

Weather Modification, Inc. (WMI)

FOUNDED: 1961

WHAT: "Atmospheric Resources Management Technologies For the 21st Century"

WHERE: Hector International Airport, Fargo, North Dakota

HOW: Science, science, science (and some airplanes)

WHO: Patrick H. Sweeney, President, Weather Modification, Inc
Chief Executive Officer, Fargo Jet Center, Inc. James P. Sweeney, Vice President,
Weather Modification, President, Fargo Jet Center, inc.

General Aviation Works for the Skies

Welcome back to Avfuel's General Aviation Works for America series. This series of articles brings you a closer look at some of the many ways that general aviation enhances the way we live and work. In the last installment, we interviewed Avfuel customer Papillon Helicopter about search and rescue, power line patrol, military training operations and a whole lot more. In this edition Avfuel brings you a story that could be science fiction -- but we assure you it is absolutely, 100% real.

Hail suppression. Precipitation augmentation. Cloud microphysics. Cloud seeding. Storm tracking. Pollution monitoring. Atmospheric Chemistry. Weather modification certainly sounds like something you might find in the underground lab of a super villain. But it's not only real, it has been used to help cities, countries and companies solve water and weather-related problems for decades.

Weather Modification, Inc. (WMI) is the largest global provider of weather modification services. Started in 1961, WMI originally focused on increasing rainfall and decreasing hail. Since then the company

has expanded its core competencies to include more comprehensive weather management services such as atmospheric research and air quality studies. Today, WMI helps customers all over the world, performing entire operations training and providing equipment. While much of the aircraft modification, product development, design and fabrication take place at WMI's sister company and airport neighbor Fargo Jet Center, quite a bit is also performed at or near the project site -- wherever it is. With customers in Greece, Turkey, Saudi Arabia, West Africa, the US and Canada, WMI and Fargo Jet Center professionals certainly have their work cut out for them.

"The key thing," says James P. Sweeney, Vice President of WMI and President of Fargo Jet Center, "is that weather modification has to be one part of your whole water management approach. We can't create a cloud or make it rain without some natural conditions already in place. WMI simply applies science to enhance the natural precipitation process to increase rain or suppress hail."

In essence, cloud seeding (synonymous with weather modification) is the process by which inefficient clouds (clouds from which moisture is not falling) are made efficient by the introduction of particles. In a cloud, moisture tends to adhere to a dust particle (usually provided by nature), and as that moisture collects it forms a droplet, which then falls as precipitation. WMI introduces artificial nuclei to the cloud in the form of the natural compound, silver iodide. The silver iodide then attracts moisture, expediting the formation of a raindrop sooner



(A dual mission cloud seeding and atmospheric research aircraft; King Air 200)

than nature does. WMI provides the means for cloud seeding from ground or air.

During cloud seeding a WMI aircraft, usually a turbine like the King Air 200, positions itself at the front of a

thunderstorm, feeder cloud, or updraft, flying above or below it and seeding the updraft with silver iodide delivered via pyrotechnic flares launched from the modified aircraft. Pilots do not venture directly into the storms, as this is an unnecessary risk. During the mission the aircraft often works several parts of one storm. Aircraft are modified and fitted with cloud seeding equipment and scientific instrumentation either on-site or at Fargo Jet Center's facility. WMI has a long-established record of excellence with the FAA in the modification of aircraft.

According James, the first phase of any WMI project is a detailed analysis of what determines cloud formation and precipitation in a given region.



(A wing-mounted hygroscopic flare rack.)

"Our clients ask us to analyze what makes up their clouds and how they can best be modified to be more efficient," says James. "We sit down with our own scientific team as well as third-party scientists for an alternative perspective, and we highlight the best means of meeting the client's objective."



Air sampling probes mounted on a pylon on the wing of a King Air 200

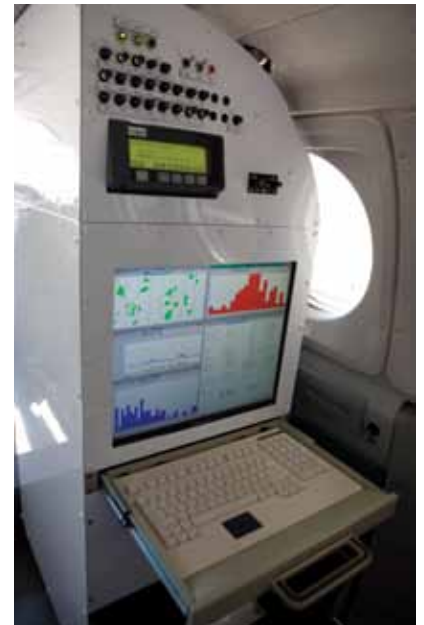
Objectives vary: some customers want to improve agriculture and increase water in reservoirs; others to determine pollution levels; others to reduce expenses caused by weather damage. Sweeney tells of one contract that involved suppressing hail in Calgary in order to reduce property damage. Interestingly, the job was commissioned by an insurance company that wanted to reduce property and casualty claims. In another notable project, WMI helped a region in Argentina reduce the destruction of grapes by hail in order to improve the wine production which drives their economy.

"If you're drinking a 2005 Malbec from Argentina, chances are WMI helped protect the grapes that went into it," notes Sweeney.

While WMI is a leader in performing all the key parts of weather management, such as modifications to aircraft, ground based weather radar, supplies, equipment and expertise, the company also has a program of technology transfer that allows the client to eventually run its own weather management program. In such a situation the client typically owns the aircraft, and runs the program, while WMI steps back into a role of supplier and consultant.

This US-based company has been a pioneer in the research and development of weather management services, flying missions 24 hours a day, seven days a week, all over the world. More than 50,000 hours of cloud seeding flights have been conducted by the company's pilots. Without such integration of science with general aviation, weather modification would not exist as it does today.

www.weathermod.com



(Onboard data - acquisition equipment)

"Seeding a cloud in North Dakota and seeding one in Saudi Arabia are very different processes," says James P. Sweeney, Vice President of WMI and President of Fargo Jet Center.