

NORTH AMERICAN INTERSTATE
WEATHER MODIFICATION COUNCIL
Desert Research Institute, Las Vegas, Nevada
November 19, 1998

The meeting of the North American Interstate Weather Modification Council was called to order by Chairman George Bomar at 9:00 a.m., November 19, 1998, at the Desert Research Institute, Las Vegas, Nevada. Present at the meeting were:

California - Maurice Roos
Kansas - Darrel Eklund
Nevada - Arlen Huggins
 Dick Smith
 Joe Warburton
North Dakota - Bruce Boe
 LeNor Dollinger
Oklahoma - Mike Mathis
Texas - George Bomar
 Dale Bates
Utah - Norm Stauffer

All attending the meeting introduced themselves.

MINUTES

LeNor Dollinger stated there were some minor changes to be made to the minutes of the meeting of March 18, 1998. On page 1, last paragraph, change \$19 million acres to 19 million acres; on page 2, third paragraph, 5th line insert the word "be" between "to much" (to be much); page 3, strike the last sentence of the second paragraph.

Mike Mathis moved the minutes be approved as corrected. Seconded by Joe Warburton. Motion carried.

STATUS REPORT OF WEATHER MODIFICATION OPERATIONS

California - Maurice Roos - The state is not directly involved in operations although they have a minor regulatory role. He stated there were 13 projects last winter, however, some did not operate due to the wet weather.

Kansas - Darrel Eklund - Stated the Kansas Water Office is the licensing agency for weather modification operations in Kansas. Mr. Eklund noted the weather modification program expanded significantly in Kansas in 1997. Mr. Eklund stated there is some opposition to the operational programs and petitions have been circulated to subject the issue to election. Results of the program appear to be very good. Mr. Eklund said in 1996 Kansas was not allowed to seed in Colorado for affect in Kansas. In 1997 one county allowed seeding in Colorado, and in 1998 three counties in Colorado (2/3 of the western

border) allowed cloud seeding in Colorado for affect in Kansas.

North Dakota - Bruce Boe - Reported operations carried out in 7.25 million acres of western North Dakota from June 1 through August 31 of 1998 at a cost of approximately 8 cents per acre. Two radars, seven cloud-base aircraft, and two cloud-top aircraft were used on the project. A total of 1,031 flight hours were flown in the 92-day project with a total generator burn time of 374 hours. 176.4 kilograms of silver iodide, and 6,836 pounds of dry ice were dispensed. Ten intern co-pilots from the University of North Dakota were placed on the nine aircraft (one served as rover for vacations) at a cost to the Atmospheric Resource Board of \$24,505 for the entire project thus ensuring trained weather modification pilots for next year. Contractor made significant changes to the generators prior to the 1998 project which resulted in much improved burner performance in the field. Both radars have been equipped with TITAN. North Dakota retains a retired National Weather Service area electronics technician to maintain the radars. There were no radar failures in 1998. Mr. Boe reported there is no research component to the North Dakota program at this time.

New Mexico - George Bomar - Stated Scotty Savage wanted to attend meeting but was unable to. Have received commitment of \$150,000 for 1999 program covering approximately 2 million acres.

Nevada - Arlen Huggins - Noted largest project ever in terms of storm frequency and duration and high number of cold storms. Operations were suspended in the Sierra Nevada due to snowpack criteria of 130-140% of normal and the snowpack was 177% of normal. In the north Nevada areas the criteria is less stringent due to lack of population. That area is mostly rangeland and was seeded well into April. Most seeding done by ground generators, although plans are to outfit a leased aircraft to put Carley generators, a liquid water probe, and computers onboard. However, in September funding was cut 50% by the state, but feels this will be revisited again in January, 1999. May get funded at full level and aircraft seeding may result after January. Have changed to Finnegan solution the past two years including adding salt toward a more hygroscopic solution. It is felt this has boosted particle amounts dramatically. Some modifications were also made to the generators. Joe Warburton stated the funding reductions were a result of some large very urgent requests and feels the funding will be forthcoming in January, 1999.

Oklahoma - Mike Mathis - Stated Oklahoma completed their second full season (March through October) of operations in 1998. Independent evaluation shows the contractor is performing to standards. The program is a non-randomized program and at this time there is no statistical significance to determine affect. Some evaluation is being done using dynamic crop models which show two counties' wheat yields showing a change in the yields which indicated the program almost pays for itself. Mr. Mathis noted hail suppression is beginning to get a lot of attention in Oklahoma. They are trying to work with the insurance industry to get a dedicated source of revenue in the up-coming legislative session so they have a long-term funding base. The Governor of Oklahoma is a steadfast supporter of the weather modification program. Three cloud-top aircraft are used which evaluation shows is very inadequate for sufficient statewide coverage. Two radars are

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used (Oklahoma City and Woodward) which is also inadequate. They also rely on NEXRAD radar information.

Texas - George Bomar - Are planning 7 operational programs covering 23 million acres for FY99 with \$2.5 million in state funding to assist projects. Plan to fund as many as 10 projects covering 60 million acres by the summer of 1999. That is two-fifths of the state of Texas involved in rain enhancement programs. It was noted some programs are self-sufficient by procuring decommissioned NWS radars and some own their aircraft. Mr. Bomar sees a diminishing role for contractors in the future. Plans are to request \$2/3 million dollars at the legislative session in January to fund research and evaluation of the operational programs in Texas. A one-month research program in San Angelo on dispersion and sampling of hygroscopic flares was quite successful. They hope to know the efficiency of the hygroscopic flares in the near future. Requests are also being submitted to the legislature to purchase aircraft for these projects.

Texas - Dale Bates - Reported good success with volunteer workers. Program covers 6.4 million acres, own one aircraft and hope to have a 12 month program. South African company is building telemetry equipment for the program. Now in the process of setting up a pilot training program, same with the meteorologists. This program is now manufacturing flares and credit Dr. Finnegan with an excellent formulation. Equipment to produce flares is being purchased from a large munitions plant that is being closed. Received an inquiry regarding a "listening post" at the White Sands Missile Range if the military has a civilian user. Mr. Bates feels this could be a good venture for all involved in weather modification programs. In the area of assessment/evaluation this may be a very good opportunity.

Utah - Norm Stauffer - Cloud seeding carried out in Utah from November through March. Utah has been very wet. In the counties seeding for a long time for the reservoirs, the reservoirs are almost full. The weather modification programs in Utah are low-key. \$300,000 or less is spent per year on programs. Dam safety became an issue in Utah when one dam failed. Millions of dollars are needed to repair dams.

FINANCIAL STATUS REPORT

Joe Warburton distributed copies of financial status reports as of 4/12/87, 1/11/88, 5/12/98, and 11/19/98. It was noted 6 states had paid membership as of 11/19/98. Mr. Warburton stated the funds are in a money market account with the ability to write checks at the rate of 3 checks per month.

Bruce Boe moved to accept the financial status report dated 11/19/98. Seconded by Arlen Huggins. Motion carried.

MEMBERSHIP

Bruce Boe said invitations had been sent to the following to attend this meeting: Montana,

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Idaho, Colorado, South Dakota, the Navajo Nation, Arizona, Nebraska, Mexico Coahilla Province, Nuevo Leon in Mexico, and Saskatchewan.

Stan Shewchuck of Saskatchewan said they are interested but have no funds to join at this time. A call was received from Bob Becker of the Navajo Nation expressing appreciation for the invitation and is interested, however has no funding at this time.

Copies of past membership records were distributed by Joe Warburton.

ARCHIVAL OF COUNCIL DOCUMENTATION

Joe Warburton noted he has archived council documentation from the present time back to 1986.

Discussion was held on archiving research data so all states involved would have access to information on research carried out.

LeNor Dollinger noted all research reports funded through the NOAA-State Cooperative Research Program would be on file with the program officer (Joe Golden) at the NOAA-OAR offices.

It was noted Bruce Boe is working on a web page for the Council with no time-table at this time.

EFFORTS TO RESTORE RESEARCH FUNDING

Chairman Bomar stated since efforts to restore research funding has been unsuccessful in 1998, he felt the Council needs to work vigorously to restore research funding in 1999. He feels it will take a concerted effort to gather congressional support for FY2000.

Discussion was held on retaining Rick Spees to assist in the efforts to obtain funding for research. It was noted he has stated he is available to work for the Council at an approximate rate of \$30,000/year and has knowledge of past research efforts.

Further discussion was held on efforts by individual states in Washington, D.C. in their lobbying efforts on water issues. It was felt that water supply and improvement of water supply as a research focus may have a broader scope of interest, and including work towards further information on climate change.

Bruce Boe suggested that perhaps the Council could raise enough funds to hire Mr. Spees if the member states could pay a special assessment for the first year. He feels this is the only way there will be enough money to hire Mr. Spees.

Joe Warburton expressed he had worked with Mr. Spees in the past and stated he is very good in the area of the Department of Commerce and National Oceanic & Atmospheric Administration (NOAA). He favors retaining Mr. Spees as he has very good connections

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within NOAA.

Discussion was held regarding the efforts that can be made by each state to gather support from their congressional delegation to support funding for research.

It was expressed that research objectives will have to fit with the strategic plan of the federal agency through which the funding is passed on to the states. If research funding is realized those states interested in carrying out research would submit their proposals to the federal agency.

Joe Warburton moved the members of the North American Interstate Weather Modification Council who are available in this next year go to Washington, D.C. to do everything they can to get research funding through the NOAA Weather Damage Mitigation Program. Seconded by Maurice Roos. Motion carried.

Chairman Bomar asked which states are interested in carrying out research programs. Those states were Nevada, North Dakota, Oklahoma, Texas, and Utah.

Chairman Bomar appointed a Research Development Committee to organize efforts to secure research funding and to explore other areas of lobbying and report to the Council members. Mr. Bomar appointed the following:

Arlen Huggins
Mike Mathis
Norm Stauffer

Bruce Boe, Chairman
George Bomar

WMA STANDARDS & ETHICS

Copies of the proposed *Weather Modification Association Ethics and Standards: Policies and Procedures* were distributed. It was noted the proposed ethics and standards have been reviewed by the WMA Executive Board and proposed changes and deletions recommended to the WMA Ethics Committee.

Bruce Boe moved NAIWMC thank the WMA for the opportunity to review the proposed ethics and standards and advise them of the Council's support in their efforts. Seconded by Mike Mathis. Motion carried.

FUTURE MEETINGS

General consensus of those present is that the Desert Research Institute in Las Vegas is a very convenient place to hold the Council meetings. It was also noted rejuvenation of the Council has been very beneficial for the members. It was stated the Council should hold at minimum two meetings each year, one in early spring and one in late fall. It was also

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suggested members prepare to go to Washington, DC in the spring to support the Council's effort to secure federal funding for research.

It was decided the next meeting of the Council will be April 8, 1999 in Las Vegas.

INTERACTION WITH ASCE

Bruce Boe stated the American Society of Civil Engineers is in the process of writing standards for hail suppression, rainfall enhancement, and fog dispersion operations. The chairman of the committee writing the standards is George Bomar. The committee will meet at the WMA annual meeting in Banff in May.

Being no further business, the meeting adjourned at 2:15 p.m.

GEORGE BOMAR, CHAIRMAN

JOSEPH WARBURTON
SECRETARY-TREASURER

Transcribed from notes taken by LeNor Dollinger