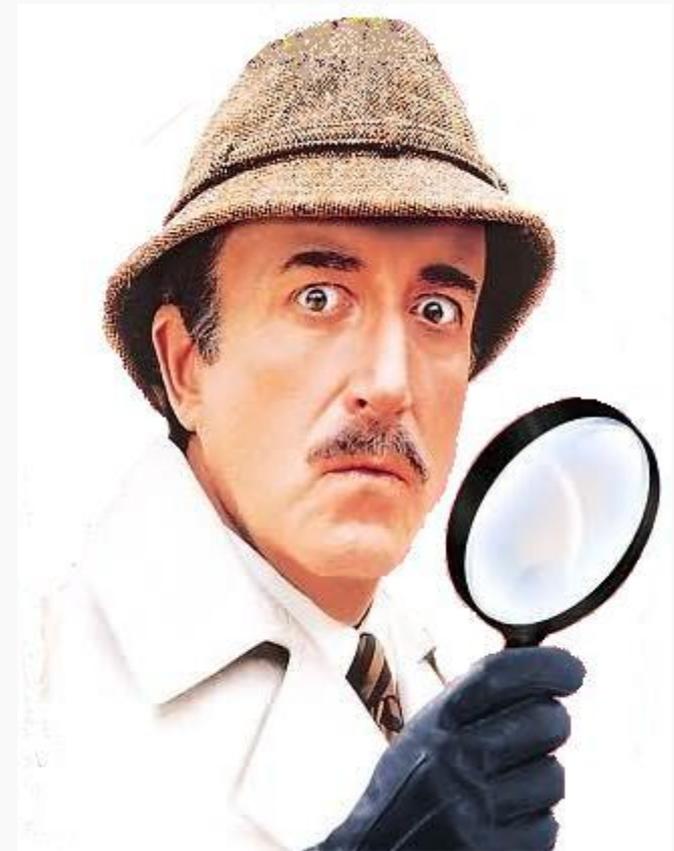
What it is does not:

- Provide a failing grade according to our acceptance criteria



Why the New Approach?

- Clearly shows how labs are performing compared to each other
- Problem compounds are seen easier
- Color coding helps clearly identify concerns
- Lab mean allows us to see differences between our labs
- Shows if we are meeting MDLs
- Lower PT levels mimic real world levels
- Nominal value assesses our spike quality
- Referee lab allows us to compare against a “true value”
- Comparison of referee lab to lab mean may show quality issues with our referee labs



NATTS Data Quality Objectives (DQOs)



The NATTS DQO was reviewed in 2013. It has been changed to read...

*“To be able to detect a 15 percent difference (trend) between the annual mean concentrations of successive 3-year periods within acceptable levels of decision error, **while demonstrating the confidence in the sampling measurements.**”*

And we accomplish this if the NATTS network:

- *Measures concentrations of specified pollutants a minimum of once in every six days*
- *Contains observations that are at least 85 percent complete on a quarterly basis; and*
- *Controls measurement error with a coefficient of variation (CV) of no more than 15 percent*



Data Quality Objectives (DQO)

*“**confidence in the sampling measurements**” is associated with the Sensitivity and Bias MQOs and were not originally considered in the original DQO assessment.*

The original MQOs did not change; however, there were a few recommended updates to the NATTS Workplan Template

Pollutant	Completeness MQO (%)	Sensitivity MQO	Bias MQO (% Difference)	Precision (%CV)
Benzo(a)pyrene	85% 1-in-6 day sampling Each Quarter	$\leq 0.57 \text{ ng/m}^3$	$\pm 25\%$	$\leq 15\%$
1,3-Butadiene		$\leq 0.033 \text{ }\mu\text{g/m}^3$	$\pm 25\%$	
Formaldehyde		$\leq 0.08 \text{ }\mu\text{g/m}^3$	$\pm 20\%$	
Nickel (PM ₁₀)		$\leq 2.1 \text{ ng/m}^3$	$\pm 20\%$	

NATTS PT Quality Assurance Annual Report (QAAR)



NATTS QAAR

The NATTS QAAR for 2011 – 2012 has been posted to AMTIC

<http://www.epa.gov/ttnamti1/airtoxqa.html>

Recommendations from QAAR

- Require the reporting of MDLs to AQS
- Include fields in AQS to specify the meaning of various POCs, and require the population of these fields
- Include fields in AQS to capture the results of ongoing flow audits performed by the monitoring agencies, and require the population of these fields
- Standardize the units of concentration used in AQS, and require that results be uploaded in these units only