

NORTH AMERICAN INTERSTATE
WEATHER MODIFICATION COUNCIL
Desert Research Institute
Reno, Nevada
April 5, 2001

The meeting was called to order by Acting Chairman Joe Warburton. Members present at the meeting were Joe Warburton, Nevada; Norm Stauffer, Utah; Dave Cole, Utah; Darin Langerud, North Dakota; LeNor Dollinger, North Dakota; Arlen Huggins, Nevada; Dale Bates, Texas; Tommy Shearer, Texas; Bill Finnigan, Nevada; and Steve Chai, Nevada.

MINUTES

Arlen Huggins moved the minutes of the November 2, 2000 minutes be approved as distributed. Second by Norm Stauffer. Motion carried.

FINANCIAL STATUS REPORT

Joe Warburton distributed copies and reviewed the financial status report as of 4-5-01 which showed a bank balance of \$22,232.76. There were no questions.

Norm Stauffer moved the financial status report of 4-5-01 be accepted as presented. Second by Darin Langerud. Motion carried.

MEMBER REPORTS

Utah - Norm Stauffer distributed copies of color maps showing the winter cloud seeding project areas in Utah for 2000-2001; a map of the cloud seeding generator site locations; a historical list of active and inactive project areas; and a map depicting mountain snowpack as of 3-1-01; and the drought severity index for the period ended 3-31-01. Mr. Stauffer noted for the 2000-2001 season Utah had six active projects. He noted there were not very many good opportunities for seeding this season and due to this the contracts have been extended into April until funds for the fixed-cost contracts is exhausted. Mr. Stauffer stated the snowpack in the northern part of Utah is at 54% of normal, and the southern part of the state is near normal. Even though the snowpack is down, it is felt the runoff will be better than last year because October was a very wet month statewide. There has been record-level precipitation and the soil moisture is high. A study and report by the State of Utah which was completed last year estimates 13% increase in streamflow (weighted average statewide), and a 14 to 20% increase in precipitation during the seeded period in the project areas. Based on the cost of the program and estimated runoff, it is estimated at a cost of \$1.00 per acre foot. In response to a question regarding state cost-share for the projects, Mr. Stauffer stated the cost-share is a fixed cost of \$150,000 for each project from three revolving construction funds. The cloud seeding cost share money comes from an interest-free

fund for small irrigation projects.

Nevada - Arlen Huggins reported there is approximately 50% of normal snowpack in the Tahoe Basin and 60% of normal snowpack in the Walker Basin at this time. Mr. Huggins stated the runoff started 2 - 3 weeks earlier this year than normal. The project has not seeded since early March in the Walker Basin, and at this time the Tahoe Basin has less than 20 inches of water in the snowpack. Mr. Huggins said they had an abnormally cold winter with few good conditions for cloud seeding.

Joe Warburton reported Dr. Nori Fukuta of University of Utah has been working on developing different methods of cloud seeding and has recently returned from a second trip to Japan. In arrangements with two universities in Japan providing aircraft and radar, Dr. Fukuta is using a new liquid CO₂ system for cloud seeding. He has written a paper which is published in the Atmospheric Research Journal as a letter to the editor regarding the results of two particular seeding events they did. Dr. Warburton noted the results are pretty spectacular. Dr. Fukuta is now writing a complete paper on this subject in which he is critical of the use of dry ice pellets because of the fact that they are falling vertically and are producing vertical trains of ice crystals, etc., compared with the liquid CO₂ which he does in the horizontal framework. Reported results show a much more dramatic effect with liquid CO₂ than it does with dry ice. Dr. Fukuta claims that the use of 400 grams of liquid CO₂ is producing a million tons of water. This is based on radar reflectivity measurements and actual precipitation measurements at the ground. This is about 10 times the amount of precipitation that is seen from the Utah program, from the Southern Cal Edison Program, and the Nevada program which produced specifically about 2500 acre feet of water per generator operating during the program season. Utah, for example used about 101 generators in the state getting approximately 250,000 acre feet of water runoff. Dr. Fukuta is using the liquid CO₂ at the -4° sea level. It is a horizontal entry into the cloud system and calculates within 2 minutes of release of the liquid CO₂ puts out approximately 400 grams of the liquid CO₂.

Texas - Dale Bates reported on changes going on in Texas at this time. The grant program of the cloud seeding program will be moving to the Texas Department of Agriculture, and the license and permitting part of the program to the Department of License. George Bomar will most likely be placed in the Texas Department of License and his assistant to the Department of Agriculture. Mr. Bates reported they have purchased the basic assessment package for TITAN. This is a TITAN-based cloud-to-cloud assessment. The computer picks the control cloud, whereas, in the original version of the software, someone chose a control cloud. The control cloud used will be from the same atmospheric condition as the cloud seeded. One of the problems now presented is due to the quick growth of the Texas projects, areas where control clouds were chosen, are now seeding clouds, which is making choosing control clouds more difficult. At this time, the assessment is only being done to make management decisions. Whatever this assessment indicates, changes are made to reflect what has been learned from seeding with the assessment. Using TITAN volume, Texas has set their standard for number of flares to use in a cloud. Mr. Bates noted that three 40 gram flares in a cloud produced no apparent positive effects. Above three, the positive

affects have been noted. Above 120 grams, a one-to-one relationship has been noted. On the clouds seeded, Texas is using on average on the size clouds seeded, eight to twelve 40 grams flares are used in each cloud over a period of time.

North Dakota - Darin Langerud reported the ND Cloud Modification Project (NDCMP) will start on June 1 and run through August 31. In the November general election a county that had been conducting a pilot project for the past four years placed the issue on the November general election ballot and it passed by a margin of 80-20. Mr. Langerud noted the funding for the program in North Dakota is based on taxable evaluation of the participating counties. He also stated there has been some interest expressed by counties in the northwest corner of the state that border Canada. State cost-sharing with the counties will be increased over the 2001-2003 biennium. Plans are also underway to reconvene the Hypothesis Assessment Committee to review the operations manual and safeguards plan of the ND Cloud Modification Project. Mr. Langerud reported a change in the NDCMP in District II will be adding a second cloud-top aircraft and aircraft tracking. North Dakota is also planning to try to determine the dry ice pellet size spectrum that will work better in the cloud seeding efforts. It was announced the 2001 NDCMP Ground School will be held in Bismarck, May 21 - 24, 2001.

It was also noted the ND Atmospheric Resource Board (NDARB) will continue two training programs during the 2001 project. The board will place 8 intern pilots and 2 intern meteorologists in the field for hands-on training. Each aircraft and radar will have an intern working throughout the project. The intern pilots are multi-engine rated and are chosen from the pilots completing the second-year weather modification class at the University of North Dakota. The intern meteorologists must have completed at least two-years towards a degree in meteorology and are selected by NDARB on a competitive basis.

STATUS REPORT ON FEDERAL FUNDING

Darin Langerud distributed copies of the documents that were provided to congressional delegations and committee staff members during their meetings with them in Washington, D.C. in order to heighten the awareness of the need for funding for a weather damage mitigation program.

Rick Spees has suggested more involvement is needed by the member states of the NAIWMC in the effort to get the funding put in place.

Arlen Huggins reported Mike Mathis had informed him that a group from Oklahoma has recently met with their delegation and subcommittees, and a letter has been drafted which encourages the funding for rain enhancement and hail suppression.

Joe Warburton reported committee staff members were apprised of PL 102-250, Section 206B which states:

P.L. 102-250, Sec. 206B - authorizes the Secretary to conduct a precipitation management technology transfer program to help alleviate problems caused by precipitation variability and droughts in the west as a balanced long-term water resources development and management program in consultation with state, local, tribal, water, hydropower, water quality and in-stream flow interests. Areas shall be selected for conducting cost-shared field studies cost-shared on a 50-50 basis to validate and quantify the potential for appropriate precipitation management technology to augment stream flows. Validated technologies shall be transferred to non-federal interests for operational implementation.

There appears to be difficulty in getting others to understand what the Council is requesting in the effort to secure funding for further research. Some feel it is operational support and still others technology transfer. We need to continue to educate congressional delegations and committee staff members that there is a long list of areas in which further research needs to be carried out, as identified by those states with operational programs.

Discussion was held on additional areas of follow-up and emphasis on this important issue for the Council.

BY-LAWS COMMITTEE REPORT - ARLEN HUGGINS

Mr. Huggins gave a brief report of the efforts of the By-Laws Committee and reviewed the proposed changes for membership. The main parts of the changes for membership were to add a third level called “associate member” available to any state weather modification organization within a state regardless of the number collectively. There could only be one associate member vote from any state, and only if there is a full member from that state. The associate member group would have one vote between them and could share in the cost of the membership. Full membership is still designated as the state organization or governing body responsible for licensing and permitting, and rules and regulations, as opposed to associations or sponsoring agencies. Affiliate members would be other entities who wanted to join but would not be a voting member.

Discussion was held as to the committee report and intent.

Norm Stauffer moved to adopt the proposed revisions to the by-laws regarding membership of the North American Interstate Weather Modification Council as proposed 5-4-01. Seconded by Darin Langerud. Motion carried.

Darin Langerud moved the associate membership dues be set at \$1200 per year. Norm

Stauffer second. Motion carried.

Arlen Huggins offered to prepare a finalized version of the updated by-laws of the Council. Discussion was held on the makeup of the board of directors, executive committee (elected officers), nominating committee, when election of officers shall take place (annual meeting), regular meetings, and special meetings.

It was noted that when states and others pay their membership, they need to state who will serve as their delegate and alternate.

ELECTION OF OFFICERS

Norman Stauffer moved Darin Langerud be elected as Chairman; Mike Mathis as Vice-Chairman; and Joe Warburton as Secretary-Treasurer. Seconded by Arlen Huggins. Motion carried.

PARTNERING AGREEMENT, NAIWMC - WMA - ASCE

Discussion was held on the proposed partnering agreement between the Council, the Weather Modification Association, and the American Society of Civil Engineers to enter into a memorandum of understanding to facilitate administering jointly a continuing education and technology outreach program for the atmospheric water management community. The goal is to set up a process whereby the products (WMA Journal, the ASCE documents, etc.) are used to educate interested individuals from the broad user community (management districts, state & local governing bodies, decision-makers and interested stakeholder groups) about atmospheric management activities and technological advancements. The specific objectives are to develop continuing education courses for weather modification certification and/or recertification and explore the establishment of credit for continuing education and/or professional development courses administered under the agreement and to develop and implement the protocols for administering the courses.

Following further discussion, the general consensus of the Council was to not enter into this memorandum of understand at this time.

OTHER BUSINESS

Chairman Warburton asked if anyone had any information regarding the status of the document of the Weather Modification Association's *Code of Ethics: Standards of Conduct in Projects, and Procedures for Misconduct of Members*. There was none.

Chairman Warburton stated he had no further information regarding the status of ASCE standard practice documents on hail suppression, precipitation enhancement, and fog dispersion other than he was aware that emails were circulating asking for input to whether this document needs to be updated. There was nothing further at this time.

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It was decided the next meeting will be held September 27 in Reno.

Being no further business, the meeting adjourned.

DR. JOSEPH WARBURTON
ACTING CHAIRMAN

DR. JOSEPH WARBURTON
SECRETARY-TREASURER

Transcribed from notes taken by LeNor Dollinger