

MINUTES
NORTH AMERICAN INTERSTATE
WEATHER MODIFICATION COUNCIL
Reno, Nevada
September 23, 2004

The meeting was called to order by Chairman Mike Mathis, at 1:30 p.m., at the Desert Research Institute, Reno, Nevada. Members present were: Arlen Huggins, Nevada; Darin Langerud, North Dakota; LeNor Dollinger, North Dakota Weather Modification Association; Dr. Joseph Warburton, Walker River Irrigation District (NV); Maurice Roos, California; Tommy Shearrer, Texas Weather Modification Association; Joe Busto, Colorado; and Dave Cole, Utah;

Others present were Aaron Gilstad, Barry Lawrence, Dr. Joe Golden, Tom Ryan, and John Andrew.

MINUTES

Dr. Joseph Warburton moved to accept the minutes of the April 28, 2004 meeting. Second by Tommy Shearrer. Motion carried.

MEMBERSHIP REPORT

Dr. Warburton reported the the latest new member was the State of New Mexico. There were no other new members at this time. Barry Lawrence reported the State of Wyoming is planning to join in 2005. Darin Langerud suggested the New Mexico Weather Modification Association be invited to join.

FINANCIAL STATUS REPORT

Dr. Warburton reviewed the 9-22-04 financial status report showing a balance of \$26,493.97 in the Council's checking account. There were no questions.

Darin Langerud moved to accept the 9-22-04 financial status report. Second by Arlen Huggins. Motion carried.

WEB SITE

Darin Langerud reported the Council web site now includes research synopses from the states that submitted information. Otherwise there has been no other activity. We have not been monitoring the number of hits the site has received. If any members have any suggestions or information they would like to post, please contact Darin.

It was suggested meeting dates could be posted on the Council's web site.

STATE REPORTS

Texas – Tommy Shearrer distributed information regarding The Southern Plains Experiment in Cloud Seeding of Thunderstorms for Rain Augmentation (SPECTRA) being carried out in the southern US Great Plains Region. The project is funded through the Bureau of Reclamation by the Weather Damage Modification Program and administered by the Texas Department of Licensing and Regulation (TDLR). A Cheyenne II aircraft was purchased and outfitted to collect data and information on cloud properties. Statistical analysis is also being done of previous cloud-seeding events (2001-2002) using a combination of rain gage and radar observations. The TDLR purchased a CCN counter and work has been done over the entire state to the extent possible gathering CCN data. Base seeding experiments are also being done using both glaciogenic (silver iodide) and hygroscopic materials (milled salts) and using sulfurhexafluoride gas as a tracer to track the dispersion of seeding materials and assess their impact on cloud growth and behavior.

Eight operational rain-enhancement projects were in operation during the 2004 cloud seeding season in Texas covering 39 million acres. Two of the eight projects (based in San Angelo and Carrizo Springs) are dual purpose, with an added emphasis on hail suppression. For the first time, multiple projects are sharing radar facilities and meteorological support services.

The Texas Legislature did not appropriate state funds to support the operational program during 2004. Operating costs have been borne by the water districts and weather modification associations that sponsor the projects.

The TDLR revised its weather modification rules to increase fees for Texas weather modification licenses and license amendments to \$650 each. Permit fees remain unchanged at \$75. There are no changes to current Texas weather modification law being contemplated.

Oklahoma – Mike Mathis reported Oklahoma does not have actual operations going on but is a partner with Texas in the research program serving as a subcontractor. Weather Decision Technologies and the National Severe Storms Laboratory have linked NEXRAD into the operational programs in Texas for the research effort.

The Oklahoma Water Resources Board is also doing some support work with Texas on rainfall and hail climatology utilizing NEXRAD data, particularly on the hail swath algorithm along with hail reports to get a better idea of hail occurrence. This work is also being extended into Kansas for their benefit. Hail occurrence is a significant issue in all three states.

California – Maurice Roos distributed copies of the executive update of hydrologic conditions in California as of 9-1-04, and a draft of the California Water Plan, Volume 2 – Resource Management Strategies regarding precipitation enhancement. Mr.

Roos stated that program regulation in California will be switching from the flood management area to the Water Planning Branch.

Utah – Dave Cole reported Utah had five active project areas during the 2003-2004 winter season. The projects used a total of 137 silver iodide ground generators for a total cost of \$377,900 of which the state paid \$142,400. The state budget for the projects is \$150,000. Each of the projects has a local sponsoring entity.

The Emery Water Conservancy District operates a small-scale project using three high elevation ground based liquid propane seeders on the Wasatch Plateau. This project is a continuation of the State/Federal Cooperative Research Program conducted in the 1990s.

Mr. Cole noted runoff was low in March & April, 2004. A dry warm March left little snow by April 1.

Nevada – Arlen Huggins reported the Nevada Cloud Seeding Program operations ran from November 2, 2003 to May 10, 2004. There were five project target areas. Two target areas (Walker-Carson and Tahoe) use aircraft and others 20 remotely-controlled ground generators. 82 aircraft hours were flown with 54 seeding hours, and 3440 ground seeding hours reported.

A silver iodide and cesium solution was used on the last four flights of the project so evidence of that is being looked for in the snow samples.

Mr. Huggins noted that warm conditions led to early runoff which began early to mid-March and led to below normal snowpack by April 1.

The average annual budget for the projects is slight less than \$500,000, which has not changed much over the past 20 years.

Colorado – Joe Busto reported the Denver Water Board has opted to hike water rates and trim back on the cloud seeding program. The board will contract to keep the generators in place and will make the call regarding seeding if the forecasted average doesn't materialize.

Mr. Busto noted the Colorado Water Conservation Board (CWCB) has expanded program spending authority from \$7100 to \$25000 in fees from various cloud seeding operators to be used to carry out various programmatic duties. He also noted the CWCB has approved \$90,000 in cost-share grants for 2004-2005.

The CWCB is also funding a climatological assessment of cloud seeding opportunities between 1972-2002 in Colorado. The study is designed to answer the questions, "If you were cloud seeding since the state has had a program, what did you have to work with?" The study is designed to develop the historical storm data

set for Colorado, and to make a rough determination as to the utility of cloud seeding in the two to three years before a forecasted drought.

The CWCB is also collaborating with the Bureau of Reclamation on a project to provide improved assessment of snowpack snow water equivalent, snowmelt, snowpack base, and snow depth. The project will be refined over years and help many forms of water management and assessment in Colorado and downstream states.

Wyoming – Barry Lawrence thanked the Council for their cooperation and collaboration in assisting him. He noted the State of Wyoming has funded a study for the Wind River and Sierra Madre/Medicine Bow Ranges to assess the feasibility of conducting a cloud seeding program for winter snowpack augmentation.

A contractor was selected which is Weather Modification, Inc., Fargo, ND; and the National Center for Atmospheric Research, Boulder, CO. The final report is due November 1.

Invitations to informational meetings were sent out to approximately 100 entities across the state including irrigation districts, conservation districts, federal and state research managers, universities, extension, and select legislative committees, etc. The meetings were lightly attended but most were supportive. Mr. Lawrence stated they wanted to make the point that this is not to be considered a drought-busting program, but a program that needs to be supported for the long haul.

Mr. Lawrence reported there is one operational program ongoing in Wyoming. It has been active for approximately thirty years. It is a spin off of the University of Wyoming early efforts in the 1970's sponsored by the Eden Valley Irrigation District. Three silver iodide generators and two propene generators are used on this project.

The Wyoming Legislature will meet in 2005, and based on the feasibility study due in November, legislation may be put forth to the Legislative Select Water Committee regarding funding for weather modification projects in the state.

North Dakota – Darin Langerud distributed copies of "*Report on the 2004 North Dakota Cloud Modification Project (NDCMP)*." Operations were conducted in the target areas from June 1 through August 31, with an 8-day extension in Ward and Williams Counties due to the late harvest. The 2004 NDCMP saw 544.33 flight hours logged, well below the 830 budgeted for the project. Eight aircraft and two radars (Bowman and Stanley) were utilized.

The PARS (Palm Aircraft Recordkeeping System), developed in-house and field tested in 2003, was fully deployed for the 2004 project. The system collects location information from a GPS at prescribed time intervals during flight, in addition to storing data input by the pilot crew. The flight data is then uploaded to the NDARB database in Bismarck via standard telephone line. Additional training on the use of

the PARS system will be incorporated in ground school prior to the 2005 project to help alleviate the common user issues. An advantage to this system is now all information is electronic and in our database. This information includes flight tracks, seeding locations and time, aircraft locations every 60 seconds, as well as seeding chemical expended, and pilot crew remarks. We intend to use this data in addition to our rain gage network data in putting together an assessment methodology. The PARS is a major component of this effort.

Mr. Langerud also reported on some interest in additional counties joining the program.

NDARB's WDMP research initiatives continued through the summer. Equipment problems impacted the collection of CCN data. Numerical modeling efforts were also delayed this summer by a network security issue at NCAR which amounted to a seven-week lockout for use of their computational facilities. A no-cost extension has been requested to complete the modeling activities.

Results of the target/control evaluation of the NDARB Cooperative Observer Network (ARBCON) dataset indicate more rainfall in and downwind of the NDCMP target areas. Statistical analysis has not yet been completed.

NDARB will give presentations on WDMP efforts at the American Meteorological Society meeting in San Diego.

WEATHER DAMAGE MODIFICATION PROGRAM

Mike Mathis distributed copies of the latest report of efforts by Capitol Decisions in Washington, DC.

Darin Langerud moved the Council continue the services of Capitol Decisions for the 2005 calendar year at the current rate of \$2500 per month. Second by Dr. Joe Warburton. Motion carried on roll call vote of 7 ayes, 0 nays.

FEDERAL AGENCIES UPDATE

Dr. Joe Golden briefly reviewed proposed budget and management changes being planned within the National Oceanic & Atmospheric Administration (NOAA). He has had a chance to brief Dr. Rick Rosen, the head of the Office of Atmospheric Research, NOAA, regarding past efforts of the State-Federal Cooperative Program in Atmospheric Research, as well as the ongoing Weather Damage Modification Program.

Mike Mathis reported he had visited with Steve Hunter, US Bureau of Reclamation, who was unable to attend the meeting. Mr. Hunter stated there is still interest within the Bureau for the Weather Damage Modification Program.

Dr. Warburton requested the Council authorize him to purchase an upgrade to the Council's computer system at a cost of up to \$1,500.

Discussion followed about what was the best way to upgrade the Council's computer system, or to just purchase a new computer.

Tommy Shearrer moved the Council authorize Dr. Warburton to purchase a new computer for the Council at a cost of up to \$1500. Second by Maurice Roos. Motion carried on roll call vote of 7 ayes, 0 nays.

OTHER BUSINESS

LeNor Dollinger asked what the Council plans to do about their records. It was noted that Conrad Keyes stated in a recent email to Council members that he was having the 1974-1987 records placed in archives at the New Mexico State University Library. General discussion and consensus was that all NAIWMC records should be consolidated and located in one place.

Darin Langerud moved the Council consolidate its historical records in a location to be determined by the Council. Second by Dr. Joe Warburton. Motion carried.

Mike Mathis stated he would contact Conrad Keyes and find out the amount of Council records he has.

The next meeting will be held in Washington, D.C. in April, 2005. A date will be announced at a later time when arrangements can be made.

MIKE MATHIS, CHAIRMAN

Dr. JOSEPH WARBURTON
SECRETARY-TREASURER

Transcribed by LeNor Dollinger