

MINUTES - NORTH DAKOTA ATMOSPHERIC RESOURCE BOARD

NOVEMBER 9, 2015

Chairman Henry Bodmer called the meeting of the North Dakota Atmospheric Resource Board (ARB) to order at 1:36 p.m., November 9, 2015 in the Lower Level Conference Room, State Office Building, Bismarck, ND.

ROLL CALL

Roll call was taken. Members present were Henry Bodmer, Monte Hininger, Paul Myrdal, Tom Tupa, Todd Sando, Rob White and Jared Wingo for Kyle Wanner.

Others present were Darin Langerud, Director; Mark Schneider, Chief Meteorologist; Kelli Schroeder, Business Manager; Dan Brothers, Meteorologist; and Hans Ahlness, Weather Modification, Inc. (WMI).

MINUTES

IT WAS MOVED BY MR. TUPA, SECONDED BY MR. SANDO TO APPROVE THE MINUTES OF THE APRIL 28, 2015 MEETING AS DISTRIBUTED. THE MOTION CARRIED UNANIMOUSLY.

FINANCIAL UPDATES

Financial Status Report

Ms. Schroeder reviewed the financial status report for the period ending September 30, 2015.

In response to a question, Mr. Langerud indicated that in recent years we've increased county contracts for the cloud modification project 3-4% to cover increased contract costs. A new contract with WMI will be negotiated in the next few months.

There were no further questions.

2015 NORTH DAKOTA CLOUD MODIFICATION PROJECT (NDCMP)

Project Overview

Mr. Langerud provided the Board with an overview of the 2015 NDCMP project.

In response to a question regarding the seasonal flight maps, Mr. Langerud noted that red dots represent flares. There were more expended than are visible though due to the green layers (generators) overlapping.

In response to a question regarding lack of seeding past our borders with Montana, South Dakota and Canada, Mr. Langerud noted that this is all GPS data from our iPads. The flight tracks are accurately displayed.

In response to a question regarding the addition of Burke County, Mr. Langerud indicated that we did not try to figure out how many hours we flew in Burke County this year. When budgeting, we added 10% additional flight hours to District II based on the land area. We think that number was adequate as we ended the project under budget for flight hours.

He also noted that we did not have issues flying along the Canadian border. There are some rules related to flying across the border. However, landing in Canada is a larger problem than crossing in and out in the air. If they had an issue and had to land in Canada, they could land there. But there would be potential issues with getting the aircraft back into the U.S.

In response to a question regarding additional counties joining the program, Mr. Langerud indicated that there is no current discussion with any counties for the upcoming season. Burke County committed to 4 years, at which time it will be placed on the ballot for citizens to vote to keep the project going. However, there is potential for other counties such as Divide or Renville to join without a lot of problems or additional cost.

Cost Summary

Ms. Schroeder reviewed the cost report for the 2015 NDCMP. District I was \$1,623 under budget. District II was \$53,903 under budget, primarily due to limited flight hours flown.

In response to a question regarding the budget, Ms. Schroeder indicated that we try to keep our expenses for each category as close as possible but total dollars are the most important when keeping to the budget.

Seeding agent usage / inventory

Mr. Schneider reviewed the ending chemical inventory and usage for the 2015 NDCMP.

In response to a question, Mr. Schneider noted that the shelf life of our flares ends no sooner than our ability to use them, 3-5 years. Mr. Ahlness indicated that they have not had any trouble with shelf-life of ejectable flares. Burn-in-place flares have a shorter shelf-life. Mr. Langerud noted that Ice Crystal Engineering allows us to return dud flares in exchange for new ones.

Generator performance

Mr. Schneider reviewed generator performance. In 2015, there was 2.3% failure rate, which is determined as any time a generator was needed and would not function correctly. The 5-year average failure rate is 3.2%.

In response to a question, Mr. Ahlness indicated that this summer one of the failures was due to a wire that shorted out and broke. Another had some contamination on one of the plugs inside the back of the burner. If the pilots put a lot of effort into cleaning the parts and filtering the chemical when adding, they usually do pretty good. Mr. Langerud

also noted that WMI pilots take their aircraft up and do burner testing if they haven't flown for a number of days.

Intern Programs

Ms. Schroeder reviewed the intern program. At the end of this project, we have trained a total of 352 pilots and 50 meteorologists. She also reviewed suggestions that the intern pilots and intern meteorologists gave regarding their internships.

In response to a question, Ms. Schroeder indicated that the types of things the temporary staff are allowed to do for pay are things beneficial to the project such as mowing the airport lawn.

In response to another question, Ms. Schroeder noted that the intern pay this year was \$13.25 per hour.

In response to a question, Ms. Schroeder noted that she didn't have trouble finding enough interns this year. However, one intern left during Ground School so Ms. Schroeder had to do some quick work to get 1 of the 3 previously unselected people to agree to join the program. Mr. Ahlness indicated that some of these interns have an unrealistic expectation. By and large, we get pretty good crews.

Ms. Schroeder reminded the board that every year just before spring registration, UND puts a reminder on their Facebook page to remind students to register for the Applied Weather Modification class if they are interested in the internship. That has recently generated more interest. We also attend the Student Aviation Management Association (SAMA) Career Fair yearly to increase awareness.

In response to a question, Mr. Ahlness indicated that it is getting harder to find pilots. The King Air is especially hard because by the time they qualify to fly that aircraft, the airlines are scooping them up. Mr. Langerud indicated that he and Mr. Ahlness have been talking about these issues and how it affects the program. Mr. Ahlness indicated that the projections are that a lot of pilots will be retiring from the airlines in the next 10 years. So he doesn't foresee this getting better for us any time soon.

UND Weather Research and Forecasting (WRF) numerical modeling support

Mr. Langerud reviewed the University of North Dakota (UND) Weather Research and Forecasting (WRF) numerical modeling project. They have been providing support for our research and operational projects. This year, UND ran 4 different versions of the WRF model a couple of times per day during the NDCMP project. The model is doing a pretty good job of forecasting when weather is going to occur and even a pretty good job of forecasting the scale of storms that will form.

Through some of the work UND has been doing with us on this project, they have gotten involved with the National Center for Atmospheric Research (NCAR) visitor scientist program. Dr. Gretchen Mullendore and one of the graduate students will be learning more about the WRF model.

Also, a student was doing a senior project analyzing the data. We incorporated another parameter this summer called Hailcast, a model component that tries to forecast where hail streaks will occur in convective storms. The student will analyze the Hailcast model output as compared to observed hail reports from the National Weather Service (NWS) network of observers and our network.

In response to a question, Mr. Langerud noted that hail reports from our precipitation observers can be mapped as point observations. We also watch the NWS reports, also point observations. We don't have the data that shows streaks of where hail has impacted crops or such.

Aircraft Operations

Mr. Langerud reviewed the contract clause, which requires aircraft to be operational. There were six incidents this year where aircraft were unable to launch due to various reasons. Those were reviewed with surrounding circumstances. Mr. Langerud recommended no penalties be applied to the final contract payment.

IT WAS MOVED BY MR. TUPA AND SECONDED BY MR. HININGER TO APPROVE THE DIRECTOR'S RECOMMENDATION TO NOT APPLY PENALTIES TO THE FINAL CONTRACT PAYMENT. THE MOTION CARRIED UNANIMOUSLY.

Contractor's Final Report

Mr. Ahlness reviewed the contractor's Final Operations Report for the 2015 project. He also discussed issues relating to flying near and landing in Canada.

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

ISSUES FOR NDCMP 2016

Availability of housing

Mr. Schneider reviewed housing issues expected for 2016. We're hoping that rental prices in Stanley continue to improve so that eventually we could let go of the apartment we've been renting.

Mr. Langerud noted that prices aren't the only stumbling blocks for us. Most places are leasing for a full year and don't want to do a 3-month lease, as our staff would need.

2016 NDCMP Aircraft Service Contract

Mr. Langerud reported that the 3-year contract with WMI for aircraft and pilot services is coming to a close. Since we haven't gotten competitive bids for many years, we will again put a notice online with the State Procurement Office (SPO) that will notify

potential contractors that we are looking to acquire these services again. If no other entity expresses interest, we will direct negotiate with WMI.

In response to a question, Mr. Langerud noted that the notice requesting bidders must be out 30 days at the most, maybe even only 21 days. The advertising is actually published through SPO's portal. So we no longer have to put ads in newspapers and trade magazines.

Mr. Tupa suggested that staff contact a legislator to submit a bill to allow us to work directly with WMI without advertising with SPO until such time that another contractor would come forward with interest.

Mr. Langerud noted that we currently have 3-year agreements with WMI. We could look at doing longer term contracts to reduce overhead.

Mr. Ahlness indicated that some of their wintertime projects are setup to bill fuel at cost. For an 8-aircraft project, that would be a lot of additional work tracking it in real-time.

Radar Technician Services

Mr. Langerud reported that the current contract with Clem Aadland for radar technician services is coming to a close. We will be going through the bidding process before 2016 starts.

Powder River MOA

Mr. Langerud reported that the expanded Powder River Military Operations Area (MOA) went active in September. They are flying at the high altitudes now until they get radio communications issues in the area dealt with.

Mr. Wingo believes the low-altitude range will go active in the spring.

Mr. Langerud noted that he has had discussions with the Ellsworth staff. They do not fly their aircraft around thunderstorms. So, that should deconflict our missions almost completely.

Mr. Ahlness indicated that he has been in discussions with the Ellsworth staff also about how we operate. They indicated that they are willing to work with us.

ARB RESEARCH & EVALUATION PROGRAM

Polarimetric Cloud Analysis and Seeding Test (POLCAST)

Mr. Langerud reviewed POLCAST status – the research experiment on hygroscopic seeding that has been ongoing for a number of years. He reviewed activities ongoing at UND and also at the National Center for Atmospheric Research (NCAR). Final reports from UND and NCAR are expected next May.

RADAR OPERATIONS

Bowman airport construction, radar relocation

Mr. Langerud reported that we have successfully moved the Bowman radar to the new airport. The radar was down for a month to get the move accomplished. Software and hardware upgrades were made at the same time also.

Mr. Langerud noted we have been trying to get access to the National Oceanic and Atmospheric Administration's (NOAA) surplus radar parts since 2010. It appears that the feds are starting to move forward with the surplus process.

Year-round Bowman radar operations

Mr. Langerud reviewed the year-round Bowman radar operations project that has been running through support from six counties in southwest North Dakota, Fallon County in Montana, and Harding County in South Dakota. We are expecting to continue this service.

Counties in the Stanley radar area are also considering running the Stanley radar all year. In the next few months as we visit with the county commissions in that area about the NDCMP, we will ask about interest in running the radar all year.

2015 ARB COOPERATIVE OBSERVER NETWORK (ARBCON) REPORT

Status report

Mr. Brothers reported that we had 530 active observers reporting precipitation. 232 observers report year-round, rain and snow. 170 observers are reporting online.

Growing season rainfall totals and grid maps

Mr. Brothers provided the Board with a 2015 April through September percent of normal precipitation map. He noted that monthly maps are online as well as data in multiple formats.

In response to a question, Mr. Brothers indicated that snow depth is checked using a ruler directly in contact with the ground. For snowfall, some observers do snowpack measurements by collecting snow from the ground. Studies have shown there could be as much as 25-30% error in this method. But it is the best we have without spending a lot of money for better equipment. For water equivalent of the snowpack, again measurements are collected via a core sample, it is allowed to melt and the water is then measured. The internet observers are asked twice a month to do a snowpack measurement and report the water equivalent value to us.

In response to a question, Mr. Brothers indicated that he has a pretty good distribution of observers throughout the state. There are areas that aren't covered as well, but they are usually areas where there just aren't a lot of people living.

GPS-based snow reporting

Mr. Langerud reviewed a project we are doing with a professor at University of Colorado in Boulder using GPS-base station data to determine snow depth on the ground. We were able to help her get access to two towers last winter. However, we didn't have much snow to measure last year.

Our intent is to do this again this winter. We're only paying for the cell data hookups, a nominal charge every month. If the results come back confirmatory in the prairie setting here versus mountainous areas she has studied, it may be worthwhile to add additional towers.

We would like to do some ground-truthing of the data by taking measurements in person and comparing the results.

2016 MEETING SCHEDULE

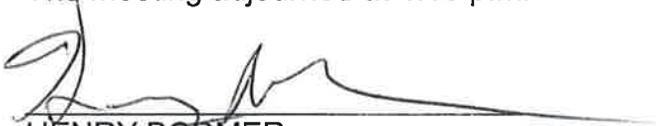
The Board directed the staff to set a tentative schedule for 2016 Board meetings. The spring meeting will be tentatively scheduled for April 13th. The fall meeting will be tentatively scheduled for October 26th.

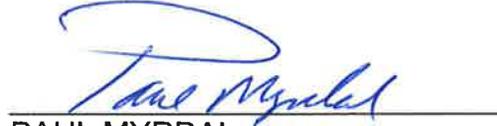
ELECTION OF OFFICERS

The current officers include Mr. Bodmer as Chair, Mr. Brewer as Vice Chair and Mr. Myrdal as Secretary. Mr. Bodmer called for nominations for offices.

IT WAS MOVED BY MR. TUPA AND SECONDED BY MR. HININGER TO NOMINATE UNANIMOUSLY THE EXISTING SLATE OF OFFICERS (MR. BODMER AS CHAIR; MR. BREWER AS VICE CHAIR; AND MR. MYRDAL AS SECRETARY). THE MOTION CARRIED UNANIMOUSLY.

The meeting adjourned at 4:16 p.m.


HENRY BODMER
CHAIRMAN


PAUL MYRDAL
SECRETARY

Transcribed by Kelli Schroeder