

MINUTES  
NORTH AMERICAN INTERESTATE  
WEATHER MODIFICATION COUNCIL  
Desert Research Institute  
Reno, Nevada  
September 12, 2002

The meeting was called to order by Chairman Darin Langerud at 10:00 a.m., September 12, 2002, at the Desert Research Institute, Reno, Nevada. Members present were: Maurice Roos, California; Diane Coe, Kansas; Arlen Huggins, Nevada; Darin Langerud, North Dakota; LeNor Dollinger, North Dakota Weather Modification Association; Nathan Kuhnert, Oklahoma; George Bomar, Texas Department of Licensing & Regulation; Jane Lee, Texas Department of Agriculture; Dale Bates, Texas Weather Modification Association; Tommy Shearer, Texas Weather Modification Association; Dave Cole, Utah; Dr. Joseph Warburton, Walker River Irrigation District (NV); and Dennis Gibbs, Santa Barbara County Water Agency (CA affiliate member).

Other present were Dr. Joe Golden, NOAA FSL, Boulder, CO; Mike Eilts, Weather Decision Technologies, Inc.; and Bill Finnegan.

MINUTES

Tommy Shearer moved the minutes of the meeting of April 24, 2002 be approved as distributed. Second by Dr. Joe Warburton. Motion carried.

FINANCIAL STATUS REPORT

Dr. Joe Warburton, NAIWMC Treasurer, presented the financial status report as of 9-12-02, showing an ending balance of cash on hand of \$39,123.09.

George Bomar moved to accept the treasurer's report as presented. Second by Maurice Roos. Motion carried.

MEMBERSHIP REPORT

Dr. Warburton reported all members have paid membership for 2002. Two new memberships were reported. They were the North Dakota Weather Modification Association (Associate Member), and South Dakota School of Mines & Technology (Affiliate Member).

Discussion was held on dues for 2003.

George Bomar moved to increase annual member dues for full and associate members from \$1200 to \$1500 per year beginning with 2003; increase affiliate membership from \$400 to \$500 per year beginning wit 2003; and, set the special

assessment for 2003 at \$2000. Second by Maurice Roos. A roll call vote was taken and there were 10 yes votes and 0 no votes. Motion carried.

Dr. Warburton urged each member to seriously consider paying the special assessment in addition to their regular membership. This will enable the NAIWMC to keep funding the present activities. In 2002 only three states (New Mexico, North Dakota, and Oklahoma) paid the special assessment.

LeNor Dollinger noted statements will be mailed in November, 2002 for the 2003 dues.

### 2003 CONTRACT – R. SPEES

Discussion was held on continuing the contract with Mr. Rick Spees of Katz, Kutter, Alderman, Bryant & Yon. Mr. Langerud noted Mr. Spees had notified him he would continue his work at the rate of \$3000/month for the calendar year 2003.

George Bomar moved to authorize the Chairman to enter into contract with Rick Spees, of Katz, Kutter, Alderman, Bryant & Yon for the calendar year 2003 at a cost of \$36,000 plus direct expenses. Second by Dr. Joe Warburton. A roll call vote was taken and there were 9 yes votes and 0 no votes. Motion carried.

### TRAVEL POLICY

Chairman Langerud presented a proposed policy for travel reimbursement for the NAIWMC, which stated:

***This policy will apply to the delegate or alternate of any active Full member or Associate Member of the Council. Active membership constitutes payment of dues for the calendar year in which the travel occurs. Affiliate Members are not eligible for travel reimbursement by the Council.***

***The Chair of the Council will appoint a Travel Committee consisting of three members. Current members of the Council's Executive Committee, or delegates of Affiliate Members will not be able to serve on the Travel Committee. The Travel Committee will review travel reimbursement requests submitted by eligible members and shall have the authority to approve or deny those requests. Approval by the Travel Committee will authorize the Secretary/Treasurer to reimburse the applicant.***

***Travel eligible for reimbursement includes: a) expenses incurred by eligible members who travel in a capacity to officially represent the Council as determined by the Chair; b) travel expense***

***reimbursement related to Council business for “special circumstances” may be considered by the Committee on a case-by-case basis.***

***Reimbursement shall be made for actual expenses for airfare, lodging, rental car, taxis, and miscellaneous expenditures. Meals will be reimbursed based on the GSA rate for the destination city. Mileage for personal vehicles will be reimbursed at \$0.31 per mile.***

Dr. Joseph Warburton moved the proposed travel policy by adopted. Second by Diane Coe. A roll call vote was taken and there were 10 yes votes and 0 no votes. Motion carried.

### TRAVEL COMMITTEE

Chairman Langerud appointed the following persons to the Travel Committee:

Tommy Shearer, Chairman  
Maurice Roos  
Dave Cole

### WEB PAGE

Darin Langerud presented information regarding progress of building a web page for the NAIWMC. The North Dakota Atmospheric Resource Board will host the web page. Mr. Langerud stated there is a cost of \$70 to register the Council's domain name for two years.

Diane Coe moved the Council reimburse North Dakota for the \$70 registration of the Council's domain name for the web page. Second by Arlen Huggins. Motion carried.

Mr. Langerud also presented a logo for the NAIWMC and asked for suggestions for change, etc. Several members suggested changes. The logo will be returned to the graphic artist at the ND State Water Commission for further changes.

### TECHNICAL SESSION

Suggestions have been made by members that the Council should consider holding technical sessions at the time of meetings. Discussion ensued on the merits of adding another day or half-day for the purpose of discussions and presentation of technical nature regarding areas of purpose for the Council.

The question was raised as to, “what is the difference between technical sessions and state reports on operations, research and evaluations, and state

research proposals?” It was noted there were already three items on the agenda which are already overlapping in the sense of “technical sessions” and would the technical sessions replace these reports, or will there be a presentation of specific scientific data that are required under the current activities?

It was noted a technical session should be designed to help inform and assist members and prospective members in the area of technical aspects of weather modification.

Dr. Joe Warburton moved a technical session be incorporated into the agenda for the annual fall meeting. Second by George Bomar. Motion carried.

### MEMBER REPORTS

**Nevada** - Arlen Huggins distributed copies of a summary of activity for the Nevada program for 2001-2002. It was noted Atmospheric, Inc., Fresno, CA, was the aircraft contractor for the Nevada program using burn-in-place and ejectable flares. Aircraft flew approximately 49 hours during the project, but seeding hours were lost due to an early season suspension of seeding due to abnormally high snowpack (~200% of normal). Sixteen ground generators were used on the project with more than the usual number of problems with communications with remote generators. Most of the problems were cell phone provider problems. Mr. Huggins reported on water levels in the cloud modification project area basins.

Dr. Warburton reported that in the Walker Basin there is virtually no irrigation going on due to the low water levels. At this time water rights are back to 1859.

**California** – Maurice Roos distributed copies of water conditions in California as of April, 2002, and a map depicting the 13 rain and snow enhancement programs in California. He reported the possibility of a 14<sup>th</sup> project starting up in the Stanislaus Basin. Aircraft and ground generators are used on the projects.

**New Mexico** – A copy of a report submitted by Scotty Savage was distributed. Ms. Savage reported much progress in promoting acceptance of the weather modification program in New Mexico. The Llano Estacado Weather Modification Association has submitted a five-year plan to the Interstate Stream Commission for expansion of the program to include nearly 13 million acres of rain enhancement with a research component for hydroscopic flares. The Sandy Land Underground Water Conservation of Texas will begin a new program comprised of 2.2 million acres in Texas and 3 million acres in eastern New Mexico. Two aircraft will be used for the 5.2 million acre program.

**North Dakota** – Darin Langerud distributed copies of a report outlining aspects of the North Dakota Cloud Modification Project. The project covers 10,500 square miles employing 8 aircraft. In addition to the pilots-in-command, 9 intern co-pilots, four field meteorologists, and two intern meteorologists are employed. The intern pilot program, a cooperative agreement with the University of North Dakota has been in place since 1976. During that time 250 intern pilots have been trained during the NDCMP, many of which have returned as PIC's during subsequent years. Due to budget cuts for the 2003-2005 biennium, the Intern Pilot program will be unfunded. While the funding will no longer be available, the experience and twin-engine flight hours the program offers should allow the program to continue.

North Dakota is still involved in a process to reacquire a cloud seeding buffer zone in Montana, upwind of the ND target areas.

Mr. Langerud noted the ND Atmospheric Resource Board will be convening a panel of experts to review the NDCMP operations manual and safeguards criteria. This is a follow-up review of the original study conducted in 1984.

Discussion was held on the problems encountered by weather modification programs as it relates to environmental issues and perception by the public.

Dr. Joe Warburton moved the NAIWMC address the Chairman of the National Research Council panel with a request that the environmental issue be addressed in their report. Second by George Bomar. Motion carried.

**Texas** – George Bomar reported there are currently 10 rain enhancement programs going on in Texas, and one program which is a joint rain enhancement and hail suppression project. Mr. Bomar also reported on a cooperative agreement within Oklahoma whereby the states can use the airspace in the other state for cloud seeding purposes without having to license and permit in that state. Mr. Bomar also reported the High Plains Underground Water Conservation District has temporarily suspended their program due to opposition to the program; and, a new program is in the development stage that will cover approximately 5 million acres in west Texas. It was noted the Edwards Aquifer Authority (EAA) is no longer using a contractor. The EAA has signed an agreement with two neighboring programs to seed in the aquifer recharge areas.

Jane Lee, Texas Department of Agriculture (TDA), reported the TDA has allocated \$2.4 million in funding for the fiscal year beginning September 1. Currently, TDA is funding 10 operational programs on a 50%-50% match basis. The amount awarded depends on the amount of acreage in the target area. TDA awards between 3.5 to 4.5 cents per acre. Ms. Lee also reported TDA has implemented two new evaluation contracts. These contracts will be used to evaluate the operational programs using TITAN and satellite imagery. At this time, the TDA has not decided on what type of research to fund this fiscal year.

Ms. Lee stated due to the opposition of the weather modification program in the panhandle of Texas, several people within the weather modification programs will be giving presentations to educate the public about cloud seeding.

Dale Bates, Texas Weather Modification Association, reported the Weather Modification Consultants will be hosting pilot, meteorological and manager training for all the Texas programs. Mr. Bates also reported a member of the Australian Parliament visited Texas to observe the programs and receive information relative to setting up a new program in Australia.

**Utah** - Dave Cole reported the 2001-2002 winter season in Utah had four active project areas. These target areas were seeded using silver iodide ground generators operated by North American Weather Consultants. A total of 109 ground generators were used on the projects for the 2001-2002 season. The total estimated cost for these projects was \$279,200 of which the state paid \$139,600 (50%).

Mr. Cole noted the Emery Water Conservancy District operated a small-scale project using three high elevation ground based liquid propane seeders on the Wasatch Plateau within the Central and Southern Utah project area. This is a continuation of part of a NOAA research project conducted in the 1990's.

The Utah projects experienced less than normal seeding opportunities during the 2001-2002 season.

A recent study by the Division of Water Resources estimated the average annual increase in runoff due to cloud seeding to be about 250,000 acre-feet (13 percent) for projects seeded during the 1999-2000 season. The estimated cost of the water developed was about one dollar per acre-foot.

Mr. Cole noted there is interest in Utah in submitting a research proposal under the Weather Damage Modification Program.

**KANSAS** – Diane Cole reported on activities regarding the Kansas project and the goals for the future of the projects. Ms. Cole noted the funding for FY 2002 was reduced from \$390,000 to \$341,000. FY 2003 support for the program is at \$98,600. A lower level of state support is anticipated for FY 2004.

Ms. Coe noted a stable and permanent funding is needed for the Kansas Weather Modification Program to continue. One option being considered is to coordinate with the Kansas Insurance Department to introduce legislation to secure a stable and permanent source of cost share funding for weather modification funding in Kansas.

**OKLAHOMA** – Nathan Kuhnert reported at this time there is no state appropriation for the weather modification program in Oklahoma. There were no

operations in 2002. Ongoing effort for future programs is ongoing. Oklahoma is planning to work with Texas and New Mexico to establish a regional effort for research under the Weather Damage Modification Program.

**Santa Barbara County Water Agency (CA)** - Dennis Gibbs reported that during the 2001-2002 season the agency conducted a three-month program to enhance water supply to surface water reservoirs and groundwater basins. The area received only 45-50% of normal rainfall in most areas of southern California. The flares used on the program were 150 gram high impact, fast acting AgI complexes. There were only about 7 seeded events during the program. The cost are shared 50-50 between the county and the local water purveyors. North American Weather Consultants was the contractor for the program. During the 2002-2003 winter season they plan to have a contractor seed from November 15 through early April to try to catch the full season. The longer season is estimated to cost an additional \$50,000. An additional design will be added to the program this year with the addition of a five-month ground program using flares. During the core three months of the winter the aircraft seeding will be added.

#### WEATHER DAMAGE MODIFICATION PROGRAM (WDMP)

**Status of WDMP 2002** - Chairman Langerud noted the Bureau of Reclamation (BOR) will be accepting proposals for the Weather Damage Modification Program (WDMP) until October 17, 2002. The BOR wants the programs to start no later than December 20.

**Status of WDMP 2003** - Mr. Langerud distributed copies of a letter report from Rick Spees regarding the status of FY 2003 appropriations for the Weather Damage Modification Program. At this time the Senate has marked up its version of the FY 2003 Energy and Water bill. The bill included \$3.5 million for the WDMP. In response to a question, it was noted a Memorandum of Understanding is being drafted that would enable BOR to transfer the WDMP funds to another federal agency. A mechanism such as the memorandum must be in place in order for a transfer to happen.

**Status of National Academy of Sciences (NAS) Study** – Members who attended the meeting of the NAS committee on weather modification in Woods Hole, MA, August 1, 2002, gave brief comments on different aspects of the meeting. The final report and recommendations is expected in spring of 2003.

#### WDMP RESEARCH PROPOSALS

The chairman inquired of members which states are planning on submitting proposals. These are: California, Oklahoma, New Mexico, Nevada, North Dakota, Texas, and Utah. Discussion was held on particular types of work some of the states hope to carry out under the WDMP.

JOE GOLDEN, FORECAST SYSTEMS LABORATORY (FSL)

Dr. Golden stated he feels one of the major roadblocks to the success of weather modification, both real and perceived by both the scientists and the general public in the US, has been limited budgets and statistical analysis. Remarkable progress has been made in the technology and he feels you really can't convince anyone that you are successful in weather modification until you can do an adequate job of forecasting what would have occurred naturally. The business of the FSL is to develop new technology and forecasting techniques to transfer to operations. The FSL has been involved in much of the work in the modernization of the National Weather Service. One of the major advances in modeling that the FSL is involved in is assimilation of diverse data sets. Some of the new types of data sets that are being brought into the prediction models are winds from profilers, data from satellite tracking cloud drift, NEXRAD data for velocity reflectivity, and high-level commercial aircraft data including winds, temperatures, and in the near future humidity. Dr. Golden noted there is now a rapidly developing national network of GPS meteorology sites. The GPS data not being used by navigators has turned out to be a gold mine for meteorologists, such as, the time-wave delay is directly proportional to the amount of water vapor in the column above the GPS site. A continuous measurement of integrated precipitable water is available at every one of these sites. Non-traditional data sets can also be brought into the models. It was noted models using new technology are being forced to do a much better job in the short term which is information weather modification operations need to know. The FSL is one of the key players in the national effort which will lead to a replacement for the MM5 model. The replacement will be the next generation mesoscale model with the best cloud physics, best microphysical parameterization, and the best knowledge the community has.

Dr. Golden stated the FSL is very interested in being a part of the WDMP, and for less resources that is being taken out now, they can offer a significant portion of their resources, both people and computer time in the modeling area and working with the states to: 1) help operational states in both winter and summer work to make better assessment and decisions on targeting and timing; and, 2) assist with evaluation in quantifying results.

MICHAEL EILTS, WEATHER DECISION TECHNOLOGIES, INC.

Mr. Eilts made a presentation on the development of a NEXRAD-based weather modification decision support system.

OTHER BUSINESS

The states of Texas, North Dakota and Nevada expressed interest in printing additional copies of the WATER MAGAZINE for education and promotional purposes. The North Dakota staff will assist in getting this done.

Dr. Joe Warburton moved the next NAIWMC meeting be held April 23, 2003, in Rapid City, South Dakota. Second by Diane Coe. Motion carried.

Arlen Huggins moved the meeting adjourn. Second by Diane Coe. Motion carried.

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DARIN LANGERUD, CHAIRMAN

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DR. JOSEPH WARBURTON  
SECRETARY-TREASURER

Transcribed by LeNor Dollinger