

# **MINUTES - NORTH DAKOTA ATMOSPHERIC RESOURCE BOARD**

**OCTOBER 27, 2020**

Chairman Tom Tupa called a meeting of the Atmospheric Resource Board to order at 1:30 p.m., October 27, 2020.

## ***ROLL CALL***

Roll call was taken. Members present were Tom Tupa; Monte Hininger; David Monson; Chris Theisen; Casey Veil; Pat Fridgen for John Paczkowski, State Water Commission (SWC); Kyle Wanner, North Dakota Aeronautics Commission; and Angela Seligman, North Dakota Department of Environmental Quality.

Others present were Darin Langerud, Director; Kelli Schroeder, Business Manager; Mark Schneider, Chief Meteorologist; Daniel Brothers, Meteorologist; Jody Fischer, Weather Modification International (WMI); and Lance Gaebe, ND Weather Modification Association (NDWMA).

## ***MINUTES***

**IT WAS MOVED BY MR. MONSON, SECONDED BY MR. HININGER, AND CARRIED ON A VOICE VOTE TO APPROVE THE MINUTES OF THE APRIL 7, 2020 MEETING AS DISTRIBUTED.**

## ***FINANCIAL STATUS REPORT***

Ms. Schroeder reviewed the financial status report for the period ending September 30, 2020.

## ***REVIEW OF THE 2020 NORTH DAKOTA CLOUD MODIFICATION PROJECT (NDCMP)***

Mr. Langerud discussed challenges the program endured related to the COVID-19 pandemic, University of North Dakota's (UND) cancellation of summer internships and the vote of Ward County ending their participation in the project. Of positive note, all remaining counties renewed their weather modification authorities this year for another 5 years.

### **Project overview**

Mr. Schneider provided the board with a review of the 2020 NDCMP. Operations ran June 1 through August 31 with no extension. There were 6 aircraft on project with the Cessna 340 hybrid in Dickinson shared by both districts (35% District 1, 65% District 2). Even though total flight hours came in below the 10-year average, a close eye was kept on flight hours budget as June was very busy. Thankfully, the weather slowed down in July as it typically does. Rain enhancement suspensions began on July 20<sup>th</sup> for harvesting.

### **Cost Summary**

Ms. Schroeder reviewed the cost report for the 2020 NDCMP. Assuming no penalties will be applied to the final contract payment for WMI, both districts will come in under budget.

### **Seeding Agent Usage / Inventory**

Mr. Schneider reviewed the ending chemical inventory and usage for the 2020 NDCMP.

In response to a question from Mr. Tupa, Mr. Schneider indicated that while the flares don't have a specific shelf life, our supplier suggests using them within 3-5 years. Outside of that window, there could be more duds. Shelf life is more of an issue for our dry chemicals which are typically more reasonably priced chemicals.

### **Generator Performance**

Mr. Schneider reviewed generator performance. In 2020, generators performed exceptionally well - 0.83% failure rate. This can be attributed to returning, experienced pilot-in-command (PIC) staff. Additionally, Alex Sailsbury revised and expanded the Lohse burner manual, which also contributed to effective burner use as well.

### **Intern Programs**

Ms. Schroeder reviewed the internship final report and activities for the 2020 NDCMP. As of the end of the 2020 project, we have trained 92 intern co-pilots and 64 intern meteorologists.

### **UND Weather Research and Forecasting (WRF) Numerical Modeling**

Mr. Brothers reviewed the WRF numerical modeling effort, which has been used on the NDCMP for a few years now. He reported that it was mostly stable and generally had no outages this year. It worked well for us this year.

### **Aircraft Operations & Contractor's Final Report**

Mr. Langerud reviewed his memo to the board regarding liquidated damages recommendations. There were 3 cases reviewed but no penalties were recommended.

**IT WAS MOVED BY MR. MONSON AND SECONDED BY MR. VEIL TO APPROVE THE DIRECTOR'S RECOMMENDATION RELATED TO LIQUIDATED DAMAGES AS PRESENTED. THE MOTION CARRIED UNANIMOUSLY.**

Mr. Fischer commented on the project. He indicated that while the project had its difficulties, we were fortunate that we didn't have to deal with staff COVID-19 cases.

**IT WAS MOVED BY MR. HININGER AND SECONDED BY MR. WANNER TO ACCEPT THE CONTRACTOR'S FINAL REPORT AND APPROVE THE FINAL CONTRACT PAYMENT. THE MOTION CARRIED UNANIMOUSLY.**

### ***ISSUES FOR NDCMP 2021***

#### **Project planning and funding changes**

Mr. Langerud reported that with recent structural changes, COVID-19 and economic challenges in oil country, funding from counties may be an issue in 2021. We will be working with the counties this winter to give them a plan that can work within their budgets. County budgets are going through approval processes right now.

### ***ARB RESEARCH & EVALUATION PROGRAM***

#### **Hail Retrieval Algorithm (HRA)**

Mr. Langerud reported that Kyle Pederson, a UND graduate student and our 2020 Bowman radar met, is working on the HRA project. He is focusing on perfecting the process of using numerical modeling to identify similar environments that were seeded and non-seeded and compare the data. He hopes to graduate in December 2021 with a goal of completing this project on several case studies. Mr. Brothers is working with him

now to gather data on storms from 2019-2020 for case studies. We hope to continue with that modeling in the future. The cost of this agreement was rolled into the WRF project.

### **UND Weather Research and Forecasting (WRF) modeling**

Mr. Langerud reviewed work being done with the WRF model. It has continually improved and was a good investment for leveraging it in research and development. Dr. Gretchen Mullendore who has been the principle investigator has accepted a job doing similar work at the National Center for Atmospheric Research (NCAR) in Boulder, CO. She intends to complete the existing UND agreements while at NCAR. UND's Atmospheric Science department intends on filling the position and is working through the approval process.

## ***LEGISLATIVE SESSION***

### **2021-23 Budget**

Mr. Langerud reported that the next legislative session will begin in January. Budgets were submitted late this summer. We worked with the SWC Administrative Division on the 2021-23 budget. The Governor's Office asked special fund agencies to reprioritize 5% of the current budget from low performing projects toward areas that meet our strategic goals. Mr. Langerud reprogrammed our division's 5% (\$31,500) toward purchases of remote weather sensors that will be paired with SWC's Pushing REmote SENSors (PRESENS) data loggers which collect surface and groundwater data and telemeter it back to the SWC's databases. These PRESENS units work well and are low cost. They can take inputs from other sensors. We are currently testing a remote weather sensor at our office. The goal is to deploy several out in the field and hopefully fill gaps in our cooperative observer network or gaps in the North Dakota Agricultural Weather Network (NDAWN) run by North Dakota State University (NDSU).

Mr. Monson indicated that he expects less money will be available and all budgets will be trimmed during the session. He recommended that we make it known that this division's budget is about more than just weather modification. Mr. Tupa agreed that economics across the state, observer network, benefits to airports should all be discussed during session. Mr. Gaebe indicated that the NDWMA will endeavor to organize presentations, to get discussion beyond just cloud seeding.

## ***RADAR OPERATIONS***

Mr. Langerud briefed the board on operations of the Stanley and Bowman radars. The Bowman radar non-NDCMP operations and maintenance are funded by 8 counties (6

southwest ND counties, 1 South Dakota county and 1 Montana county) contributing \$24,000 per year. The Bowman radar data goes directly to our website. It is also converted to GR Level 2 format for the National Weather Service (NWS) use as well.

Williams County purchased a new radar and placed it at the new airport in Williston in March. We assisted their staff in processes including Federal Communications Commission & Federal Aviation Administration licensing and the type of radar to purchase. We also agreed to be the data recipient and make it available to the public like the Bowman and Stanley radar data. The NWS is also able to download this data from our servers as well. Like the Bowman radar, the Williams County radar fills a large gap in NWS radar coverage.

### ***2020 ARB COOPERATIVE OBSERVER NETWORK (ARBCON) REPORT***

#### **Growing season rainfall totals and grid maps**

Mr. Brothers reported that we have 473 active observers with 167 reporting online. Snowfall reports this winter will total 185. He will be recruiting more observers this winter.

Mr. Brothers reported that we had a very dry 2<sup>nd</sup> half of winter and very dry spring. The Red River Valley was closer to average than the west though. In response to a question from Mr. Tupa, Mr. Brothers indicated that the outlook is trending towards a La Niña winter (cooler than average). However, he doesn't put too much stock in long-term outlooks.

#### **SWC Pushing Remote Sensors (PRESENS) – remote data collection**

Mr. Langerud reviewed the SWC's PRESENS. There are about 200 sensors across the state. We would like to integrate a few dozen of these sensors with PRESENS to get more precipitation data, covering areas that are not well represented in our ARBCON network. As mentioned earlier, weather sensor testing is currently ongoing at our office.

In response to a question from Mr. Tupa, Mr. Langerud indicated that there are no moving parts in the sensor we identified. The sensor has been around for a few years and has performed well.

Soil moisture and temperature are also being considered, as well as possibly working with the Game & Fish Department at boat ramps.

### ***2021 MEETING SCHEDULE***

Tentative dates for 2021 board meetings were discussed. The spring meeting will be tentatively scheduled for Tuesday, April 6<sup>th</sup>. The fall meeting will be tentatively scheduled for Tuesday, October 26<sup>th</sup>.

### ***ELECTION OF OFFICERS***

Mr. Tupa indicated that he would like to resign from the board sometime in 2021 and asked the members to consider this during nominations. When no nominations were given, Mr. Tupa asked for volunteers. Mr. Veil volunteered to remain the Vice Chair. Mr. Theisen volunteered to be secretary. Mr. Tupa said he was willing to remain chair, at least until retirement.

**IT WAS MOVED BY MR. THEISEN AND SECONDED BY MR. MONSON TO NOMINATE MR. TUPA AS CHAIR; MR. VEIL AS VICE CHAIR; AND MR. THEISEN AS SECRETARY. THE MOTION CARRIED UNANIMOUSLY.**

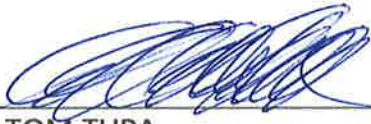
### ***OTHER BUSINESS***

Mr. Tupa asked that the board or staff recognize Mr. Bodmer and Mr. Hininger for their long-time efforts in the advancement of weather modification in North Dakota and in guiding this board. Other members expressed support. Mr. Langerud offered to investigate what can be done to recognize past board members and report back to the board.

Ms. Schroeder asked the board if they would like to try video conference for the April meeting. We can explore video conference for the spring meeting. However, if the pandemic situation allows for an in-person meeting next fall, the board would prefer that.

Mr. Langerud noted that Mr. Theisen is our newest board member, appointed this summer by the Governor. Mr. Theisen introduced himself to the board.

Being no further business, the meeting adjourned at approximately 3:10 p.m.



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TOM TUPA  
CHAIRMAN

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CHRIS THEISEN  
SECRETARY

Transcribed by Kelli Schroeder