

NORTH AMERICAN INTERSTATE  
WEATHER MODIFICATION COUNCIL  
Desert Research Institute, Reno, Nevada  
October 21, 1999

The regular meeting of the North American Interstate Weather Modification Council was called to order by Chairman George Bomar at 10:00 a.m., October 21, 1999 at the Desert Research Institute, Reno, Nevada. Chairman Bomar expressed appreciation to Arlen Huggins and Dick Smith for making the arrangements for use of the facility at the Desert Research Institute in Reno.

Member state representatives present at the meeting were: George Bomar, Texas; Mike Mathis, Oklahoma; Scotty Savage, New Mexico; Norm Stauffer, Utah; Bruce Boe, North Dakota; Maurice Roos, California; and Arlen Huggins, Nevada. Affiliate member Harold Orville, South Dakota School of Mines & Technology, was also present.

Others present were: Curtis Smith, Kansas; Keith Lebbin, Kansas; Wayne Bossert, Kansas; Steve Phillips, Kansas; Kyle Spencer, Kansas; John Burgess, Kansas; LeNor Dollinger, North Dakota; Dick Smith, Nevada; Bill Finnigan, Nevada; Dale Bates, Texas; Joe Warburton, Nevada; and Rick Stone, Nevada.

### MINUTES

Scotty Savage moved the minutes of the April 8, 1999 meeting be approved as distributed. Seconded by Mike Mathis. Motion carried.

### STATE STATUS REPORTS

Kansas - Keith Lebbin reported the completion of the twenty-fifth season in Western Kansas in 1999. This was the third year the Northwest Kansas Groundwater Management District #1 has been a part of the target area. The same target area is proposed for 2000 but due to some controversy in the Northwest Kansas Groundwater Management District #1 and efforts to try to stop the program there, at this time it is not known if the program will be carried out in District #1 in 2000.

Curt Smith reported a 37:1 benefit to cost ratio attributed to the hail suppression program for the years 1978-1993. A 27% reduction in hail loss was also found for the target area. At the present time a student at Kansas State University is doing a master's degree study on the program which will be reviewed carefully. \$390,000 has been authorized for cost-share for the program. Previously the program has been all local funding. The program has contracted with the Northwest Kansas Groundwater Management District #1 the past three years. The target area in Kansas is approximately 16,000 square miles. No results have been shown to date on the rain enhancement side of the project.

Keith Lebbin stated he would like to see more work done using radars to evaluate rainfall events.

Oklahoma - Mike Mathis reported their program is now going through a transition period. Senate Bill 101 passed during the 1999 Legislative Session made several changes including a voluntary assessment for insurance companies to fund the program. The funding goal for the program is \$3,000,000. The first year funding will be \$1,000,000 from state funding and \$2,000,000 from insurance companies, then strictly \$3,000,000 from voluntary assessments from the insurance companies. Mr. Mathis stated operations started in mid-September with 3 aircraft and 3 radars using state funds to get started. Operations are carried out 24 hours-a-day. In 2000 they anticipate a startup date of March 1. At this time a director of the weather modification division has not been hired.

Mr. Mathis stated past operations in Oklahoma have been evaluated by the Oklahoma Climatological Survey. The evaluations show consistent seeding methods and a need for more aircraft for a statewide program. Mr. Mathis stated a positive strong evaluation will be very important in the long term. This evaluation is not funded in the present appropriation.

New Mexico - Scotty Savage reported their project started three years ago in partnership with the Texas program. The program uses one radar and three aircraft and covers 3 million acres. The program costs are at four cents per acre. The Interstate Stream Commission contributes \$100,000 per year and have just earmarked money for the next 3 years. At this time New Mexico is pursuing funding from the insurance industry, which is not too receptive. Scotty Savage stated she feels the Council should get more involved in addressing the issue of education of weather modification programs in the states. She feels they must do better in this area.

SD School of Mines & Technology - Dr. Harold Orville reported they are completing a three year study funded by an NSF grant in the area of numerical modeling on the effects of cloud seeding for rain enhancement and hail suppression. He also reported they have a candidate (final year) doing a master's thesis on hygroscopic seeding. In the summer of 2000 SDSM&T will be heavily involved in the STEPS Project, an 8 week project in eastern Colorado looking at the relationship between atmospheric electricity and hail. NCAR will be heavily involved.

Dr. Orville also reported he is no longer a member of the World Meteorological Organization CAS Working Group on the Physics and Chemistry of Clouds and Weather Modification Research. His replacement is Dr. Brant Foote. Dr. Orville reported the work done in Thailand showing statistical significance was reported at the WMO meeting in China. The work in South Africa and Mexico is also showing statistical significance. He noted hygroscopic seeding is showing significant effects.

Utah - Norm Stauffer reported the cost sharing for the Utah program is at 50%. He also reported the Division of Water Resources now has a web page regarding cloud seeding. He also reported they are trying to evaluate for acre feet of runoff due to cloud seeding. Mr. Stauffer noted the West Boxelder Project has not been active the past two years and that the Emery Project is now being run by the Bureau of Reclamation using computerized automatic stations.

North Dakota - Bruce Boe reported the 1999 North Dakota Cloud Modification Project ended at midnight August 31. He stated 803.01 total hours were flown. Of the total hours flown, 634.61 were for hail suppression; 3.57 for rain enhancement; 118.25 for reconnaissance; and 46.58 for other (return-to-base, etc.). These hours do not include contractor's maintenance hours. Mr. Boe stated the project went very well. He also reported the generator failure rate, which was 26% in 1992, was at 2.5% in 1999. A marked improvement due to efforts between the ND Atmospheric Resource Board and the contractor. The generators, which have been reengineered by the contractor, now need to be tested to determine if the changes have had an affect on the amount of nuclei generated.

A major concern for the North Dakota program is training and keeping project personnel. The ND Atmospheric Resource Board (NDARB) will continue to fund the Weather Modification Pilot Training Program by providing internships during the project for intern co-pilots who have completed the weather modification class at the John D. Odegard Center for Aerospace Sciences, University of North Dakota. NDARB also funds an internship program for meteorologists in an effort to have a meteorology staff trained in weather modification operations.

Mr. Boe reported on changes in the North Dakota Weather Modification Law made during the 1999 legislative session. A bill to provide funding from a tax on the insurance industry for the weather modification program in North Dakota was opposed by the insurance industry. The bill was amended to provide the funding for a statewide program from the state general fund. The legislative committee like the concept but was unable to support the \$3.2 million price tag. The final change to the ND law allows for "geographical" target areas, not just entire counties.

### FINANCIAL STATUS REPORT

Dr. Joe Warburon reviewed the financial status report as of October 21, 1999. There were no questions.

Bruce Boe moved to accept the 10-21-99 financial status report as presented. Second by Maurice Roos. Motion carried.

Nevada - Arlen Huggins reported the cloud seeding research and operations are linked to the university system in Nevada through the Desert Research Institute. The target

area are specific mountain ranges. Funding for the program is a one-year contract from the Finance Committee of the legislature. The committee meets annually to hear requests for funding. The program uses mostly ground-based generators, however this year they used a leased aircraft and plan to do the same in 2000. The aircraft will be used mainly to augment in the Walker-Carson area and east of Reno about 100 miles because of the wilderness areas.

Texas - George Bomar reported there are 7 projects in Texas over 36 million acres. This is the largest target area ever in Texas. Two projects of approximately 7.6 million acres will be added to cover the panhandle in 2000. All projects are for rain enhancement. Mr. Bomar noted three of the projects are no longer contractor dependent and other projects are moving in the same direction. This is being done due to difficulty with contractors and some still unresolved issues. Texas does not want to rely on contractors anymore than they have to. Funding is through the Texas Natural Resource Conservation Commission at the level of \$5.4 million for the next two-year period. It is estimated Texas will have a target area of 60 million acres by 2001.

Texas - Dale Bates reported they are beginning to look at a problem of having enough pilots and meteorologists for their programs. They have contracted with Dr. Woodley and Dr. Rosenfeld to do evaluations of the programs using satellite data. Mr. Bates noted they would lose about half of their programs without state funds. 95% of the program are run by the water districts.

California - Maurice Roos reported California has 13 projects. The projects begin in November and most should be running again next season. Four of the projects are for hydro power and the rest for water supply. The projects are run by power companies and water districts. The water supply looks good for the fifth year in a row with the exception being the southern part of the state. The only state funding is approximately \$20,000 for the Kings River Project. Most projects are contracted to commercial operators.

Chairman Bomar asked if anyone was aware of other states or areas with ongoing weather modification projects. Bruce Boe suggested Arizona may still be interested. He said Dennis Sundie would be a contact in Arizona. Norm Stauffer said he would check with Idaho officials to see if there are any projects in Idaho. Wayne Bossert stated due to law change the Natural Resource Districts in Nebraska have backed off pursuing a program although Larry Appel is still interested.

#### WEB SITE DEVELOPMENT

Bruce Boe showed the council what has been developed for the NAIWMC web page to date. Joe Warburton will send Bruce his ideas also for the web page. Mr. Boe asked if anyone has a site to host the web page. Mr. Bossert stated Kansas may be interested in hosting the web page and he will inquire.

## FEDERAL FUNDING FOR RESEARCH STATUS REPORT

Chairman Bomar reported that attempts to get federal funding for weather modification research have been unsuccessful for FY2000. Copies of Rick Spees' report on these efforts was distributed and discussed.

Discussion was held on other areas in which to seek funding for research. Some suggestions were the Bureau of Reclamation and the Department of Agriculture Drought Commission.

Following discussion it was the general consensus of the members present that Rick Spees did a good job of trying to get funding in place for FY2000 and that the Council should try to fund Mr. Spees efforts for another year, and expand the effort to other areas of possibility.

Chairman Bomar reported Mr. Spees would contract with NAIWMC for another year at the same rate as the past year (\$30,000). Mr. Bomar feels this is feasible if the states could again pay a special assessment as they did in 1999, plus the membership fees. We need to try to get other states to join the Council. This would help our effort considerably.

Discussion was held regarding raising the full membership fee to \$1500 in an effort to raise funds to retain Mr. Spees. Mr. Mathis stated if there is no long-term need to retain a consultant, the council may wish to table this issue at this time.

Bruce Boe moved the NAIWMC retain Mr. Rick Spees at the same rate for 2000. Second by Mike Mathis. Motion carried.

## MEMBERSHIP

The question was raised if it would be possible for other program sponsors to join the Council as full voting members? Discussion followed regarding the different levels of membership and voting rights.

Scotty Savage moved to authorize a By-Laws Committee to review the bylaws of the Council and provide a proposal and information to the membership prior to the next meeting regarding the levels of membership and voting rights of each. Second by Norm Stauffer. Motion carried.

Chairman Bomar appointed Bruce Boe as Chair of the By-Laws Committee, and Mike Mathis, and Arlen Huggins as members to review and research the NAIWMC constitution and bylaws and provide a proposal and information regarding membership prior to the next annual meeting in spring of 2000.

The annual meeting of NAIWMC was set for April 6, 2000, at Reno, Nevada.

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It was reported Conrad Keyes had notified the Council that he would still be available to serve as Executive Director of the Council. Members agreed the Council is not in a position to have paid staff at this time. Bruce Boe expressed the Council convey its appreciation to Mr. Keyes and that they will keep his offer in mind and notify him of any changes.

Being no further business, the meeting adjourned at 4:10 p.m.

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GEORGE BOMAR, CHAIRMAN

DR. JOSEPH WARBURTON  
SECRETARY-TREASURER

Transcribed from notes taken by LeNor Dollinger