

NORTH AMERICAN INTERSTATE
WEATHER MODIFICATION COUNCIL
Desert Research Institute
Reno, Nevada
November 2, 2000

The regular meeting of the North American Interstate Weather Modification Council was called to order by Chairman George Bomar November 2, 2000, at 9:00 a.m. at the Desert Research Institute, Reno, Nevada.

Member states represented at the meeting were: George Bomar, Texas; Bruce Boe and LeNor Dollinger, North Dakota; Arlen Huggins and Joe Warburton, Nevada; Scotty Savage, New Mexico; Mike Mathis, Oklahoma; Norm Stauffer, Utah; Maurice Roos and Mark Heggli, California.

Others present were: Bill Finnigan, Steve Chai, and Rick Stone, all of the Desert Research Institute.

Chairman Bomar noted a minor revision had been made to the agenda that had been mailed to members with the notice of the meeting, which was an item was added under status reports.

Chairman Bomar also announced that Mr. Rick Spees would be attending the meeting at approximately 11:15 a.m.

MINUTES

Bruce Boe moved the minutes of the April 6, 2000 meeting be approved as distributed. Second by Mike Mathis. Motion carried.

FINANCIAL STATUS REPORT

Dr. Joe Warburton distributed copies and reviewed the financial status report dated 11-2-00. The report showed a balance in the bank as of 11-2-00 was \$1,740.57. Dr. Warburton noted there are three payments to make to Rick Spees, Inc. for the remainder of the year (Oct., Nov., and Dec.). At this time the bank account does not have enough to make those payments.

Bruce Boe asked if there were any outstanding accounts receivable. It was noted New Mexico has not paid their membership dues for calendar year 2000.

Mike Mathis moved the financial status report be accepted as presented by Joe Warburton, Treasurer. Second by Bruce Boe. Motion carried.

MEMBER REPORTS

New Mexico - Scotty Savage reported the program in New Mexico is a three county program covering three million acres involved in a partnership with the High Plains Underground Water District of Texas. The program does both cloud top and cloud base seeding. The project began April 1 and continued until September 15. The project has about 200 rain gauges set out in a six-mile grid across the target area and in a circle roughly ten miles outside the target area. The project is being funded by the Interstate Stream Commission (ISC) as an experimental project only. The project is slated to last one more year with a possibility of extending it. The ISC wants a “scientific assessment” of the program and at this time there is not sufficient rain gauge data to do so. Several additional counties have expressed considerable interest in the program, and two counties are actively seeking ways to put together a program. Ms. Savage is assisting one county in writing a proposal to request funds from the ISC for a program.

Dr. Warburton urged Ms. Savage to inform the program sponsors in NM that it is not possible at all to provide a scientific evaluation of the NM program when you are carrying out operational seeding the way you are doing it, which is the best operational process that you can use. Dr. Warburton quoted from accepted scientific literature, “Whatever design is used, rigorous evaluation requires the treatment allocation to have been randomized. Without it there is no way to avoid bias, intentional or otherwise, and no justification for probabilistic evaluation intensive significance. The hope that one might arrive at reliable conclusions by simply comparing operational data with historical records has been discredited and some of the biases have been demonstrated. Fortunately, it is now well accepted in the more scientifically minded part of the weather modification community that evaluations must involved experiments with randomized treatment allocation.”

Dr. Warburton reiterated that it is impossible to provide a scientific evaluation of the NM program on the basis of the design and operations that are presently being done, and the people expecting an evaluation should be referred to the scientific literature. There is nothing wrong with the way NM is doing their operational seeding, but you cannot produce a reliable result by trying to compare with historical data. An operational assessment might satisfy the needs of the program sponsors. It was noted by Mr. Boe that even though it is not possible with the type of program being done in NM to do a “rigorous scientific evaluation”, it is still possible to provide program sponsors with the best indication you can with the caveat that this will not withstand rigorous scientific scrutiny because it is not a study conducted in that manner.

California - Maurice Roos reported California had thirteen projects operating last winter primarily for enhancing water supply and adding to hydroelectric power. Only one of the projects operates for awhile in the summertime, which is the Edison project. Mr. Roos anticipates about the same number this year with the possible addition of one more project if Monterey County decides to renew operations. Mr. Roos noted that he is officially retired but was asked by his replacement to return and help out. Mr. Mark Heggli is the official representative for California at this meeting.

Mr. Roos mentioned that the question on the accumulation of silver is beginning to come up again and this may be a good area to consider for further research. Since the big scare about chromium and arsenic in drinking water, people are kind of worried in this regard.

Rick Stone mentioned that there are a couple things to consider and that is that over many years we have been putting silver out there, so you do accumulate mass. The other things is the ability to detect things is getting better and better. There are a lot of questions in the scientific community about trace chemistry results from the past, because materials for doing standards are getting so much cleaner that some of the results of tracer studies of river pollutants, etc., are showing things to be much cleaner and people are having a hard time believing it is just because we are cleaning up our act.

Mr. Stone stated they have done some studies looking at watershed lake sediments and sediments in rivers, and you can barely detect anything. It is at a few parts per trillion at best and a thousand times below any toxicity levels. Some fairly recent studies have been done that will bear this out.

Nevada - Arlen Huggins reported they will not be doing any aircraft seeding during the winter of 2000 -2001. It has been cut out for this year but may be added back in sometime in the future. Last year was the first year out of the previous six years where most of the basins were below normal snowpack, with the northeast being closest to normal. Seeding-wise it was a good year in that the storms were reasonable cold, there were no suspension issues, no flood issues, no warm storms, and no pineapple connections. We normally suspend with above normal snowpacks based on what months we are in at around 150% of normal. We hit that in the Tahoe Basin several times in the preceding years. We seeded our first major storm of the season last weekend. We are concentrating on increasing our seeding level in the Walker Basin in an attempt to increase water flows into Walker Lake which has been on average declining since approximately the 1930's. The level of dissolved solids was reaching a point where it couldn't support much of anything let alone sport fish. There is a big push in the region to get more water into the lake. The Desert Research Institute is now looking at ways to increase operation in the Walker Basin, particularly in the mountain ranges that haven't been seeded before that drain directly into the lake, as opposed to the headwaters of the Walker River in the Sierra Nevada itself.

The ground seeding effort is status quo this year. Two more ground generators are being built which brings the total to seven.

North Dakota - Bruce Boe reported the ND Cloud Modification Project had a larger target area in 2000 by 9 townships in Slope County, for a total project target area of 6.7 million acres. The project was completed under budget and in general was an average project year for frequency of storms. Flight hours were down a little from the two

previous years which had run above average.

During the 2000 project we had intended to implement aircraft flight tracking (air link interfaced to TITAN) on all six project aircraft in District II. The contractor did not get this done before project startup, so it was implemented as aircraft could be rotated back to Fargo and outfitted. The system never worked correctly. This had been done in a test mode the preceding year on a cloud-base and a cloud-top aircraft and we were pleased with the results and were optimistic but it just didn't come together as it should have this year. In a project-end meeting with the contractor, the general consensus was that not enough attention was paid to getting this done right. Efforts will be strengthened for the 2001 project to accomplish this enhancement to the North Dakota project.

Bruce Boe noted a high priority for the ND Atmospheric Resource Board (NDARB) is to do a rainfall assessment, which hasn't been done since 1985. A hail suppression assessment was published in 1997, using hailfall statistics.

In response to a question, Mr. Boe explained that the meteorology staff for the project are employed by the state (NDARB) and the aircraft, pilots and seeding equipment is obtained on a contractual basis through a competitive bid process. The state meteorologists direct the contractor pilots to do the work. Each operations district has its own radar and an assigned meteorology staff. The particular counties in an operations district decide where they want to base the aircraft, based on suitability of airports and logistical constraints.

Oklahoma - Mike Mathis reported the Oklahoma project started March 1, 2000 and ended October 31, 2000. He stated they had a lot of seeding activity early. He said it was a good spring and early summer water year with good seeding opportunities. In early July it quit raining and didn't rain again for three months. They went from good water conditions in the lakes to extreme drought conditions based on the mesonet soil moisture sensors. The Oklahoma Department of Agriculture estimated agricultural losses due to the drought approached \$1 billion.

Mr. Mathis also reported Oklahoma has entered into agreement with the State of Kansas and are now licensed and permitted to do a buffer zone into Kansas. Their intent is for a collaborative effort on sharing resources across state lines. Oklahoma and Texas are also working to develop an interstate agreement on sharing resources across state lines.

There is good support for the program in Oklahoma. The Legislature attempted to pass legislation reappropriating a portion of the insurance industry tax to fund the program on a permanent basis which failed in committee. Senator Kerr will sponsor that bill again and is more optimistic about its passage. If it passes, it would provide approximately \$3 million in funding for the program. At this time the program is still operating with three aircraft and two radars for a statewide effort. Early assessment shows the need for

more equipment for the program. Mr. Mathis stated they are also working to get NCAR and Oklahoma University involved and working on a research project. The challenge at this time is the funding.

Utah - Norm Stauffer reported the cloud seeding program costs in Utah for the 1999 season were \$254,000. It is estimated the cost of the projects for the next year will be \$321,900 of which the state will cost share 45.5% (\$150,000). The only licensed contractor in Utah is North American Weather Consultants. They contract directly with local sponsors and we contract with these sponsors to pay our part of the cost share.

The sponsors have to advertise in the newspapers their intention to carry out the program. This year we have had no response to the notices. Cloud Seeding is very low-key in Utah at this time.

Texas - George Bomar reported there were 9 projects during the 2000 project year. One project, the Southwest Texas REA project became a hail suppression project for the first time this year. Six of the nine projects will not be functioning over the winter. Three are now totally self-sufficient and will be able conduct seeding operations on any convective cloud development during the cold season. Only one of the nine projects is now contractor driven. That is the Edwards Aquifer Authority project in south central Texas. Their plans are to continue indefinitely using a contractor. The other eight projects have procured the equipment, hired the personnel and are now running the projects on their own. The two projects in the panhandle are new. They are the North Plains GCD in the extreme northern panhandle, and the Panhandle GCD just south of that. The Panhandle GCD used a contractor this year, but in 2001 plans to run its own program.

The State of Texas is continuing to help fund these projects up to a cost of 4.5 cents/acre. In most cases that means the State of Texas is funding half of the costs for the programs. We have approximately \$2.5 million of state money to contribute toward the operation of these nine projects. We will also have some additional money available for a tenth project which we envision going into place in the west central Texas area around Abilene. That project will probably be about 6 million acres which will bring our total acreage to over 50 million acres, which is approximately 31% of the land area of Texas.

The Texas legislative session begins in January with good reason to believe the funding will remain at the current level or perhaps even some new funding. There is a good possibility that the Texas Natural Resources Conservation Commission (TNRCC) will not have this program after next summer. The program may be moved to the Department of Agriculture.

Mr. Bomar also commented on Mr. Mathis' statement regarding the collaborative effort between Texas and Oklahoma allowing use of adjacent airspace for cloud seeding purposes. Rules are currently being revised to allow exemption of water resource

boards from having to get a permit for this activity. This process is expected to be complete in May which will cement what has been agreed to informally for the past couple of years.

STATUS REPORT: FEDERAL FUNDING FOR RESEARCH

Chairman Bomar introduced Mr. Rick Spees to give the Council a status report on the efforts to secure federal funding for weather modification research.

Mr. Spees noted two problems as he sees it in securing the funding for research: 1) the competition in Washington, D. C, was particularly difficult this year and suggested the members of the Council need to be more active with their state congressional delegations in trying to secure the funding. Texas, North Dakota, and Nevada have been active but members from the other states need to assist; and, 2) he noted discretionary funding for NOAA and the Bureau of Reclamation was low considering the size of the surpluses. Both of these agencies have not been supportive and we need to work harder in this area. Mr. Spees stated that possible changes in some staff members may help our efforts.

Mr. Spees reported that weather modification was written into the National Drought Council's report as an area in which further research needs to be done. He feels there might be some discretionary monies available from the US Department of Agriculture for FY2001 and feels the NAIWMC should make an effort to obtain some of these funds as soon as OMB make their allocations to the agency.

Mr. Spees stated he was very disappointed that no funds were obtained this year. Mr. Spees reminded the council members, when they hired him he thought it would take two years to get results. Since it has been two years and he hasn't succeeded, he proposes to work for the NAIWMC for another year, without payment, unless he is successful in securing funding. He would only ask for his expenses, which are about \$200 per year. If we are able to secure some discretionary money, we would go back to the original agreement at \$2500 per month. If funding is obtained through appropriations then we would decide where to go from there.

Chairman Bomar thanked Mr. Spees for his time in attending the meeting and reporting the status of this funding issue to the Council.

ORGANIZATIONAL ISSUES

Chairman Bomar asked Bruce Boe, Chairman of the By-Laws committee for a report.

Mr. Boe stated the proposal is the same provided at the April, 2000 meeting. This is because when it was provided to the parties who were interested at that time, and there was discussion about it near the end of the meeting. Then the point was made that because we are talking about state agencies, not simply the promotion of weather

modification, that the organization needs to be aware of and respectful of contrary opinions. It was Mr Boe's understanding at that time pending any rethinking we would wait to take action on the by-laws, if in fact it was even needed. Mr. Boe has not heard from anyone on the council that in fact modification is necessary or they would like to see the proposed revisions revised.

Bruce Boe stated the proposed revision was as follows: "at the discretion of each full member, 1/3 vote of that members one vote may be assigned to that state's associate member for all voting matters. In such case the full member shall have 2/3 of one vote and the associate member 1/3 of one vote. Affiliate members shall not vote." Remember, we had created a third membership class here.

Mr. Boe stated his concern in revising the by-laws was in revisiting the original purpose of this organization, it is not intended to be an organization of people that had their own programs. It is supposed to be regulatory entities, people that manage and oversee programs, of state and provincial agencies principally that are responsible for that sort of thing. By opening the door, even in fact as it was or is now, because there have been no formal amendments, the affiliate member has a 1/3 vote and there is no limitation on the number of affiliate members that could be from anyplace.

Boe read the present by-laws regarding membership: "Affiliate membership of the council is available to national, provincial, and state agencies, political subdivisions within provinces or states, professional organizations, and scientific societies. The Board may create different classes of affiliate members. Each jurisdiction, agency, organization or society electing to become an affiliate member of the councils shall affirm its decision by informing the council of its support and by appointment of a delegate and an alternate to the council and payment of dues to the council."

Mr. Boe read a memo to the by-laws committee to the members pertaining to the changes suggested herein.

Chairman Bomar asked Mr. Boe what he would prefer to do at this point.

Mr. Boe stated, since the effort in going over the language has already been made and we have found some glitchy things in it, and while they are minor and really don't affect the functioning of the organization I'd like to fix them. He recommends the committee make another pass at this.

Chairman Bomar commented that from his perspective he would prefer the idea of giving all sub-units a caucus vote that is equal to that of the state rather than to give each sub-unit a separate identical vote.

Mr. Boe reiterated, at present we have the full member and the affiliate member. The affiliate member has 1/3 vote and the full member has one vote. There is no associate member, which would be the proposed new category.

Mr. Boe's opinion is, before we make any changes we really ought to see it written down and everybody have a chance to look at it and study it because as Mike said it could be potentially huge for the organization.

Chairman Bomar directed the By-Laws Committee with developing something further for Council members to consider that could be circulated to prior to the next meeting so we could address the matter and act on it on an informed basis.

Arlen Huggins commented the associate category for states who already have a membership but whose other organizations may want to join. Whereas the affiliate is still for those groups outside of the state that don't have a full member but still want to join but don't have a vote. In my thinking the affiliate would still be the, like South Dakota, in the zero vote category but they still want to be part of this organization.

Chairman Bomar asked if any of the delegates had any further input that they would like to give to the By-Laws Committee?

Dr. Warburton summarized the consensus of the delegates: 1) it is necessary for a state to be a full member for any sub-unit to be an associate member; 2) one or more of the sub-units may be an associate member but entitled to only one vote, collectively; 3) an organization who wants to be a member of the council but has no voting rights is called an affiliate member.

Norm Stauffer inquired if cloud seeding contractors can become members. Mr. Boe noted the definition of a member is as follows: "political subdivisions within provinces or states, professional organizations, and scientific societies".

The By-Laws Committee will proceed as directed.

STATUS REPORTS

A. Special Magazine on Weather Modification

Bruce Boe reported the magazine was completed last month. He noted some of the state's web sites had been passed on to the editors of the magazine but did not get put in, and regrets these omissions. Initially 18,000 copies were printed. He noted this is a special issue for weather modification, but the magazine *North Dakota Water* is printed monthly and distributed throughout the state. The ND Atmospheric Resource Board has an article in the magazine every month. He noted anyone wishing to order additional copies should contact the North Dakota Water Education Foundation to see about this possibility.

Chairman Bomar requested the record show the Council considers this magazine an excellent source of material on weather modification and a publication to really be proud of.

B. ASCE Environmental and Water Resources Institute (EWRI)

George Bomar reported on the establishment of the Environmental and Water Resources Institute with the American Society of Civil Engineers (ASCE). ASCE through Mr. Conrad Keyes has asked for the Council to cooperate with EWRI and organizations like the Weather Modification Association (WMA) to sponsor workshops and also pay for the publication of standard practice manuals that are in the process of being finalized on hail suppression, rain enhancement, and fog dispersal. At this time the Council is not committed at any level since we do not have the funds.

Chairman Bomar suggested a draft partnering agreement with EWRI could be sent to Council members and reviewed for possible action at the next meeting.

C. National Academy of Sciences

Joe Warburton reported that he received information from Dr. Harry Orville that the National Academy of Sciences wanted to hold a workshop titled, *Assessing the current state of weather modification as a basis for future environmental sustainability and policy development*.

The meeting will be held November 9 - 10, 2000 at the National Academy of Sciences Building, Washington, D. C. Several people have been invited to make presentations. Some of these are Harold Orville, Roelof Brintjes, William Woodley, Paul Smith, Jim Renick, Bruce Boe, and Dr. Warburton, to name a few.

A final report will be produced from this workshop with recommendations and guidelines to agencies regarding research for various type of programs suggested by the participants. There will also be final report review by the participants.

Dr. Warburton read the comments he had sent to the National Drought Policy Commission.

CONSIDERATION OF RENEWAL WITH SPEES, INC.

Chairman Bomar asked the Council members for their opinions regarding Mr. Spees offer to continue working for the Council for the next calendar year (2001) at no cost until such time as federal funding for research is reinstated. At that time we would meet and work out a new contract with Spees, Inc. In the past two years, the Council has paid approximately \$53,000 and is obligated for another \$7500 approximately for the last three months of 2000.

It was the general consensus of the delegates that the services of Rick Spees is needed to assist the Council in Washington, D.C. to secure federal funding for weather modification research.

Rick Spees rejoined the meeting to address questions regarding his proposal to the Council. He proposes to work for the Council another year (2001). If he does not succeed this year then the

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Council can decide if they want to further pursue these efforts or drop it. If he is successful in helping to secure funding in 2001 then the Council can decide to either again retain Mr. Spees for his services, or not to do so, but he will not charge for 2001 services retroactively once funding has been secured.

Scotty Savage moved to accept Rick Spees' offer to provide service for 2001 at the rate of no service fee, and to pay only miscellaneous expenses. Second by Arlen Huggins. Motion carried.

MEMBERSHIP DUES & SPECIAL ASSESSMENT

Joe Warburton moved the annual full member dues be increased to \$1200 per year and the affiliate membership to \$400 per year and the notice of such dues be sent out to members as soon as possible. Second by Scotty Savage. Motion carried.

It was noted that with the few states that are able to pay the special assessment, the Council will still be very underfunded to pay for the services of Spees, Inc.

OTHER BUSINESS

The next meeting of the Council will be held March 29, 2001 in Reno, Nevada.

Being no further business the meeting adjourned.

GEORGE BOMAR, CHAIRMAN

JOE WARBURTON, SECRETARY

Transcribed by LeNor Dollinger