

Network Operations Subcommittee (NOS) Meeting
October 26, 1998
St. Petersburg, FL

Attendees:

Rick Artz
Sue Bachman
Brigita Demir
Scotty Dossett
Joel Frisch
Cari Furiness
John Gordon
Dennis Lamb
Mark Losleben
Bernie Malo
Lee Maul
Mark Mesarch
Stuart Nagourney
Mark Nilles
Mark Peden
Eric Prestbo
Susan Randall Johnson
John Robertson
Jane Rothert

INTRODUCTION:

Introduction by Scotty Dossett

APPROVAL OF MINUTES:

Minutes for April, 1998 NOS meeting on the NADP Web Page
Minutes approved - Susan Randall-Johnson moved, Lee Maul, 2nd, passed

Nominations for NOS secretary for 1999:

Susan Randall-Johnson (MPCA) nominated/accepted nomination from the floor.
Lee Maul moved to close the nominations
Bernie Malo, 2nd
passed

With no other nominees, Susan Randall Johnson will be the secretary for NOS for 1999,
providing funding can be found for her to attend the meetings.

LABORATORY AUDITS, CAL AND HAL:

The NADP Quality Assurance (QA) Plan calls for a Central Analytical Laboratory (CAL) audit every other year. It has been several years since the last one. Scotty Dossett proposed having a CAL audit in 1999. The audit is to be in the summer of 1999. The audit would be two to three days and include a draft written report at the end of that time. A report will be made to the NOS of the findings at the fall meeting. The QA Plan stipulates that the NOS chairman be on the audit team. The NOS chairman for 1999 is John Gordon, who will chair the audit committee. In addition, John Robertson, who has participated in several CAL audits in the past and is the former chair of the NADP QA Steering Committee, and Mary Ann Allen, the Data Management and Analysis Subcommittee (DMAS) representative, agreed to also be on the committee. One additional member for the committee is still to be chosen.

In addition to a CAL audit, there will be a HAL audit. HAL stated that they have had six audits in the last 1.5 years. The HAL audit will be earlier in the year than the CAL audit, but the results will also be reported at the fall meeting. Committee members selected to conduct the audit are Mark Peden and John Shimshock. At least two additional people need to be added to the committee, one of them being a CAPMoN representative if possible. Sandy Verry was charged with coordinating the audit and finding the additional audit team members.

Both audits are to be full systems audits. This means that not only will the analytical laboratories be audited, but also all shipping and receiving protocols, materials preparations, laboratory analysis and data management will be audited. Both the HAL and the CAL audits will last two-three days with the last day spent in writing the audit findings and recommendations. These will be presented to the NOS at the fall NADP technical meeting.

E-MAIL VOTES:

The new E-mail voting procedure was used to approve the MDN hardware change. Bob Brunette and Scott Dossett discussed how the new procedure worked. Bob was very happy with it. The hardware change was approved by the NOS and was implemented at several sites during the summer. For more information on this motion and proposal see the April, 1998 NOS meeting minutes.

MDN DUAL PEN EVENT RECORDER RETROFIT:

The MDN dual pen event recorder retrofit is also proceeding according to the proposal made at the April, 1998 meeting. Bob Brunette reported no problems.

OPERATOR'S MANUAL UPDATE:

An update on the revision of the NADP Operator's Manual was given by Scotty Dossett. The manual is out for review and will be printed by the end of 1998. John Robertson has agreed to do a final review before printing.

DRY BUCKET SAMPLING:

The Effects Subcommittee had called for a vote on whether to continue the dry-bucket portion of the NADP sampling protocol. Several years ago it was made optional on a site and sponsor basis. At this time there are 12 sites still sending in their dry-side bucket. Nov. 10, 1998 was the next scheduled time for the dry-side bucket to be sent to the CAL. Mark Peden moved to discontinue the dry-side bucket analysis beginning Nov. 11, 1998, after the last scheduled removal date. John Gordon seconded. Motion passed.

Meeting adjourned until Oct. 28, 1998.

Network Operations Subcommittee (NOS) Meeting
October 28, 1998
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23 attendees

NADP SITE SYSTEMS AND PERFORMANCE SURVEYS:

The NADP Site Systems and Performance Surveys report was given by John Shimshock. The auditors are scheduled to visit 100 sites per year. As of Oct., 1998, 67 sites had been visited in 1998. The plan has been to start on either coast and move toward the middle as the year progresses. Some of the general findings have been:

* The calibration of 35 out of the 67 (52%) rain gages checked were out of calibration. Most seemed to fail at over 5 inches of rain but are ok at the lower precipitation amounts.

* The original solution used by the auditors had a conductivity reading of 65-68 $\mu\text{S}/\text{cm}$. This has now been changed to around 30 $\mu\text{S}/\text{cm}$.

John asked for an acceptable tolerance criteria for both the pH and the conductivity of their check solution. John was told to use the method used at the USGS which is based on hydrogen ion concentration rather than on pH (about ± 0.15 pH units for the 4.7-4.8 pH solution).

John Gordon will get the equation for John Shimshock so that the auditors will have it to use. John Gordon will also look at how the USGS came up with the numbers and report back at the spring meeting. The conductivity variance was given to be:

$\pm 2 \mu\text{S}/\text{cm}$ for conductivity less than 10 $\mu\text{S}/\text{cm}$

$\pm 4 \mu\text{S}/\text{cm}$ for conductivity greater than 10 $\mu\text{S}/\text{cm}$ but less than 60 $\mu\text{S}/\text{cm}$

$\pm 6 \mu\text{S}/\text{cm}$ for conductivity greater than 60 $\mu\text{S}/\text{cm}$

NETWORK EQUIPMENT DEPOT:

Scott Dossett gave a report on the Network Equipment Depot (NED) status (Attachment #2).

Current inventory is as follows:

- motor box - about 8 months supply
- sensors - about 2 months supply
- event recorders - 32 months supply
- clocks - about 9 months supply

Only problem at this time seems to be the amount of sensor supplies.

New shipping procedures for the raingage clocks and manual on how to install are done.

Procedures include pictures.

Summary: There shouldn't be any downtime due to lack of components for the network. Scott has decided to try to speed up the raingage change-out to the new ones remade in house. The sensor rebuilds need to be finalized. NED needs to look into replacing bushings and bearings, etc.

The USGS purchased eight motor boxes and eleven sensors from AerochemMetrics in September, 1998. NED has these new units in their current inventory.

USGS RAINGAGE STUDY:

An update on the USGS raingage study was presented by Laura Hult (Attachment #3). If the Belfort 5-780 now used on the network is replaced, what would be its replacement. What is on the market? How does the Belfort 5-780 compare with newer models now available? Should the NADP be thinking about upgrading the raingage? These are some of the questions being looked at. HIF, the USGS testing facility at Stennis Space Center, MS, is testing five different gages against the National Weather Service 8" stick gage (Novalynx US stick gage) as the standard. The gages being tested are: ETI NOAH II, Ott Pluvial, Belfort 3200, Belfort 5-780 (using old ones from NADP sites), and Geonor T-200. Calibration isn't the issue but sensitivity is. There was considerable discussion that the Belfort 5-780's being used were old and possibly more prone to problems due to age than the other gages in the study. Several people thought that this would affect the performance of the Belfort 5-780 negatively and wanted to know why new Belfort 5-780's weren't purchased for the study. The original study wasn't set up to look at new gages but just the performance of current gages vs. what was available on the market. USGS will look into this part of the study.

E-MAIL ALIAS:

The E-mail alias for NOS and the discussion area on the Web was discussed (Attachment 4). Some of the questions asked were: did it work or not?, does the current format need modifying?, how do we handle discussion groups?, does NOS want an open discussion group forum?, do we filter who can participate?, and how do we call for votes? Dennis Lamb likes the open forum idea. Anyone interested in NADP should have a right to voice their opinion during the

discussion period. Someone suggested separate URL's for each topic of discussion. S. Dossett and others thought this would be too cumbersome and would hamper participation in an open forum. There were additional thoughts about having comments available through links rather than the entire discussion appearing on the main discussion page. This would simplify the page and make it easier to look at the most recent contributions to the discussion rather than always having to load the entire discussion on a given topic.

After more discussion, it was decided that the discussion area would be public with pointers from main NADP Web page. Any voting would be private and restricted to members of NOS. After a given time, a call to vote would be made in the public forum discussion as well as via E-mail to NOS members. Since membership in NOS is defined as anyone attending at least one NOS meeting in the last three years, limiting voting to NOS members is really not restricting the voting to a select few. A vote would then be made via E-mail or perhaps on a Web page with restricted access.

Discussion then ensued about how to make this vote part of the permanent NOS record. It was agreed that all votes by E-mail would be reported at the next NOS meeting so that the vote could be recorded in the NOS minutes. Bernie Malo suggested that the discussion and the E-mail vote be filed into a permanent record or at least for a set amount of time so that anyone could go back and review the reasonings behind a given decision. Mark Nilles suggested the NOS chairman look at ways to get the meeting minutes, committee reports, and Web discussions and votes all consolidated and archived together. Meanwhile, the conclusion of the discussion was to continue with public discussion and private voting via the Web.

NADP FIELD EQUIPMENT REPORT:

Mark Nilles reported on the ad hoc committee to look into modernizing the NADP site equipment. The committee consists of Van Bowersox, Rick Artz, Mark Nilles, and Eric Prestbo. Each year approximately 10 site years of data are lost due to failing equipment across the network. Mark requested suggestions from the NOS members for equipment that the committee should consider rather than the committee coming up with all their own ideas. Expanding the input to the committee will help in finding new techniques that are available. Mark cautioned people to make sure that the equipment and changes suggested be kept simple so that non-technical people will be able to operate them. The committee wants to look at new equipment as well as ways to possibly upgrade or in general overhaul what is already out in the network. The committee isn't looking for quick fixes, but is looking into a long term upgrading of the network.

EXTERNAL QA ISSUES

SODIUM BIASES:

There were several topics discussed under external QA issues. John Gordon reported on the sodium problem seen in the USGS laboratory intercomparison samples with the CAL's results. When the sample was shipped to the CAL in the buckets using the lids with the o-ring, there was a high Na bias in the samples that were put into the bucket vs. the part of the sample that was

never exposed to the bucket or lid. With the start of the bottle protocol in 1994, this problem, it was assumed, would go away. Unfortunately, this was not the case, but the reverse was seen. Now there is LESS Na in the bucket portion of the sample compared to the part that never sees the bucket, or now there is a negative bias in Na in the field exposed part of the study.

On Jan. 1, 1998, the use of a new type of filter used to filter the NADP samples was begun. Prior to Jan. 1, 1998, the samples were filtered through Millipore filters. Starting Jan. 1, 1998, the CAL is using Gelman filters. The Millipore filters actually contributed Na to the samples. When looking at the data for the first several months of 1998, with the new filters, the bias of the Na in the field exposed part of the study goes away. The bias showed up as unequal between the exposed and the control portions because of the volumes filtered at the CAL from each portion. At this time, it is assumed that the sodium bias from the filters has completely disappeared. John Gordon will continue to monitor the situation and give an update at the spring meeting in 1999.

FIELD BLANK DESIGN:

An ad hoc committee was formed at the April, 1998 meeting to discuss field blank design across all of NADP. MDN, NTN, and AIRMoN all had similar field blank programs but all with slightly different designs. The NADP field blank program will entail getting 100 field blanks per year, or about half the sites would submit a field blank each year. The field blank criteria would be based on a week where no precipitation occurred for the entire week. There are also other requirements (see Attachment X). Each site that was to do a field blank would have one year to submit the sample. USGS would send out the sample to be used. Half of the sample would be poured into the bucket and half would be returned to the CAL in the original bottle. The AIRMoN protocol would be similar, but AIRMoN has a field blank every month at each site.

The MDN field blank protocol would also be for one field blank per site per year. The site could only do a field blank if there were no openings on the collector, according to the event recorder. HAL would send each site a bottle of pH 5, low Hg concentration water. Half of the bottle would be poured through the entire sample train and half would remain in the original bottle. Both halves would be returned to the HAL for analysis. Starting in Jan., 1999, MDN will do about 10-12 sites each quarter. If a field blank bottle is sent to a site, but no appropriate week with no lid openings occur for three months, then the bottle of solution is to be returned to the HAL and a new one will be sent to the site.

Eric Prestbo moved to accept these field blank criteria as outlined. Susan Randall-Johnson seconded. Motion passed.

SITING CRITERIA VARIANCES:

When NTN became part of NADP, John Robertson published a site directory. This is a two volume directory each containing about 500 pages. The directory includes land use around each site, topographical information, identification of point sources, etc. This information is still requested occasionally and the CAL sends out the information. This information, however, is

outdated in many cases. The question presented to the NOS by Scott Dossett was whether we need to update this book, generate an entirely new publication to include the current conditions at each site, and should it be put on the Web rather than hard copy printed whether it is updated or just continue with the old version? Because of its size, Dossett's suggestion was to not reprint the current one but to put it on the Web as a minimum. To update the directory would be extremely expensive. Carrie Furiness said that we really need an updated version and that cost should be considered separately. John Robertson agreed to put together a white paper on what it would take to update the directory and get back to the NOS at the spring meeting in 1999.

Someone asked how the sites looked to the auditors, whether this was an urgent problem. John Shimshock and Scott Dossett gave some examples of local and regional problems that have been found or not found at the 64 sites audited in 1998. Some had problems that went against the siting protocols, others didn't.

Meeting was adjourned by Scott Dossett.

ATTACHMENTS

Attachment #1:

Network Operation Subcommittee Agenda Fall 1998 Meeting, St. Petersburg, FL

srd 10.20.98

Date	Time PM	ITEM
26	4:15-4:25	Introductions/Approval of Minutes/Officer Election- All
26	4:25-4:35	Laboratory Audits, CAL and HAL- Scott Dossett
26	4:35-4:45	E-mail votes: re: MDN hardware change- Bob Brunette/Scott Dossett
26	4:45-4:50	MDN: update re: dual pen event recorder retrofit-Bob Brunette
26	4:50-5:00	Operators Manual Update- Scott Dossett

Date	Time AM	ITEM
28	10:45-10:55	NADP Site Systems and Performance Surveys- John Shimshock
28	10:55-11:10	Network Equipment Depot- Scott Dossett
28	11:10-11:20	USGS raingage study- Laura Huth
28	11:20-11:30	E-mail alias, discussion area- Scott Dossett
28	11:30-11:40	NADP field equipment-Mark Nilles
28	11:40-12:00	External QA Issues: optimize field blank program and sodium deficit from blind audit, John Gordon, Jane Rothert, Clyde Sweet
28	12:00-12:10	Siting Criteria Variances- Scott Dossett
28	12:10-12:30	Other Issues

Attachment #2:

**STATUS OF NETWORK EQUIPMENT DEPOT (NED)
Fall 1998 meeting St. Petersburg, FL**

10.23.98 srd

INVENTORY

NOTE: the first numbers are from first quarter 1998, the second set of numbers are from the second quarter, the third set of numbers, in bold are for the third quarter of 1998.

UNIT	# ready	#for testing	# to fix	# to scrap
Motor Boxes	35/ 14/31	3/ 14/23	8/ 20/5	5/ 6/6
Sensors	9/ 7/6	8/ 2/1	5/ 15/16	4/ 5/5
Event Recorder	9/ 12/11	6/ 15/15	3/ 1/0	0
Clocks	25/ 9/32	3/ 12/5	16/ 31/6	NA/ 27

ORDERS for last three quarters (Spring/SUMMER/Fall)

	Number	SUM	Yearly* Avg.
Motor boxes	17/ 16/18	51	80
Sensors	10/ 20/12	42	45
Event Recorders	7/ 7/1	15	10
Raingage Clocks	21/ 11/17	49	50

* NED design estimate (from old records)

SUMMARY OF INVENTORY

MOTOR BOXES- 54 available or **8.2** months. Generally we are successful at repair, good stock prior to winter.

SENSORS- 7 available or **1.8** months. Problem with sensor shell caused supplies to be down, prototype "ground up" build testing.

EVENT RECORDERS- 26 available or **32.0** months.

RAINGAGE CLOCKS- 37 available or **8.9** months

RECENT IMPROVEMENTS

Still working at being independence of ACM for all component repair.

Driving motor units found at vendor, ordered for trial.

Sources found for sensor heating pads, sensor enclosures and thermistors.

Raingage repair, field changeover and shipping protocol finalized. Gages being shipped.

Cold testing of all raingage clocks.

RECENT PROBLEMS

Sensors-Supply lacking, hopeful regarding trials of new build.

Aerochem lid driving hardware. Attention must be paid to the bearings, bushings and other components making up the non-box drive assembly. This will require development.

SUMMARY OF CURRENT OPERATION

No downtime due to lack of components.

Not possible to tell if the frequency of repairs is decreasing due to component improvements

PLANS

Speed up raingage change system.

Finalize sensor build trials.

Formulate plan of action for lid driving hardware.

Attachment #3: Raingage Study

Attachment 4:

The screenshot shows a Microsoft Internet Explorer browser window with the title bar 'Frameset for newMapDisc - Microsoft Internet Explorer'. The address bar contains the URL 'http://nadpsql.sws.uiuc.edu/newmaps/maps_frm.htm'. The browser's menu bar includes 'File', 'Edit', 'View', 'Go', 'Favorites', and 'Help'. Below the address bar, there are several links: 'Best of the Web', 'Channel Guide', 'Customize Links', 'Internet Explorer News', 'Internet Start', and 'HTML document for the World Wide Web'. The main content area is divided into two frames. The left frame is titled 'Map Prototype Discussion' and contains a 'CONTENTS' section with a list of links and dates, such as 'Welcome! Bob Larson 9/9/98', 'Quick first look Mary Ann Allan 9/9/98', 'On second look Mary Ann Allan 9/9/98', 'Re: On second look Bob Larson 9/9/98', 'Printing, resolution, data question Scott Dossett 9/9/98', 'Re: Printing, resolution, data question Bob Larson 9/9/98', 'Re: Printing, resolution, data question Bob Larson 9/9/98', 'Looks Good! Mary Ann Allan 9/9/98', 'Good color resolution Ellen Porter 9/9/98', 'Levels & Labels Van Bowersox 9/10/98', 'Impressed Mark A Mesarch 9/10/98', 'Article 12 9/10/98', 'pH maps comparison Kathy Tonnessen 9/10/98', 'Re: pH maps comparison Bob Larson 9/10/98', 'comment on resolution & nr. of classes Wayne Cornelius 9/10/98', 'like the new colors Kathy Tonnessen 9/10/98', 'Very nice Mark Nilles 9/14/98', 'Comments on new maps Luther Smith 9/21/98', 'Re: Comments on new maps Gary Lear 10/2/98', and 'New Maps Karen Harlin 9/28/98'. The right frame is titled 'WELCOME' and contains the text: 'This is an on-line discussion forum called *Map Prototype*. The contents frame shows the titles of all articles posted to the discussion. Selecting a title will cause the corresponding article to be loaded into this frame. You may [Post a new article \(starting a new thread\)](#). In addition, each article has links to let you reply to it (continue the thread) and navigate the article list. **Note: You may need to reload this page to see the most current entries.**' The bottom of the browser window shows the Windows taskbar with the Start button, several open application icons, and the system tray displaying the time as 3:46 PM.