

# Minutes of the Network Operations/Data Management and Analysis Subcommittee Meeting

April 1-3, 1996,  
New Orleans, Louisiana

The meeting was called to order at 1:10 p.m. by Kenni James and Mary Ann Allan, the respective chairs of Network Operations and Data Management. A joint meeting of NOS and Data Management & Analysis was held for entire length of the meeting.

NOS Officers: Data Management Officers

Chairman: Kenni James, Mary Ann Allan

Vice Chair: John Gordon Vice Chair: vacant

Secretary: John Gordon Secretary: vacant

The following people were present:

Mary Ann Allan  
Van Bowersox  
Scott Dossett  
Richard Flagler  
Joel Frisch  
Bob Gilpin  
John Gordon  
Kenni James

Paul Kapinos  
Gary Lear  
Mark Nilles  
Molly Welker  
Bruce Rodger  
Luther Smith  
Gary Stensland

The meeting agenda, e-mail/surface-mail addresses, and phone numbers for attendees are listed in [Attachment A](#).

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## • Approval of minutes from fall meetings (Allan/James)

Motion to approve minutes for the Oct. 95 NOS meeting passed unanimously.

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## • Coordination Office Standing Report (Flagler, Lear, and Gilpin)

Flagler gave the first part of the standing report for the Coordination Office (CO). A copy of the CO standing report is included as [Attachment B](#). Bigelow has stepped down as QA Program Manager; this position will be advertised soon. In the interim Flagler will be the PI on the QA project. Sandy Pletschet resigned the Site Liaison position, and now works half-time in the QA program. The site liaison position was advertised 3/23/96 in the *National Job Seeker*, *the Denver Post* and *Rocky Mountain News*. To date 15 applicants have responded. The CO plans to fill the position by late June. Pletschet will continue to handle site liaison duties until the position is filled.

Three sites closed between January and March 1996, dropping the number of active U.S. sites to 189. Funding for NBS sites has decreased significantly. By the end of the year an evaluation of how many NBS sites can continue operation will be completed. There are currently 10 NBS sites; may lose 5. Joel Frisch remarked that Stan Coloff's role in the future of NBS sites needs to be investigated. Frisch also noted that CAL needs firm budget figures for next year for planning purposes, and a decision on NBS sites is needed before October. Flagler replied that the NBS sites remain in operation now only because some funds for chemistry were provided by the CO for 7/12 of FY96, and no information is available regarding funding for next year.

A total of 109 replacement parts have been distributed in the last 6 months.

Aerochemetrics (ACM) is behind in motor box, sensor and event recorder repairs. CO plans to increase use of Advanced Research Systems (ARS) for future repairs as much as funds allow. The ARS designed system is working well. The ARS design features an increase in the power to the motor box from 13.5 to 17.5 volts, but this has not increased the performance other than a slight increase in lid movement. Van noted that the ARS prototype has not had short circuiting effects and works better than other prototypes. AL99, a lightning prone site, will test the ARS model for voltage surge problems. Because the electronics are much better in the ARS model, lightning problems are expected to decrease.

Joel Frisch started a discussion on the shortage of spare ACM parts. Joel noted the USGS bought 30 motor boxes, and while some are in Ocala at the USGS field service unit, most seem to have disappeared into the system. Flagler remarked we continue to run short of repaired motor boxes, and he will talk to Wally Weber of ACM to try to get more repairs done. Flagler said that repairs done at ARS are very expensive, but a slight decreases in cost could be realized if we started to use ARS extensively for repairs. Frisch said that there could be a crisis in the next 6 months if there is no production from ARS, and virtually no output from ACM. Frisch remarked that the cost of lost data due to no available parts needs to be considered. Dossett suggested we extract all broken parts from ACM for repair elsewhere, and asked if any attempt to retrieve broken parts from ACM has been tried. Flagler said the CO has not tried to get broken parts back from ACM. Frisch said we must make plans to transition from ACM to ARS as our primary source of repairs, and that repair capability needs to be a higher priority than the new design. Dossett said ARS repaired boxes seems to work well. Nilles added that repairing the old boxes is a lower risk for the network than changing to the new design because the electronic design is not changed. Dossett said there are 30-40 boxes at ACM, and about 15 in storage at Ocala. Kapinos suggested we need to decide to cut ACM out of the picture completely, and not even think about having repairs done at both ACM and ARS. **Nilles made the motion that all motor boxes be removed from ACM, and returned to the CO for future repair at ARS.** Stensland asked what were the cost implications of this action. Flagler said the cost of repairs would increase 4X and the budget at CO is flat. Dossett said that 50% of all repairs involve clutches, other mechanical problems, not electrical. Boxes needing mechanical repairs would not go to ARS. Clutches cost about \$25. Since all motor boxes are currently sent to ACM for repair, we are losing boxes to storage at ACM with good electronics that need only minor repair. Flagler said he needs better documentation on the causes of motor box failure from the CAL. Frisch added that no one other than ACM is currently available to repair sensors. If ACM shuts down repair work, there will be no sensors, event recorders, or collector repairs for some time. Frisch said we should phase in repairs at ARS, and start sending half the boxes to ARS. Luther Smith asked were the money for this will come from. Flagler added there are no available funds at the CO for the added repair costs, and the repairs would take over 1/2 the CO budget. Stensland said we should amend motion to fund the repairs. Kapinos replied that the cost for everyone would then go up, and the risk of losing sites from the network increases. Frisch remarked that the flip side is lost data due to a lack of available replacement parts. **A vote was then called on the motion as stated by Nilles. The motion was defeated.**

**Bob Gilpin made the motion that a committee be formed to figure out exactly what is required to replace ACM for all equipment repairs, seek out alternatives for all presently ongoing ACM**

**repair activity, and report on the ramifications of this change at the fall meeting. The motion passed unanimously.** A committee consisting of Dossett, Nilles, Flagler, and Frisch was formed to find alternative sources for mechanical and other repairs. The committee will prepare a report for the fall meeting. Van asked if the committee should address rain gage repair. The consensus of the group was no.

Rodger added that GLAD equipment might be available for the network, and someone should contact Ed Klappenback to check. Rodger also said that equipment repairs are currently being done in Wisconsin, and the repair shop in WI could replicate ARS repair protocol using the same components. Nilles noted we need the CO report on the field study so we can start buying motor boxes and asked if we will get this report at the next NOS meeting. Flagler responded that preparing this report for the fall meeting will be a priority.

### **Status of 1995 Summary Report (Gary Lear)**

Lear reminded everyone that a change in the format of the summary report had been approved at a previous NOS meeting. Data summaries will be included for the next two years using a format similar to the one used in the past. The new report format will feature a program summary and an easy to understand explanation of NADP/NTN data. A brochure with full color maps and a discussion of NADP/NTN history, background will also be included. This brochure will be targeted to a lay audience and is envisioned as a marketing tool. The brochure will go to the printer by 5/1/96 and will be distributed to the CO mailing list of 600 names. Nilles asked how the list of names is updated. Lear said postcards are sent out every 2 years to get updates, but there are problems with this approach, such as it is hard to identify appropriate EPA representatives. Two thousand copies will be printed. Kapinos remarked that the USGS needs to have more prominence in the credits for publications such as this or support for the network will disappear. USGS support totals over 50% of network costs, but USGS support is lost in the fine print. Paul added that the lack of USGS visibility in network products when the USGS is the primary funding agency is a serious problem, and that significantly more support for the network comes from the USGS than any other agency. Lear responded that he will improve the acknowledgments for the USGS, and will discuss with Kapinos the best way to do this. Van remarked other agencies have recognition concerns too, and advice on the best way to recognize each agencies support should be sought from appropriate agency representatives. AIRMoN and MDN recognition concerns will also come up in the next 2 years. Van then asked if the change to bottle protocol affect had been addressed. Lear indicated it had. Van said it would be helpful if the report was sent out for review prior to publication. Lear plans to distribute review copies to the executive committee members. Stensland suggested one color map be included with each review copy.

Gilpin added that a total of 196 data requests have been made this year, and that he plans to make data requesting easier. Use of the Web site is encouraged for all data requests. Web page is steadily gaining exposure. Nilles asked if the NADP/NTN page is in the top ten sites when searching on "acid rain". Gordon replied that he checked this last week and found that it was not in the top ten when searching with Alta Vista or Yahoo. Gilpin keeps a log of all data requesters, all users could be added to the mailing list. Nilles said that data requesters should not automatically be added to the mailing list, only if they want to be, and suggested using a check box in the data request template to do this. Frisch was reluctant to have an automated list feature, stating that sending brochures to every data requester could be a waste of money and asked if Gilpin gets many complaints about the amount of information requested from the data requesters. Gilpin said there have been few complaints about the lengthy form the requesters fill out.

Nilles asked if a press release regarding the NADP/NTN home page had been released. Gilpin said no, but that it would be a good idea. Gilpin has posted a statement on the homepage to the Cyberchat newsgroup. Gilpin suggested that a registry in the home page of current research related to precipitation chemistry would be helpful.

Gilpin has added daily precipitation data to the Web page and asked if the comments from the FORFS should be made available. Bowersox strongly opposed this idea saying the comments are not screened before entry and would be difficult to use.

AIRMoN data availability continues to be a problem, and Van is aware of the delay.

Flagler concluded the CO report by noting that Mark Wotowa who worked in the QA program has resigned, and said the CO report will be amended to reflect this.

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- **Internet distribution of minutes (Gordon)**

Gordon connected to the USGS home page using a portable laptop and accessed the minutes from the NOS meeting last fall to demonstrate how he had made the full set of minutes with all attachments available through the USGS homepage. Allan asked whether this would be feasible to do after each meeting, or if it was too much work. Gordon said it wasn't much work, and would be even easier in the future if everyone provided their standing reports and figures in electronic format. If every presenter gave the minute taker html text and gif/jpg graphics, it would actually take less time to compile and distribute the minutes than the old paper distribution method, would save unnecessary mailing costs, and reach a much larger audience. With Internet minutes, Scientists involved with the NADP but unable to attend NOS/DMAS meetings will have a means of staying informed. The minute would also be available in an electronic format that would be easy to search electronically using key words and would therefore be a much more useful reference for all the committee members.

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- **CAL/AIRMoN Standing Report (James)**

Analytical staff remains stable. One computer analyst and one sample processing person lost. A copy of the CAL/AIRMoN report is included as [Attachment C](#). Broadley James electrodes continue to work well. A total of 44 Broadley James electrodes have been sent to NADP and AIRMoN sites in the last 6 months. Jane Rothert has taken over the management of the electrode program. Last year 100 AIRMoN samples were received each month. Testing of a new automated raingage continues. The EigenBrodth (German) wet-only precipitation collector has been splash tested. The 1994 QA Report is currently in review.

The CAL's performance in interlaboratory comparisons slipped a bit in the latest round of LRTAP. CAL was no. 1 last summer and no. 15 out of 33 labs in the latest round. The same sample types were used, which don't replicate precipitation chemistry well. Results from the WMO's intercomparison last fall showed an average 5.08% difference from expected values average performance. WMO samples are like rain samples.

The pH 4.9 check solution was sent out in late October with instructions to begin using on January 2, 1996. Control charts revised by John Gordon were printed and sent to all sites in February. By April, every site in the network was using the 4.9 check sample.

AIRMoN data have been used to compare the pH obtained by grades schools participating in the National Geographic Kids Network. CAL is involved with this program as a public service mission because of NADP/NTN's reputation in the acid rain business. CAL has been evaluating pH meters, electrodes, and buffers to see if these can be provided cost effectively to schools by the National Geographic as an outreach activity.

NADP/NTN field procedures were violated during the federal government furloughs, affecting part of the November 95 sampling period, and sampling periods from 12 December 95 to 9 January 96. In December/January a serious disruption of supply shipments and significant loss of data occurred.

Data losses during the November furlough were fairly minor. Decisions on how to code data from these non-standard samples need to be made. Stensland asked if it would be possible to modify the rules for these samples. Flagler said the CO will use sample volume substitution rules but will lack numbers for deposition calculations. Gilpin said all samples with >8 days will be invalidated, but that an explanation should be added to the annual report discussing the furlough as the cause.

Four scientists from Eastern Europe spent 2 weeks at the CAL learning about wet and dry deposition. Jane Rotherth coordinated the course. The attendees are in e-mail contact with Jane for additional information.

The ARS/ACM motor box comparisons have been completed. Collection efficiency and event recorder results look good. Design needs work on internal circuit board support before production. Damage during shipping indicates that QC of shipping protocol needs attention.

The annual lid seal replacement is scheduled for July using lids seals of the same design as used in the past from the same manufacturer.

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- **USGS Standing Report (Nilles and Gordon)**

Gordon presented the results from intersite comparison study 36. Site operators continue to do an excellent job with their field measurements based on outstanding results in this most recent intersite comparison. Participation rate was 100% when initial and follow-up studies are considered. The follow-up study was effective in identifying and correcting sources of measurement errors for many sites that failed to meet the goals in the initial study. A total of 90% of the site operators met the goals for pH in the first round of the study. See [Attachment D](#) for all the summary statistics. Blind audit results have been received from the CAL for the first 9 months of 1995. The preliminary blind audit results for 1995 showed improved precision and in some cases reduced bias compared to 1994. The median percent bias for sulfate and calcium both decreased about 2 percent in 1995 compared to 1994 results. Sulfate was the only ion that was not detected in any of the blind audit ultrapure samples in 1995. See [Attachment D](#) for all the details.

Nilles discussed the interlaboratory comparison study results for 1995. He opened his discussion with a bargraph showing the number of analyses received from each lab, stating that while the bargraph bears a strong resemblance to the flag for Elbonia, it points out an important fact: the data from CAL and two other labs are complete for 1995, but only received through 9/95 and 10/95 for two labs, so the interlaboratory comparison summary is very preliminary. CAL preliminary results were good, with no ultrapure determinations above the detection limit. See [Attachment E](#) for graphs and tables.

Nilles then covered the results for the 1995 collocated study. Collocated samplers are located at IL65, MT00, NY65, an dVT99. Precision estimates for 1995 are similar to the precision estimates for 1994, with the median relative error for calcium and sulfate ranging from 5 to 10 percent and 1 to 5 percent, respectively.

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- **Mercury Deposition Network (Welker)**

The analytical services contract previously held by Steve Vermette has been awarded to Frontier Geosciences, Inc effective March 12, 1996. Vermette continues to handle shipping boxes for some sites in the network. ISWS/Clyde Sweet have the contract to modify Aerochems for mercury samples. Joe Tokos at Frontier Geosciences is the new site liaison, and oversees a site near the lab to gain a site operator's perspective. Sample costs increased under the new contract to \$159/sample. Annual Coordination Office cost increased to \$3355 per site, or \$65/sample. Total 12 month MDN cost for a site is \$11,648, a 300% increase over 1995 costs. Coordination Office support was previously under funded. Flagler noted that with the new funding arrangement the Mercury Network will be self

supporting. Some sites are switching to 2-week samples to cut costs. There are 15 active sites, with 10 additional proposed sites. New sites in MN, MA and PA could come on line by 7/96. See [Attachment F](#) for list of active MDN sites. By 9/96 MDN data for the first few months of 1996 could be available. Data prior to 1996 was generated by a different lab, so there are QA problems to resolve. Also, data prior to '94 is in Vermette's hands and data availability for '94 and '95 has been left to the discretion of each site. A Mercury Observer Report Form (MOF) modeled after the NAFP/NTN FORF has been created. Gilpin wrote a data entry program to transfer data from the MOF's to Ingres tables at the CO. Lear has helped with Ingres table definitions, and Gilpin will write an MDN data processing program. A blind audit program is being considered at Los Alamos and is in the early planning stage. The MDN is now advertised on the CO homepage. A draft solicitation packet for perspective sites has been prepared. A poster on MDN QC protocols will be presented at the 4<sup>th</sup> International Conference on Mercury as a Global Pollutant in Germany this summer. Tremendous interest in mercury deposition exists now, and meetings are very well attended. NAFTA mandates on mercury are helping to spur interest. Fresh water fishing advisories limiting the consumption of fish because of mercury contamination are another factor driving mercury interest. So far 27 states have advisories on fish consumption due to mercury contamination. Massive consumption of contaminated fish by some Native Americans is a concern, and neurological studies on children are planned. Rodger said that mercury effects on animal reproduction is also being studied. Rodger added that current research is trying to determine how much mercury comes from the atmosphere. Stensland said a paper on the driving forces behind mercury health warnings should be presented at the fall meeting. Welker said the standard protocol and single lab of the MDN makes this network desirable to state agencies. Previous studies have used labs that did not follow ultra clean handling procedures or lacked adequate QA. Many states are interested in methyl mercury, the toxic form, and can contract for this at 3x the cost. Smith asked what siting criteria is followed. Welker said standard NADP criteria, except urban sites are allowed. Stensland asked if site operators will become involved in the fall NADP meeting, Welker responded they would.

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- **Site Visitation - What is the Status? (Flagler/All)**

Continuation of the program was discussed at a November '95 meeting with the EPA contact, Joe Sickels. EPA remains committed to the NADP, pledges their support. However they have no money. Flagler said he will write a proposal for running a site visitation program out of the CO with himself as the PI for now. Once a new QA manager is hired that person would be the PI. EPA is considering funding for '97. Bernie Bennett will be the new EPA contact. He has suggested extending the site visitation contract 2 years. Flagler is considering a regionalized approach to site audits, with highly skilled site operators taking the audit lead in each region. This would significantly reduce travel costs, the major component of the site audit budget. A proposal for a new site visitation program will go back to the EPA by this fall. Gordon asked what the best case scenario was for implementing the new visitation program Flagler thought it could be in place by 7/97, but this date could slip several months, possibly to FY '98. Dossett remarked that would mean a 4 year gap without audits at many sites, including those in the Ohio Valley. Stensland suggested a site audit committee be formed prior to the fall meeting. This idea will be discussed at the next Steering Committee Meeting.

Dossett presented overheads on possible audit options in lieu of the current (albeit suspended) system. Dossett said the current system does not document local changes well, should consider improvements rather than just an extension. See [Attachment G](#).

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- **USGS Herbicide Data - Where is it, and how is it accessed? (Lear)**

The herbicide data is available from a USGS office in Kansas. All data requesters are referred to this office, and told to get back to the CO if interested in requesting the data via FTP. Nilles asked if the availability of the herbicide data is advertised on the NADP/NTN home page. Lear replied it was not.

Lear added that he is seeking pictures for the home page depicting high tech uses of NADP/NTN data.

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- **Impact of dropping t (trace), wa (water added), and da (dry added) sample analyses (Bowersox, Frisch, and Gordon)**

Frisch said possible cost saving measures need to be explored due to the likelihood of budget cutbacks. Van presented per sample cost saving estimates for the elimination of each of the three sample types. Gordon presented an analysis of the impact of dropping wa and da samples on seasonal and annual volume weighted and deposition rates. Gordon assessed long and short-term impacts on both an overall and site specific basis. Based on site records for the past 15+ years, about 70 percent of the time a given site will have 3 or fewer wa samples in a given year. When 3 or fewer wa samples occur in a given year, the impact on annual and seasonal averages is minimal. Large impacts on seasonal and annual averages are frequently observed when 7 or more wa's occur in a given year. The number of wa samples occurring at a site varies considerably from year to year but is generally highest at semi-arid sites. However unusual weather patterns can result in an occasional year with a large number of wa's at a site which normally does not get many samples of this type, so sites cannot be grouped as "prone to wa" and "not prone to wa's". The impacts of t sample on annual and seasonal averages was similar to that of the wa samples. See [Attachment H](#).

#### **Discussion -**

Based on his analysis Gordon said the best alternative for wa's is to eliminate their analysis when 3 or fewer occur in a year or 1 occurs in a season. This would reduce the annual wa sample load by 70 percent while preserving their contribution to annual deposition and concentration records when it is most likely to be significant. Wa samples often represent some of the highest concentration samples that occur at a site in a given year, and when more than 3 occur in a given year their impact on seasonal and annual volume weighted concentration and deposition rates can be significant. This approach would require tracking the number of wa's at each site and analyzing them when the limit of 1 per season and 3 per year is reached. Van said that this tracking would result in some login steps on all wa's and would require some extra work at the CAL.

DA samples are viewed as a source of QA information. The da sample load for the past 15+ years was summarized by Gordon. The distribution skewed similarly to the wa distribution, reflecting the fact in 70 percent of all annual records, 3 or fewer da samples occur. The maximum number of da samples at a site in one year was 34; 25% of all annual records had more than 7 da's.

Gordon proposed that the analysis of da samples be phased out and replaced by a new USGS field blank study that would be built into the blind audit program. The field blank study would be operated as follows: One 1-L ultrapure sample would be distributed to ~50 sites per quarter. After a week with no rain, the site operator would inspect the bucket to ensure that it is dry. If dry, the operator would pour 75 percent of the 1-L ultrapure sample into this bucket, swirl the sample, then allow for a pre-determined residence time before transferring the sample to a clean 1-L shipping bottle. The sample portion remaining in the original sample container would be shipped to the CAL for separate analyses. The advantages of an External Field Blank Program include: the field blanks in this program would be true field blanks, processed in the field, rather than in the lab; the program features a paired sample design, which provides more statistical power for detecting differences and is the design recommended most by statisticians; the cost of the program would nominal compared to the cost of the current da program; the results would be presented to the NOS at interim meetings and available to NADP/NTN data users in an analyzed form. **Motion: Gordon will prepare a one page summary on wa, da, and T analytical findings for the executive committee meeting next month.** Passed unanimously. See Attachment H for additional information on the effects of low volume sample analyses on NADP/NTN data.

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- **An Evaluation of a Two-Week Sampling Interval (Nilles)**

Nilles said no new analysis work on the two week sampling interval data has been completed. Plans to prepare a report on the 2 week study results. Gilpin asked what the cost saving implications would be for switching to a two-week sampling interval. Van replied he did not think it was appropriate for NOS to discuss cost concerns, that NOS should stick to science issues. Stensland concurred.

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- **Continuation of USGS Collocated Sampling (Nilles)**

Nilles indicated that the USGS collocated program may be discontinued with resources allocated to other areas in support of the NADP/NTN.. Lear expressed concern that data requesters looking for network precision estimates will be disappointed in the future if he has to tell them those numbers are only available through 1996. Stensland questioned the value of a site visitation program that only evaluated 1/3 the sites in the network. By October 1996, approximately three years of collocated data will have been collected using the new protocol. Nilles said collocated differences are explainable by differences in geography and annual precipitation. Systematic differences have been observed due to differences in the amount of precipitation recorded at collocated raingages. Nilles reiterated that collocated program could be discontinued and replaced with some other QA program that would be operated by the USGS. Stensland replied that he would like to see the collocated study continued at least in some limited form. When data users find out we aren't measuring precision any more, there could be a negative reaction. The consensus of the group was that the collocated study should continue in some form regardless of whether the USGS initiates additional programs in support of NADP/NTN. Van noted that the group could advise but not direct the USGS in their activities. Nilles said that of all the USGS QA programs, the Collocated Program is the most scaleable - other programs would not realize a big cost savings (or cost increase) by changing their size and scope. But cutting the collocated program by 3 sites could realize a significant savings. **Van made the motion that the USGS consider continuing the collocated program in some form. Second by Stensland. Motion passed unanimously.**

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- **CAL Policy for Archived Samples (James)**

James reviewed the NADP/NTN Archival Samples policy - see [Attachment I](#). Mark Peden has proposed that when samples' data have been verified and are available to the scientific community from the CO, archived samples be made available to researchers (~9 months after sample collection). The Coordinator will approve or deny the request after consulting with the CAL Director and with the requester. A prescriptive list of what the requester should do and what the Coordinator and CAL director will do is included in attachment H.

Acknowledgment issue was discussed. Luther suggested that if the sample requester fails to acknowledge the NADP/NTN in their report to deny samples to them in future requests. James reminded everyone that only one request for archived samples has been received since the network commenced operation. **Frisch made the motion that the CAL archive sample policy presented by James be accepted as is. The motion was seconded by Nilles and passed unanimously. Refer to attachment H for the detailed requirements of the motion.**

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- **Bias correction presentations and discussions**

- Bias from Hawaii Samples, 1985-89 (Stensland)**

Stensland provided a list of reasons why the Hawaii data was not directly comparable to NADP/NTN data, including no o-ring in lid on sampler bucket (Teflon ring), very large rain events at the Hawaii site



compared to typical rain events at NADP sites, and the fact small volume samples were composited prior to analysis. Stensland found a positive bias at the Hawaii site for chloride, sulfate, sodium. Allan questioned the value of the Hawaii data based on differences in the sampling techniques and asked the group what their opinion was regarding whether the results of this study were applicable to NADP/NTN data. The consensus was they probably were of some value.

### **Bias correction Bucket to Bottle (Bowersox)**

Van said the notification letter describing the bucket to bottle change has gone out. Statisticians working for Van and Lynch have come up with two models - a volume growth model (bigger effect with increasing volume) and a volume and pH model which also varies with pH. The constant mass dose algorithms correlated with volume and pH is favored by Van. The root mean square errors were calculated and modeled. The model significantly reduces variance in the dataset. The VGE model worked best.

**Van made that motion that the "Notification of an Important Change in the NADP/NTN database" be revised to include a table listing the algorithms and a brief description of how they might be used.** Luther Smith expressed opposition to this idea, raising statistical validity concerns and the possibility for misuse. Lear added that he was concerned about the possible misapplication of these algorithms that were based on a 1993 special blind audit study to previous years of data when there is no indication these algorithms model the bias found in earlier years. Lear also noted that there were other ways to make these algorithms known to data users, such as referring data requesters to published reports. **A vote was called on the motion, which was defeated in a close vote.** More discussion followed, then Frisch remarked that only eleven votes were cast, and twelve people were present. On this basis **Frisch made a motion that the vote be expunged; the motion to expunge passed. Frisch then called for a re-vote on the original motion. The vote was deadlocked at 6-6; the motion did not pass.**

**Allan made the motion that, Luther Smith, Van, Gordon, and Gilpin work together to come up with sample trends plots, with and without correction, of various analytes and QA data. Gilpin volunteered to take the lead and initiate this effort. Motion was seconded by Frisch, the motion passed.**

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### **• Organics pilot program, from Clyde Sweet's 10/95 Presentation (Bowersox)**

Sweet has prepared a proposal to study agricultural pesticides in rainwater. Pesticides will be analyzed from samples collected at 5 sites located in CA, IL, PA, TX, and AL. A modified Aerochem will be used. Precipitation will be collected in glass bottles inside the Aerochems. The study will measure pesticides over a 1 year period at the 5 sites, and will start in FY'97. Van expressed concern that the project could be copied by others, and requested that copies of the project proposal not be distributed outside the group.

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### **• Status of Tracking data base between CO and CAL (Flagler)**

Due to personnel changes at the CO, this project remains in the early planning stages. Van added that it could take another year to fully develop the RBWEBB software used to Telnet from the CO to CAL. Eventually this tool will allow personnel at the CO to get data directly from the CAL. Gilpin asked what work was planned on the common tracking database, and added that the main issue to keep in mind is the goal to develop a useful site management tools.

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### **• Communication between CO and CAL (Frisch)**

A year ago Frisch requested that he be sent status reports with a list of sites funded by the USGS that failed to submit samples for two consecutive weeks, or went two weeks with no pH/conductance field data. Frisch said these tracking reports are working out well. This tracking report is only distributed to Frisch, Pletschet, and Dossett. Gilpin reminded everyone that a common, problem-tracking database is needed. Issues need to be resolved regarding who gets notified for what problems, and what the extent of the information will be. Frisch said that Dossett is focal point for all site operators who call when problems come up, and that the CO needs to take a stronger lead in solving the sites problems. Flagler replied that equipment problems have always gone through Dossett, and then Dossett calls the CO liaison to send parts to the site. Nilles noted that a recommendation from the 1995 executive meeting was for Flagler and Bowersox to better define the CO and CAL site liaison duties. Frisch added that he plans to retire at the end of the year, and only work <2 days a week, and wants out of the problem resolution loop, unless other than network provided equipment is needed (meters, solar panels, operator problems, etc. Currently Scott calls Joel who then calls the CO liaison. Frisch wants Scott to call the CO liaison directly. Nilles - there seems to be a gray zone between the CO/CAL liaison job responsibilities. Nilles said that Dossett is taking on more of the CO liaison's work -- need to revisit the job descriptions. James called an end to this discussion.

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- **Alternative Supplier for Aerochem Accessories (Flagler)**

Flagler asked if the CO can have ARS repair more motor boxes than the previously specified limit if their budget allows. **Bowersox made a motion to lift the restriction on the number of motor boxes repaired at ARS. Gilpin seconded the motion, which passed unanimously.**

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### **Motorbox Comparison: ARS vs ACM (Dossett)**

Two identical ACM 301 samplers operated between 24 October 1995 and 16 February 1996. Eighteen events collected. ARS showed less but not statistically significant less catch than the ACM (about 13 grams mean difference). Event recorder traces are comparable. General quality control (unit was rec'd.. literally in pieces circuit board loose, nuts off and free inside box). Circuit board mounting not adequate on one edge. Internal electrical connections not reliable. All these should be easily fixed before a production run.

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- **New pH 4.9 check solution - Can they do it? (James)**

In January 1996 all sites were supposed to switch to the new 4.9 check solution. Most sites switched on the prescribed date, but a few stragglers did not switch until late March. James reports that the initial results from the 4.9 check solution are very good, and that the site operators can in fact measure the 4.9 solution.

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- **Letter to Sites About Subsampling (Dossett)**

Frisch proposed a few minor edits to the subsampling letter drafted by Dossett. **Van made the motion to accept the letter ([Attachment J](#)) with some minor changes suggested by Frisch. Second by Stensland, motion passed.**

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- **Status of EPA Monitoring Program**

Luther Smith gave an update on the status of CASTNET, the EPA monitoring program. CASTNET monitors chemistry, gases, particulates, and collects meteorological data. There are currently 14

CASTNET sites in operation. EPA/NPS sites have been upgraded to a full compliment of CASTNET monitoring, with the exception that a few sites don't have wet deposition monitoring. Visibility is also monitored at some National Park Service sites. The sites are operated in a manner similar to NADP/NTN sites, and samples are collected weekly. Lear asked what the objective of CASTNET is. Smith - spatial and temporal variability of dry deposition a primary objective. Dry deposition is highly variable, depends on receptor surface. Poor geographic coverage of the U.S. exists currently due to the large cutback in the number of sites. At its peak, CASTNET had 50 sites. Middle part of the U.S. never had sites. Stensland asked if ozone monitoring was driving CASTNET, and added its very expensive. Smith said that present and past CASTNET fills some "holes" in the NADP/NTN geographic coverage. Allan asked if CASTNET relies on other networks for data since it has so few sites, and added that other sites very focused on local research activities, and don't necessarily mesh well with CASTNET. CASTNET was shutdown during the furloughs to some extent. Ralph Bumgardner (EPA) is in charge of CASTNET and the data is available from him. Contact Luther for his address and phone number.

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- **Prospective on the CAAA, Implications to research (Allan)**

Allan reviewed the major components of the 1990 Clean Air Act Amendments (CAAA).

Title I - Attainment and review of National Ambient Air Quality Standards (NAAQS); introduces the role of Reasonably Available Control Technology (RACT), defines Ozone Transport Region (OTC).

Title II - mobile sources, i.e. automobiles

Title III - Lists hazardous air pollutants to be controlled through Maximum Achievable Control Technology (MACT); sets up Great Waters Program

Title IV - Acid deposition, SO<sub>2</sub>, NO<sub>x</sub> reduction. Sets up phased in controls on stationary sources i.e. power plants, etc. Phase I focus is on SO<sub>2</sub> reductions.

Title VIII - Misc. provisions including visibility protection.

Much of the air quality research conducted at EPRI is in response to the need for scientific knowledge related to Titles I,III,IV, and VIII.

Under Title I, the Ozone Transport Commission has authority to decide control technologies for older power plants. These controls have the potential of being tighter than the Nox controls already in place. EPRI has been involved in several regional measurement and modeling studies to understand ozone formation and control, notably the North American Research Strategy for Ozone in the Northeast (NARSTO-NE) Report. Its purpose is to understand NO<sub>x</sub>, VOC, meteorology. Also under Title I, the possibility of an Acid Deposition Standards was explored; the report published by EPA last fall indicates they would not be feasible. The EPA is also reviewing the PM-10 standard. Their report last year indicates the current PM-10 standard may be too high to protect human health and that a standard for finer particle (i.e. PM-2.5) may be needed. Since a large fraction of the fine particles are formed in the atmosphere, additional SO<sub>2</sub> emission controls for power plants (beyond the levels required under Title IV) may be required if a PM-2.5 standard is established.

Title III lists 189 hazardous air pollutants of concern, 37 of which are found in utility fuel sources. EPRI is currently evaluating controls, air modeling and health and risk assessments for arsenic, chromium, nickel, mercury, and radon, with primary focus on mercury. Emission inventory and source/receptor modeling is currently underway, and controls may be issued this year. Existing control technology doesn't work for mercury. Consequently, utilities would be forced to switch to natural gas if mercury regulation is established. International health effect studies for mercury will be forthcoming.

Title VIII Includes provisions for a special visibility study in the Southwest, funded in part by the utilities in the region. Visibility continues to be of concern throughout the country, both in urban and wilderness areas. Several studies including a Grand Canyon Visibility Study, Denver and Dallas haze projects, and a study in the southern Appalachians are underway. Unrelated to Title VIII, the trend in industry is toward shorter emission stacks, which has lead EPRI into research on plume downwash effects. Downwash occurs when a plume is advectively forced to ground surface after passing over a tall building.

EPRI 1996 budget is ~\$400 million, \$13 million going to Air Quality. Of this \$13 million, \$7 million is base funding, \$6 million from utilities who can direct how this money is spent. Electric utility companies used to join EPRI as a whole, now they have some say over which environmental research area their funds go to. They still become a part of EPRI by paying a "membership fee" but if the utility wants to contribute more for a particular study, EPRI will match using "membership fee" dollars. Budget cuts are expected in 1997. Keeping a long term monitoring focus will be challenging with the new ability electric utility companies have to dictate funding of narrowly focused, short term projects. Bowersox mentioned the problem of vague NOx goals in Title IV: companies afraid control technology they buy now will later prove to be inadequate.

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- **Siting Criteria Problems (Frisch)**

Frisch held up a list of siting criteria violations noted during recent site audits that have not been approved. The violations are from spring 1994 to fall 1995. **Frisch made a motion that all violations on the exception list be approved.** Many of the violations are intractable problems such as a highway or urban area closer to the site than allowed and in fact have been that way since the network was started. In some cases urban growth has encroached on the site since it was first set up. Stensland said he can't vote to approve a list of violations without the opportunity to see what is on the list, and asked if the new framework for evaluating siting violations that was first described two years ago would be included in the revised QA plan. Lear added that plans are in place to revise the QA plan. Frisch remarked that he has heard this for many years. Nilles suggested amending the siting criteria to reflect changes in the field, stating that he sees more buildings near sites than ever before as industrial growth in rural areas is exploding. The combination of urban and rural growth has made the original siting criteria untenable. Allan said that an idealized set of siting criteria are used as the standard to shoot for by every network, with the realization that they are the standards constituting an ideal site. The realities of what we have to settle for will often be different. Allan said that compromising these standards is unnecessary when what is really needed is a better understanding of how they serve as an ideal reference point. Lear said that we must distinguish protocol violations from siting criteria violations and not lump them together, adding that because we need realistic siting criteria changes to the QA plan must be made. Frisch asked Flagler when an updated list of violations was last prepared at the CO, but this information was not available. **Frisch's motion was voted on; motion was defeated. Stensland then made a motion to table this discussion until the fall meeting to give Lear, Robertson and others time to update the QA plan. The motion was seconded by Stensland and passed with the amendment that if the QA Plan is not updated by the fall meeting, Frisch's original motion will be voted on again at that time.** Lear then said he doesn't expect the QA plan to be revised by the fall meeting. Stensland then suggested that instead of trying to revise the entire QA plan by the fall, only update selected sections of it, such as the siting criteria section. **Stensland made a motion to update pages 2-6 and 2-7 of the QA plan which deal with siting criteria by the fall meeting. The motion passed unanimously after the following discussion.** Nilles questioned how only 2 pages could be revised without updating the site selection criteria. Bowersox added there are three categories of sites: Type A = no urban influence, B= moderate, C= high . Nilles said there is no data for categorizing sites like this, no information on urban influences. Bowersox suggested using land use to evaluate sites. Lear concluded this discussion by saying most data users don't even use the chemistry value codes indicating contamination, let alone

site violation information, even though this information is available from the CO. Smith asked how the site violation data was available. Lear said in Ingress tables.

Flagler added that a couple of sites in Colorado and Florida might be interested in joining the network. The group concurred these additions should be explored. Bowersox suggested asking for a five year commitment.

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- **Check Solution Switching Controversy (Gilpin)**

Before leaving the meeting yesterday in a dire condition, Dossett gasped that some sites used the 4.3 check solution past the date for switching to 4.9. James said this should be an agenda item for the fall. Nilles suggested Lear prepare recommendations for coding data from the late switching sites by the fall meeting. Dossett had also asked about invalidating data from sites that failed to switch to the 4.3 at the specified time. Flagler said there was no reason to invalidate the data from these sites. The entire group concurred.

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- **Data Users needs concerning NADP (Allan)**

The question of what QA data should be made available to data users and in what forms has been mentioned before. Allan presented a plan for addressing this question. The plan consists of 1) identifying the various QA/QC data in the network by circulating a template or questionnaire to be filled out by current holders of data, 2) compiling the information and routing to DMAS & QA, 3) prioritizing at or before the Fall meeting, 4) deliver to QA manager name of data, contact person, description of data, period of collection, no. of sites, frequency, data format, physical location, availability, importance for direct use by data users (an assessment made by the data holder). Bowersox suggested adding a category to the questionnaire for listing publication or reports related to the specific QA/QC data, and also a section to explain the original objective or intended use of the data..

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- **Miscellaneous Items (Flagler)**

Flagler found out he can get 2 motor boxes fixed quickly at ARS, asked for and got approval to do so. Flagler then asked for an archive request extension for the one researcher currently using these samples, was told to wait until executive committee next month for approval.

**The meeting adjourned 4/3/96 at 10:50 am.**