

# Final Minutes of the Network Operations Subcommittee Meeting

October 17, 1995,  
Toronto, Ontario

The meeting was called to order by Mark Nilles at 10:05 am. A joint meeting of NOS and Data Management and Analysis was held for the first two agenda items only.

Chairman: Mark Nilles  
Vice Chair: Kenni James  
Secretary: John Gordon

The meeting agenda is listed in [Attachment A](#).

## **Impact of dropping T (trace), WA (water added), and DA (dry added) sample analyses- John Gordon**

Gordon presented an analysis of the impact of dropping WA and T samples on seasonal and annual volume weighted and deposition rates. Gordon assessed long and short term impacts both an overall and site specific basis. A subset of 80 sites with a least 10 years of record was used to evaluate impacts on an overall basis. The long-term records for two semi-arid sites and the annual record for one Midwestern site with a large number of WA samples were recalculated to estimate maximum site specific impacts. The impact is highly variable from one season to the next and overall the impact from semi-arid sites will be more significant than on sites that normally receive abundant precipitation. Seasonal differences between the historical database and the WA-censored database at times exceeded 30 percent. On an overall basis, when median volume weighted concentrations or deposition rates were recalculated with WA values set to missing, there was little change indicating that dropping WA analyses will not introduce a large step function into the database when median deposition or volume weighted concentrations are calculated. [View a table summarizing the overall impact of eliminating WA analyses in Attachment B](#).

## **Discussion --**

Paul Kapinos noted that if the number of sites in the network does not decline, we can continue doing WA, T, and DA analysis. Luther Smith stated his preference that the network keep WA and T's and drop DA's. Dossett seconded. Before a vote was taken Wotowa voiced support for DA's. Wotowa said the DA samples are an important source of QA information and he would like DAs kept in some form - amend motion. Robin Sheely asked how long have DAs been collected, said to look at past to evaluate impact. Wotowa - control chart for DAs would work. Boweresox has indicated total of 25% of the weekly samples are DA, WA, or T samples. Rather than diluting low volume samples with 50 ml DI and analyzing for all analytes, it was proposed that certain parameters such as SO<sub>4</sub>, NO<sub>3</sub>, Ca, etc. be identified as priority analytes that would be analyzed from samples with 10-35 ml volume until the sample is used up. Little support for this approach was voiced. Dave Albin from Environment New Brunswick said that the chemistry of WA samples is important

for modeling purposes. Low volume samples represent peak concentrations in many instances and these are needed for some models.

**The final motion: The request to retain WA's and DA's in some form will be referred to Technical and Executive Committees for their consideration.**

**Motion passed, but not unanimously.**

## **Evaluation of a two-week sampling interval- Mark Nilles**

A paired non-parametric statistical test was used to evaluate differences between one and two week samples at eight NADP/NTN sites for all analytes. Except for pH and conductance, two week samples generally had slightly higher analyte concentrations values than one week samples, however median differences were seldom greater than a few percent. The two week sample volumes were generally less than the cumulative volumes from consecutive one week samples. pH and conductance were not statistically different for the 2 week samples compared to the one week samples.

A change to two week samples would not introduce a large step function in the NADP/NTN data set. Nilles will continue the statistical analysis. View the slides for the one-week vs two-week analysis in [Attachment C](#).

### **Discussion -**

Lee Maull remarked that in wet areas like south Florida, a two week sample collection period would result in frequent overflows because the 13 liter bucket is not sufficient for two weeks. Frisch raised concern about losing long periods of data- lose one sample for 1/2 month and have double data loss. Kapinos added that the operator would still visit the site weekly to make sure everything appeared to be operating correctly but not collect anything.

Sheely is concerned with variability, seasons and sites. He wants to continue this discussion in the spring.

Wotowa would like to see impact of one week, two week and one month sampling. Input from Effects Committee desired.

Volume protocol not discussed. Dossett talked about his analysis of CAPMON (a daily network) and NADP/NTN data completeness which he did for a poster presented at this meeting. During the winter the CAPMON collects only about 15% more precipitation yet qualifies about 50% more of its data than the NADP/NTN. Dossett speculated the difference in qualified data may be related to the sampling intervals used by each network. It was decided to ask Effects Committee to put this issue on an agenda for the spring meeting.

## **Approval of minutes from spring meeting- Mark Nilles**

**Motion to approve minutes passed unanimously.**

## **Motor Box redesign- Richard Flagler**

Flagler has talked to the president and designer of the equipment. Prototypes were not developed as of August. ARS Services finally delivered a prototype in late September. Features of the new motor box include: Solid state switches, a redesigned circuit control charger with two LED indicators (green = OK and red = motor is operating), lightning resistance, and 18V DC (greater than the 12 V for the current design, providing more torque for moving the lid when its weighed down by ice and snow). Lid movement is also faster under normal operating conditions, resulting in faster transfer from the dry to wet bucket and back. CO22 and IL11 will have prototypes to test for one month. Testing procedures have been established. After the one month test, 4 boxes will be sent to the field for a year at CO22, AL99, NY20 and MN16. Refer to Coordination Office report ([Attachment D](#)) for details. Dossett noted the NOS had suggested a high speed event recorder be used in the comparison, and asked if these were being prepared for shipment to the sites. Dossett also asked if there is a data logging system, then stated that if not there should be one. Flagler indicated design information will be made available through the CO.

Cost estimate - \$275/unit for 25 boxes or \$200/unit for 100 boxes.

### **German collector- Rick Artz**

Using grant money from the WMO, Rick Artz purchased a German wet- deposition collector identical to the ones used in parts of Europe. This collector was evaluated in Europe and judged best overall. The German collector cost \$15,000 and is currently in transit to the CAL for testing. [Attachment E](#) has detailed information on the collector. A number of European site operators are going to the CAL for a training class the week of November 6, and if the German collector arrives on time it will be used for this class. A field study will be set up at the CAL to compare the performance of the collector with the performance of the NADP/NTN Aerochem. Dossett plans to perform dye/splash tests. All results are going to the ISWS for detailed evaluation. A strain rain gage from ETI in Fort Collins is also being tested at ISWS. It has no moving parts. A pressure transducer measures the weight of sample to convert to volume, but it lacks an output feature. ISWS will put in a data logger to see how it works. The strain gage costs \$2,000 + interface. The gage mimics a tipping bucket raingage output. A report on the test results for the German collector will be given at the next NOS meeting.

### **Site visitation program status- Cary Eaton**

EPA has funded program for the last 10 years but there are no plans to renew the current contract which ends in April 1996. Cary Eaton plans to write a final report. A total of 58 sites located primarily in the northeast and midwest which were scheduled for visits this round will not be visited because of loss of funds. A total of 138 sites have been visited under current contract, including 26 sites high altitude sites since 4/95.

Lee Maull raised the question whether site quality will degrade without visits.

Nilles remarked that some sites will probably degrade without visitation. Frisch hopes the EPA will reverse its decision to eliminate funding for the program.

Miguel Flores proposed an agenda item for the next NOS meeting- said NOS should explore what if scenarios for maintenance of field equipment in event funding is not restored.

Cary Eaton presented findings from the most recent round of site visits. Please refer to Eaton's report ([Attachment F](#)) for details.

## **Backup battery issues- Scott Dossett**

Dossett found no evidence for data loss due to backup batteries. Nilles remarked that based on his contact with sites, word apparently has gotten out that back up batteries might be a problem, and some sites are therefore reluctant to add backup batteries. Dossett will send out a letter stating that backup batteries are not a problem as long as they are maintained.

## **pH 4.9 Implementation- Kenni James**

James reports that the pH 4.9 solution has been bottled and labeled and is ready to ship. Shipment to sites will occur by early November to reduce the risk of samples freezing in transit. Sites will be instructed to begin using the new check solution in January 1996. James commented that some sites will probably disregard the instructions and begin using the sample early, since this is usually the case when a protocol change occurs. Dossett added that the CAL is taking steps to ensure the implementation of the new check solution is consistent with the latest version of the training video.

## **pH 4.9 Accuracy Criteria- Kenni James**

James reports that the accuracy criteria have been set at +/- .15 pH units and +/- 2 microsiemens per centimeter for specific conductance and bottles of the new solution have been labeled with this criteria. Gordon indicated that based on recent intersite studies with target pH values approximating 4.9, about 90 percent of the reported values could be expected to fall within +/- .15 pH unit of the target value.

Wotowa discussed the subtle differences between the distribution shapes for intersite studies using reference solutions with target values that are unknown to the operators and the 4.3 check solution measurements. The distributions for both types of measurements tend to be slightly skewed, but in opposite directions. Nilles asked what the new intersite accuracy criteria are for a pH 4.9 solution and Wotowa replied 4.79 to 5.07. Nilles remarked that this range is slightly larger than the +/- .15 pH units for the new check solution, and that it seems reasonable to have a slightly wider tolerance range for intersite solutions which are blind to the operator than for a check solution with known values. James added that the new criteria for the check solution could be re-evaluated in a few months after we have data indicating how sites are actually doing measuring the new solution.

## **Rain-gage refurbishment- Richard Flagler**

Flagler informed NOS that the person who refurbished Rain gages for the NADP/NTN for many years has passed away and a new person is doing rain gage refurbishment. Flagler indicates the work by the new person appears to be satisfactory. Frisch said that a provision for reimbursement needs to be added. Robertson replied that such a provision exists.

**Dossett made the motion that the proposed rain gage contract be adopted. Frisch seconded the motion, which passed unanimously**

(Refer to [Attachment D](#) for details on the new contract)

## **Update to NADP manuals- Scott Dossett**

Dossett wants to print ~50 copies of the manual and release the CO from the requirement to wait until the entire manual is updated before printing copies with any changes. Site operators sometimes take the manuals with them when they resign, leaving the new operator without one. Operators also tend to lose or misplace their manuals fairly often. The result is ongoing requests for additional manuals, and none are available.

Dossett wants to know if we are going to push for more rapid updating of the manual, which seems to be continually relegated to low priority status. Nilles noted that the QA steering committee discussed a living document with 3-hole punched pages which would be kept in a three ring binder so that individual pages can be replaced as updated pages are prepared.

### **Frisch made a motion to print the manual as it currently stands.**

Dossett seconded the motion. Gordon noted that the manual must have the updated information within it, not in separate memorandums that can easily be misplaced.

**The motion was then amended by Flagler to print the operating manual as it stands now, with minor updates to reflect personnel changes at the CO. Separate addendums addressing changes in technical content will be sent with the manuals, but since the manuals will be unbound the information can easily be integrated with the manual. The manual will be distributed unbound in 3-hole drilled format. Updates distributed on an as-needed basis. Motion seconded by Mark Mesarch and passed unanimously.**

### **Sulfate and conductance bias?- Kenni James**

At the last NOS meeting, James presented information on sulfate bias in percent for 1988 low and high concentration internal QC standards. At that meeting, there appeared to be bias. Sulfate values determined at the CAL exceeded reference sample values in the late 80's.

James has studied this further and reported today a .2 mg/L difference between CAL values and the expected values, but high & low standards deviated from the expected values in different directions, and were not systematically biased in same direction. See overheads prepared by James ([Attachment G](#)). James also looked into bias for specific conductance, and found consistent bias in the same direction (biased high) for both high and low standards. James concludes positive bias (not that severe) for specific conductance -- one to two percent. Differences for sulfate but not consistent so there is little evidence for sulfate bias. Nilles then suggested we put this issue to rest with no motion.

### **Subsampling of archive samples- Kenni James**

Subsampling policy issue - Only one request for archive samples in the past 17 years. CAL would like to continue dealing with similar future requests on a case by case basis. Nilles asked if there were any requests pending; James replied no. James will work on a policy for the spring meeting with Mark Peden and others at the CAL.

### **Location of spring meeting- Kenni James**

James is working on New Orleans as the location. March 31-April 4 is the most likely week.

## **Election of NOS secretary- Mark Nilles**

Sandy Pletshet was elected secretary for the spring meeting.

## **Subsampling for NADP samples- Scott Dossett**

Dossett asked how aggressively does NOS want to look at site subsampling issues?

Dossett estimated how many sites are currently subsampling NADP/NTN precipitation samples collected in the Aerochems. Scott looked for occurrences where the field aliquot exceeded 100 ml prior to 1994 and found ~14 sites where this occurred regularly. Many of these sites are excellent sites, producing high quality data. Last spring Kapinos raised the issue of whether to police subsampling at sites. Dossett noted many sites have been subsampling since the beginning of program. Dossett remains concerned about possible contamination problems. He reminded everyone that the issue of whether publicizing a subsampling policy would encourage more subsampling needs to be addressed.

Frisch asked if only sites asking for information on the NADP/NTN subsampling policy are informed of the policy or is it public information. Dossett replied that it is currently not public information. Dossett then asked what should be done. Kapinos wants Dossett to find out that sites are doing with the subsamples after they remove them, and whether any sites are shorting NADP/NTN of its required sample volume by removing the sample volume they need for their side projects without concern for the sample volume needs of the network. Dossett thought this might have occurred at one site, PR20, but did not know of any others. Dossett then said the NADP/NTN should be flexible, user friendly when it come to subsampling requests. He wants to issue a policy to all Network sites on subsampling, thinks it could stimulate interest in NADP. Nilles interjected that the issue is that we want to accommodate some subsampling but do we need to market it. Kapinos - We have a right to know what other research is being done. It should not be a secret. Paul also remarked that the NADP/NTN should never get less sample volume from the sites than is needed and that some sites might be taking subsamples incorrectly.

**Robertson made the motion that the subsampling policy be publicized by sending a letter to the site operators and supervisors from Scott Dossett, and detailed information on all existing subsampling currently done at sites will be gathered. Dossett will bring a draft of the letter to the spring NOS meeting for review. Second by Dossett. Passed unanimously.**

**The meeting adjourned at 2:04 p.m.**