



# THE ATMOSPHERIC RESERVOIR

*Examining the Atmosphere and Atmospheric Resource Management*

## 2010 NDCMP: Operational Enhancements

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The 2010 North Dakota Cloud Modification Project (NDCMP) operational season began June 1 in Bowman, McKenzie, Mountrail, Slope, Ward, and Williams Counties. The long-running program has the dual-purpose of increasing summertime rainfall and decreasing damaging hail from June through August.

There are exciting enhancements to the program worth mentioning, first and foremost, the addition of a Piper Cheyenne turbo-prop aircraft in Williston. Effective targeting of western North Dakota's convective clouds with silver iodide and dry ice is dependent upon prompt delivery of the seeding agents into their supercooled regions. Traditionally, the NDCMP has used Cessna 340 piston aircraft for direct targeting of these clouds. Once launched, the aircraft are required to climb approximately 15,000 feet to reach their targeting altitudes and this consumes the better part of 30 minutes to accomplish. This high altitude seeding is known as "top seeding." A Piper Cheyenne has about twice the climb rate of a Cessna 340, can carry significantly more payload, and stay on-station longer making it a valuable "work horse" for the NDCMP.

Minot has traditionally been home to a second top seeding aircraft and that remains the same to some degree. A Cessna 340 is still based in Minot this season and serves the dual-purpose of a cloud



Piper Cheyenne aircraft based in Williston.

Photo: Weather Modification, Inc.

base and cloud top seeding aircraft. This "hybrid" aircraft has the ability to top seed using ejectable silver iodide flares, but because it's less frequently needed for that purpose, its lease rate is lower, allowing for funding of the higher performance Cheyenne aircraft in Williston. District I, including Bowman and part of Slope Counties, has been using a "hybrid" Cessna 340 for the last two seasons and program sponsors have been very pleased with the overall value of the aircraft to operations.

Returning, experienced project personnel are another important part of the 2010 NDCMP. Two of the three meteorologists at the Bowman and Stanley radar sites were 2009 NDCMP employees. All three intern meteorologists working on this year's project have previous internship experience with other companies or entities in the meteorology field. This certainly adds to the level of professionalism and knowledge within the NDCMP staff. Six of the eight 2009 NDCMP Pilots-

in-Command (PICs) provided by Weather Modification, Inc. (WMI) of Fargo have returned this year. There isn't a substitute for experience when it comes to flying aircraft in close proximity to thunderstorms. Of the nine intern pilots from the UND Aerospace Program several of them are North Dakota natives and a few of them have participated in previous internships before com-

ing to the NDCMP. This combined experience translates into quicker response to seeding opportunities and excellent communication between meteorologists and pilots during operations.

Along with the operational advancements that the NDCMP has made in the past few years there are many "tried and true" aspects that remain the same. Since its creation in 1975, the North Dakota Atmospheric Resource Board (NDARB) has continued to develop and embrace technology, while at the same time applying the fundamental scientific foundation for our hail suppression and rain enhancement programs.

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