Agricultural Aviation

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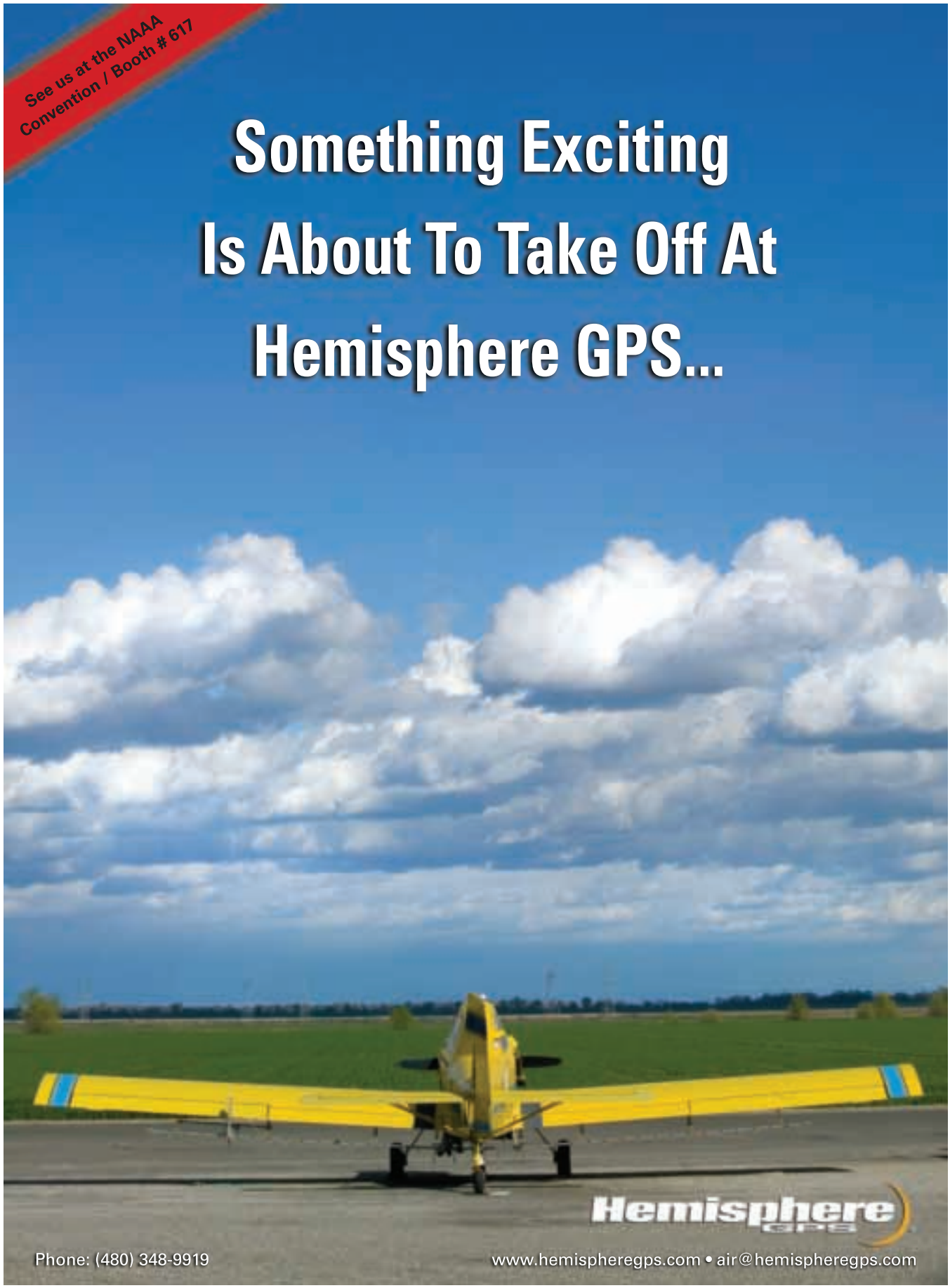
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NAAA Staff

Editorial Message

Your opinions, ideas and contributions are welcome! To submit a letter for publication, please keep it under 200 words and include your name. We may need to edit your letter for clarity and length.

If you submit a story or picture for publication, we will do our best to handle your materials with care, but we cannot be responsible for their safety.

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Reprints: All editorial material is available.

The purpose of NAAA shall be to advance the aerial application industry and its members in their efforts to enhance agriculture, and to protect the public health and the environment.

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You've worked hard this year. Reward yourself with an early present by attending NAAA's Convention & Expo Dec. 7–10. Trust us, Santa won't mind!

ALSO INSIDE:

If wind towers continue to sprout up across America's ag land, it could be difficult, if not impossible, to access a farmer's land to treat it with aerial application

Cover photo credit: VisitRenoTahoe.com/RSCVA

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John Thomas, a former Marine pilot, just completed his first season as an ag pilot

Agricultural Aviation is the Official Publication of The National Agricultural Aviation Association

President's Message

Doug Chanay

Another Successful Year

Here we are nearing the end of another successful year for NAAA. There have been a number of important accomplishments, including renewed funding for PAASS and USDA agricultural research at College Station, Texas, and NAAA's newly redesigned, soon-to-be released Web site. NAAA generated some very positive articles about our industry that should help attract a new generation of ag pilots, such as *The Wall Street Journal's* "Flying Low Is Flying High" story last August.

A number of first-year pilots got their feet wet safely flying ag aircraft this year. Those who were successful still have a lot of work left to do to hone their ag flying skills. There are many meetings to attend this fall and winter such as PAASS, presented by NAAREF through your state and local conventions. When it comes to honing safe ag flying skills, every ag pilot's presence is important at these meetings. Our Com*paass* Rose program is another forum to communicate your valuable experiences and gain from the experiences of others. This is true whether you are a rookie pilot or a veteran.

Support NAAA and its state and regional partners by attending our national and state conventions. If you have not done so already, there is still time to make plans to attend NAAA's 43rd Annual Convention & Exposition in Reno, Nev., Dec. 7–10. This year a number of planes will be on display because of the large exhibit hall.

This is my last column as NAAA President. Thank you for the opportunity to serve as your president this year. I would like to thank the NAAA staff for helping make my time as president a most enjoyable experience. Although we accomplished a lot, plenty of items remain that need further attention. We need to continue our communication with wind-energy industry representatives to help them understand the type of hazards they create for the low-level work we do.

I also would like to thank my officer team—Vice President Rick Richter, Treasurer Dana Ness and Secretary Brent Short. It's an easier job with people like them. I have had a great time meeting new people and gained a tremendous amount of knowledge from different operators across the country. It has been interesting to hear how they approach their aerial application tasks and to learn about different aircraft.

'Have an open ear'

I would like potential ag pilots with no prior flight experience to consider that they may not be suited to an ag aviation career before they commit thousands of dollars to complete an ag course. My suggestion to prospective ag pilots would be to get their private pilot's certificate to find out if they really enjoy being a pilot and while working on their commercial pilot's certificate, purchase or rent a tail-wheel airplane and start practicing maneuvers such as takeoffs and landings, lazy eights, turns-about-a-point and other ground reference maneuvers. These are the most used maneuvers in ag flying.

From the time pilots begin to learn to fly in preparation for their private pilot check ride through their commercial check ride they must establish a certain feel for how an aircraft handles. For example, before an airplane stalls, it buffets and shakes and then it stalls. This is one of the things the plane is trying to let you know, but you may not be aware of during flight training. My father taught me how to feel and listen to the airplane. After these lessons a lot of what I was instructed to do all made sense. This may not be true for all pilots—it is just my experience but one that makes sense to me. If you are new to this business, have an open ear to what experienced ag pilots have to share.

Over and Out

Before I sign off, I'd like to encourage everyone to become involved in our state/regional and national associations. We need the collective talents and resources of aerial applicators everywhere to preserve, protect and enhance this great industry. If you are a member, thank you for supporting NAAA. If you're not, this is the right time to join. I wish you all a safe and prosperous 2010 season. ■

Executive Director's Message

Andrew Moore

Using Social Media to Spread the Good Word About Agricultural Aviation

In August, I attended the American Society of Association Executive's (ASAE) annual conference in Toronto along with fellow NAAA staffer Peggy Knizner. For those readers not familiar with ASAE, it is an association for associations. It is also a very cutting-edge organization that educates its members about the latest and greatest trends being utilized by associations.

The key topic of this year's ASAE convention was how to use social media to positively communicate a trade association's message about its services and industry to its members/prospective members and the public. If you asked yourself, "What is 'social media' in the first place?" don't worry, it is relatively new in the English lexicon. One of the more precise definitions of social media I have come across is:

> Media designed to be disseminated through social interaction; it supports the human need for social interaction, using Internet and Web-based technologies to transform broadcast media monologues (one to many) into social media dialogues (many to many). It supports the democratization of knowledge and information, transforming people from content consumers into content producers. Social media can take many different forms, including Internet forums, blogs, video (i.e., YouTube) and texting. Social media are distinct from industrial media, such as newspapers, television and film. While social media are relatively inexpensive and accessible tools that enable anyone (even private individuals) to publish or access information, industrial media generally require significant resources to publish information.

Two popular social media websites are Facebook and Twitter. **Facebook** is a networking website that enables users to add friends, send them messages and update their personal profiles to notify friends about themselves. Additionally, users can join networks organized by a variety of topics from city, workplace, school, organization, etc.

Twitter is a free social networking and micro-blogging service that enables its users to send and read messages known as *tweets*. Tweets are text-based posts of up to 140 characters displayed on the author's profile page and delivered to the author's subscribers who are known as *followers*. Senders can restrict delivery to those in their circle of friends or, by default, allow open access.

Many trade organizations are still trying to understand how social media works, let alone how to utilize it effectively. That certainly doesn't mean it should be ignored. Social media can provide a lot of power to underdogs.

Both of these social media sites are wildly popular, growing rapidly on a daily basis and enabling information to be disseminated outside of traditional media channels to large populations instantaneously. Iranian citizens were able to display the government's violent crackdown on public protestors contesting election results by posting video on Facebook for the world to see. The images spread virally and were picked up by traditional media after the government blocked several other modes of communication.

President Obama was wildly successful in utilizing Twitter to inform potential voters about his campaign last year. Obama invited people to receive his tweets so they could be the first to find out who his VP pick was going to be. He then used that platform to involve them in his campaign. As a result, Obama garnered the most followers on the micro-messaging service back in August of 2008; Senator McCain, his opponent, wasn't in the top 100.

How Does Social Media Apply to Us?
Many trade organizations are still trying to understand how social media works, let alone how to utilize it effectively. That certainly doesn't mean it should be ignored. Social media can provide a lot of power to underdogs. Take Canadian musician Dave Carroll, for example.

Dave, traveling with his band in 2008, was making a connection at O'Hare on a flight from Halifax, Nova Scotia, to a gig in Nebraska when he saw his precious equipment being hurled around by United Airlines ground crew. This resulted in broken guitars. He communicated what he saw to United authorities and applied for a reimbursement for damages, but his claim was denied after nine months of a series of e-mails with the company.

In response, Carroll recorded a song about the experience, titled "United Breaks Guitars," and posted a clever and effective accompanying music video on YouTube. It was a tremendous hit and had been viewed over 5.3 million times on YouTube as of early September. In fact, at the time this article was written, it was the third site referenced by Google when searching for United Airlines. According to the *Chicago Tribune*, now United wants to use Dave Carroll's work as an in-house training guide for its customer service employees on how not to handle a "my bad" situation.

YouTube, Facebook and Twitter are just a few of many types of social media. Blogs are another. The blogosphere grows by at least one new blog each second and, as of the end of August, totaled 112.8 million individual blogging sites.

Computers are not the only method of staying connected. Our mobile phones are equipped to text, connect to the Internet, receive e-mail, play music and more. Ninety percent of Americans have cell phones within arm's reach 24 hours a day—3.3 billion cell phones exist in the world!

So how does all this relate to agriculture and aerial application? Well, according to a newly released "Agriculture New Media Study," which Nicholson Kovac Inc. conducted, a sizeable number of farmers are beginning to tap into, if not frequently use this new social media. For example, according to the study, 62 percent of large acreage U.S. corn and soybean growers have sent or received text messages during the past year; 47 percent spend five or more hours per week online; and many respondents confirmed they are already engaged in exploring new social media platforms.

Perhaps, more importantly, these forms of new media are being actively used by the younger millennial generation (born in 1978 or after). According to the Pew Internet & American Life Project report, 93 percent of millennials use the Internet and 70 percent use social networking sites. Millennials are an important demographic to reach because they make up an even larger generation than the baby boomers.

Similar to the boomers, the millennials are impacting the country at every life stage and in a myriad of ways, but particularly in politics. In 2008, the number of citizen-

eligible millennial voters was around 50 million, and 66 percent of them voted for Barrack Obama. By the presidential election of 2016, millennials will be roughly 30 percent of actual voters.

These millennials will also be an important demographic to recruit into the agricultural aviation industry to take over the reins from preceding generations. According to a 2006 EPA survey, on average, ag pilots have 25 years of experience in the industry.

Embracing these new forms of social media, as well as continuing to get our message communicated using traditional media, are the keys NAAA's Board are using to reach all generations.

The Association has had pretty good success in its outreach to traditional media this year. On Aug. 14, 2009, a front-page article in the *Wall Street Journal* examined the need for aerial application under the headline, "Flying Low is Flying High as Demand for Crop-Dusters Soars." NAAA worked closely with the reporter who authored the piece and assisted by providing statistics and suggesting sources. The article contrasted the fortunes of the aerial application industry with the struggling airline industry by stating that skilled ag pilots typically make $60,000–$100,000 a year, whereas "pilots at small airlines start at $20,000 and rarely get anywhere near six figures." The *Journal* has a print circulation of 1.7 million and more than one million paid subscribers to *WSJ.com*.

NAAA also released an updated version of "Aerial Application's Growing Role." We sent the DVD to members, non-members, public officials, media representatives and more than 500 flight schools nationwide in an effort to recruit new pilots and to communicate the vital role agricultural aviation plays in helping to produce a safe, affordable and abundant food supply to the nation and the world.

"Aerial Application's Growing Role" is now available for the world to watch on YouTube.

What's in store for NAAA and social media? NAAA is in the process of redesigning its Web site, www.agaviation.org. New content to recruit tomorrow's ag pilots and more detailed information on the important role agricultural aviation plays for all production methods of agriculture are part of the redesign plan, as well as the addition of video features.

What's in store for NAAA and social media? NAAA's committee and board members are contemplating the next steps, such as implementing social networking communities on our Web site, posting video clips on YouTube and establishing Facebook and Twitter accounts to expand our message across the growing spectrum of electronic media outlets.

NAAA's committee and board members are contemplating the next steps, such as implementing social networking communities on our Web site, posting video clips from "Aerial Application's Growing Role" on YouTube, and establishing Facebook and Twitter accounts to expand our message across the growing spectrum of electronic media outlets.

There are caveats to social media: it is intended as a two-way form of communication. Organizations must be cautious in setting up these sites so it will not be used as a forum to protest, but rather one that is conducive to productive dialogue. While some control must be sacrificed in exchange for openness, social media offers opportunities to reach an expansive audience at a fraction of the cost of using traditional media outlets. NAAA will continue to investigate ways to effectively utilize this new media in its effort to bring new generations into the agricultural aviation industry. ■

Southwest Turbine, Inc.

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1. **"NASA Technical Memorandum 107394"**; NASA Lewis Research Center
2. **"Nickel Base Alloys – IN 738"**; Aerospace Structural Metals Handbook - CINDAS LLC
3. **"Physical and Mechanical Properties of the Chromium – Cobalt – Tungsten Alloy WI-52"**; DMIC, Battelle Memorial Institute
4. **"High-temperature corrosion and materials applications"**; George Lai, ASM International
5. **"Comparative thermal fatigue resistances of twenty-six nickel- and cobalt-base alloys"**; NASA TN D-8071, NASA Lewis Research Center

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WNAAA President's Message

Elaine Gustafson

Thanks for the Opportunity

It is hard to believe that the time has come to write my final column. Writing for the magazine has been one of the hardest parts of this job. I want to thank everyone who has been there to give advice and help and support along the way. I have had a great executive committee. Special thanks to Jane Barber, our Vice President, Elly Rau, our Secretary, and Julie Broussard, our Treasurer. And where would we be without the committee chairs? They are all invaluable. I couldn't have asked for a better group of women with which to work. They have all worked very hard this year. It has been a great honor serving as the president of WNAAA this year and I will treasure the time always.

One of the objectives of WNAAA is to educate the public as well as the membership. In doing this we attend several trade shows throughout the year. This year we attended the Commodity Classic in Grapevine, Texas, in February and the National FFA Convention in Indianapolis in October. This is only one way we try to educate the public and our membership.

One of the many benefits of being a member of NAAA is the WNAAA Sponsored Scholarship. This is available to all NAAA operators, pilots and allied industry members and their immediate family. To be able to attend these shows and sponsor the scholarship, we raise funds at the NAAA Convention through the WNAAA Booth, the auction and by selling raffle tickets. We appreciate all of your support in the past and look forward to your continued support.

The Ways and Means Committee always has great gift ideas and just "fun" merchandise. They will have many new items this year. Please stop by to have a look or just to say "hi." The Ways and Means Committee is just one of our fundraisers. This year The Raffle Committee has a cuff-style diamond bracelet and matching hoop earrings valued at $3,500 plus $500 as a second drawing. These ladies will be selling tickets during the convention. The final drawing will take place at the Farewell Banquet. Please note that you do not have to be present to win.

WNAAA's Convention Committee is planning a great program in Reno at the NAAA Convention. I encourage any lady attending, whether you are a spouse or business employee, to join us. Karen Gilmore from the Southwest Center for Agriculture will be presenting "Runway to Health," a program with practical tips on nutrition and sleep for you, your family, pilots and ground employees. I will host an open house in my suite on Monday afternoon, Dec. 7. I hope I will see you all there. Please check the schedule in this issue for all of the convention details!

Once again, I encourage you to get involved with your state or local associations because that's where it all begins. Often it is also where we can interact with younger pilots who are interested in becoming involved in agricultural aviation. As you all know, it is difficult enough to get started in this business. If we can encourage and educate these young pilots we need to try. We need some young blood. The typical aerial applicator has 25 years of experience, according to a survey by the EPA. Ten to 15 years ago, there were about 4,000 agricultural pilots. Today, the figure has declined by 20 percent.

Of course, it goes without saying to stay involved with NAAA and WNAAA. NAAA is a great resource to turn to when you have any questions or need help or advice.

Again, I want to say thank you for the honor to serve as WNAAA President this year. Please plan on attending the NAAA Convention, and I hope to see you there. ■

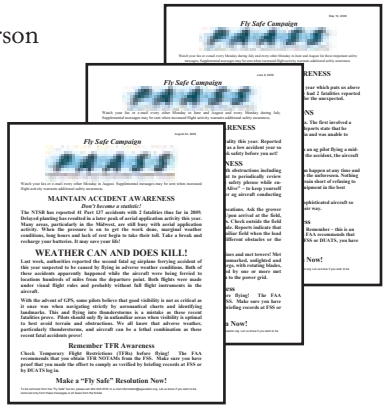
NAAREF President's Message

Randy Hale

An Ounce of Prevention is Worth a Pound of Cure

Another season has come and gone—except in South Texas where it never arrived. At the time of this writing in late August, there have been 44 ag accidents with two fatalities. Four other fatal accidents occurred while ferrying or training, so the FAA did not classify them as ag accidents.

These are not just statistics; every one is a person and a story. The sad thing is most are preventable. NAAREF's main purpose is to offer training to pilots and crews that will prevent accidents. Moreover, the program stresses safety in all areas of aerial application. When an accident happens we learn from it and adjust our training programs. Our goal is to prevent these fatal errors from occurring again.


Fly Safe Campaign

MAINTAIN ACCIDENT AWARENESS

WEATHER CAN AND DOES KILL!

Remember TFR Awareness

Make a "Fly Safe" Resolution Now!

NAAREF's Fly Safe alerts are brief and to the point by design. If you are not receiving these important reminders, contact NAAA and get on the list.

We address accident trends each week through special reminders that go out by fax and e-mail. They are brief and to the point by design, which makes them great tools for operators to use during the heat of the season. These simple reminders go a long way, so please, no matter how busy you are, take a few minutes to discuss safety with your crew. A quick talk now may prevent an accident later. If you are not receiving these reminders, contact NAAA and get on the list.

The 2009–10 PAASS season is getting underway. Some states have already seen this season's presentation. More than 1,600 pilots and crew participated in the 2008–09 PAASS Program at 22 meetings across the country. This year's program includes four modules.

1. **Ag Air Field Watch** gives attendees insight into the chain of events that occur when an ag aircraft is reported missing.

2. **Human Factors** discusses proper equipment maintenance.

3. **Spray Drift Reduction** covers equipment setup and use for variable rate controllers.

4. **Hanger Flying** discusses topics of interest to ag operators.

We urge all of you to attend your state or regional meeting and get your pilots and crews to a PAASS presentation.

No discussion of the PAASS Program would be complete without a thank you to all the folks involved in making it possible. PAASS presenters are dedicated to the well being of our industry and the safety of the people in it. They spend many hours training to give an informative and effective safety presentation. It is a demanding job with lots of material to study, equipment to care for and logistics to coordinate. Then there's the adventure of traveling on the airlines.

It would be impossible to pull this off without people to coordinate all the details. Ken Degg, NAAA's Director of Education and Safety, and all our staff in Washington, D.C., do a great job coordinating people, travel and equipment.

On the financial side, our sponsors and attendees have made it possible to have a professional, well-run program that is very effective and well received by those who regulate our industry. (See adjacent page for a list of the 2009–2010 PAASS Sponsors.)

PAASS has become the country's premier agricultural aviation safety program because of these dedicated people and all of you who have attended presentations and put what you've learned into action. Many thanks to each of you.

REMEMBER…
Upon the performance of each
Rests the fate of all. ■

2009–2010 NAAREF Program Sponsors

Operators and Pilots, Federal and State Agencies, Insurance and Service Providers, Aircraft and Equipment Manufacturers, Chemical Companies, Academic Institutions, and State Associations sponsor the NAAREF projects, including the PAASS Program. Donations are at the category level unless individually noted. **Donors that have pledged for three to five years or have donated the last three years at that level are shown in bold print.**

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Washington Report

Climate Change Policy Could Bring Increased Costs For Ag Aviation Industry

NAAA has been diligently examining the effects global climate change legislation could have on the agricultural aviation industry. The climate change policy making its way through Congress is complex, and it will undoubtedly affect all sectors of the U.S. economy, as well as every American consumer, in some form or another should it become law.

President Obama made it clear from the early days of his presidential campaign that initiating a policy to address global climate change would be among his administration's top priorities. Obama didn't waste any time tackling the issue—a bill, H.R. 2454, narrowly passed the House in June with a vote of 219–212. It's now up to the Senate to craft its own form of climate change legislation. Senate leaders have stated they hope to have a bill on the president's desk by December.

The legislation passed by the House was introduced by Rep. Henry Waxman (D-Calif.) and Rep. Ed Markey (D-Mass.). The Waxman-Markey bill would establish a cap-and-trade system for regulating carbon emissions. Supporters of a cap-and-trade program expect that it will gradually reduce the amount of CO_2 released into the atmosphere from the burning of fossil fuels. Under a cap-and-trade system, businesses buy and sell permits that allow them to emit certain amounts of greenhouse gases. The price of these permits is determined by the demand and availability in the carbon-trading marketplace.

The House legislation calls for initial permits, or allowances, to be distributed at no cost. Heavily polluting entities will have the option to buy or trade allowances with companies that do not surpass their set emissions cap. Extra allowances, called offsets, can be earned through projects that reduce emissions, such as utilizing renewable energy sources, developing forestry projects and sequestering CO_2. These offsets may be sold into the carbon-trading market.

The goal of the Waxman-Markey cap-and-trade plan is to reduce carbon emissions to 14 percent below 2005 levels by the year 2020 and 80 percent below 1990 levels by 2050. Obama stated he would like to see a functioning cap-and-trade system in effect by 2012.

The proposed cap-and-trade program would create a steady influx of revenue for the government stemming from the purchase of emission permits. The White House estimates permit sales would generate $78.7 billion in 2012 and $645.7 billion by 2019. Opponents of the president's plan argue this money will be coming straight from the pockets of American consumers. Sen. James Inhofe (R-Okla.), who serves on the Environment and Public Works committee, estimates that the effects of cap-and-trade legislation on energy prices could cost consumers $330 billion annually.

The estimated financial burdens this bill could levy on the average American household vary by a wide margin. The Congressional Budget Office (CBO) placed its estimate at $175 per year, while a study conducted by the National Association of Manufacturers (NAM) and the American Council for Capital Formation (ACCF) predicted American families will be paying an additional $1,248 per year by the time the legislation takes full effect in 2030.

The Energy Information Administration (EIA) released an

Keeley Mullis, NAAA Coordinator of Government and Public Relations

Will carbon-producing industries be on thin ice if climate change legislation making its way through Congress passes?

analysis showing the bill would minimally impact consumers in the years immediately following its enactment; however, the analysis went on to show that electricity bills would see a significant increase by 2030. According to the research group Point Carbon, retail electricity costs would increase by 7 percent over the next 11 years. After "free" allowances are phased out, energy prices could rise by nearly 20 percent. The EIA also estimates that over the next 20 years the average price for a gallon of gasoline could rise by $1.24 per gallon. The EIA analysis concluded that the proposed policy could cut anywhere from $432 billion to $1.9 trillion from America's gross domestic product (GDP) by 2030.

Rising energy costs are likely to have a direct effect on manufacturing costs, forcing American companies to terminate jobs or send them overseas. The NAM/ACCF study found that H.R. 2454 would markedly increase the cost of energy while reducing economic production. The study showed that the cap-and-trade system could diminish economic growth by 2.4 percent and eliminate 2 million jobs by the time it takes full effect in 2030. Sixty-six percent of the jobs lost would come from the manufacturing sector, the study concluded. Overall, the NAM/ACCF study estimated that this bill could cost the U.S. economy $6.7 trillion over the next 50 years.

Opponents of the Waxman-Markey bill fear that the economic numbers will prove to be worse than projected. Lawmakers, economists and energy experts alike fear the bill does not provide plans or resources for adequate energy alternatives to meet the growing energy demand.

A lag in American energy growth will put the country at a competitive disadvantage with India, China and other rapidly growing countries. China is expected to overtake the U.S. as the world's largest energy consumer within

NAAA Speaks Out

With climate change legislation under consideration in Congress, NAAA is working to ensure that the interests of the agricultural aviation industry are taken into account. As the voice of the aerial application industry, NAAA has:

- **Joined a coalition to express the ag community's concerns with the cap-and-trade bill that passed the House.**
- **Joined forces with other representatives of the aviation industry** to outline principles for lawmakers to consider when examining the relationship between aviation and climate change.
- **Requested that Congress and other regulatory authorities examine the positive effects of aerial application** since the industry assists in producing crops, protecting forests and promoting ecological balance, all of which contribute to the offsetting of CO_2 emissions. ■

the next year. Reports indicate that China is constructing coal-fired power plants at a rapid pace in order to meet the country's growing energy demands. That said, it's quite possible any reduction in emissions achieved in the U.S. would be cancelled out by increased CO_2 production from India and China. According to the International Energy Agency (IEA), even if every country was to adopt emission reduction measures today, global CO_2 emissions will still be 25 percent higher in 2030 than they are now.

The Effects of Climate Change Policy on Agriculture

The Food & Agriculture Policy Research Institute (FAPRI) in Columbia, Mo., recently conducted its own tests to gauge the financial impacts of the bill on agricultural entities. Economic models based on increased energy prices and their impact on crop farms in Missouri demonstrated average increased operating costs of $30,000 for a 1,900-acre farm by the year 2050.

Doane Advisory Service, in a study completed for The Fertilizer Institute (TFI), estimates that the production costs levied on American growers could increase from $6 billion to $12 billion as a result of increased energy prices. Furthermore, the Doane study reported that growing an acre of corn could increase by $78.80. The price of growing an acre of rice could increase by up to $153.24, cotton by $48.06, and soybeans by $20.41. Due to these increased production prices, consumers would see a 5 percent—grossly $25 billion—increase in food prices.

U.S. Secretary of Agriculture Tom Vilsack directed an Agriculture Department (USDA) study of the Waxman-Markey bill. Vilsack said the cap-and-trade program would "break even for agriculture in the short run, but longer term, there would be substantial opportunities—billions of dollars of income—for agriculture in trading carbon credits."

Rep. Colin Peterson (D-Minn.), chairman of the House Ag Committee, was successful in securing a robust agricultural offset program that will be fully administered by USDA as part of H.R. 2454. The practices qualifying for offset credits include altered tillage, reductions in nitrogen fertilizer, carbon emissions from organic soils and cultivating new forests from cropland and other open land. Although the inclusion of this offset program was touted as a major win for agriculture by some legislators and USDA officials, and led many House lawmakers to support H.R. 2454, it was not widely embraced by ag groups.

One offset qualifier, "carbon emissions from organic soils," may bring up another issue for the conventional agriculture industry. It appears that, in effect, this provision would offer additional offset credits to farmers utilizing organic methods. The Rodale Institute, a non-profit organization that promotes organic agriculture as a solution to global warming, is circulating a study from its research project, Farming Systems Trial, that claims "organically managed soils can store (sequester) more than 1,000 pounds of carbon per acre, while non-organic systems can cause carbon loss." This implies that conventionally managed soils allow substantially more

The White House estimates the sale of carbon permits would generate $78.7 billion in 2012 and $645.7 billion by 2019. Opponents argue this money will be coming straight from the pockets of American consumers. Sen. James Inhofe (R-Okla.) estimates that the effects of cap-and-trade legislation on energy prices could cost consumers $330 billion annually.

For these reasons, the fate of Obama's climate change policy remains uncertain. A cap-and-trade bill would need 60 votes to pass in the Senate. Although Democrats hold 60 Senate seats, nearly a dozen Democratic senators said they would not support a bill that mirrored the House version. With no Republican support, the bill faces a tough battle in the Senate.

Obama has the option to bypass the legislative process and use his executive authority to work directly with the EPA in crafting greenhouse gas regulations. Although the president has made it clear that he would rather see this policy develop through the legislature, it is likely that the EPA will immediately begin developing individual regulations if Congress fails to act.

carbon to escape into the atmosphere than organically managed soils.

NAAA is uncertain about the science behind this study and does not believe such incentives should be given until the proper research is conducted. As mentioned in the September/October 2009 issue of *Agricultural Aviation*, a marked shift toward organic agriculture would be detrimental to the production of certain commodities, ensuring that food prices would skyrocket and thus affect the health and wellness of American consumers—especially those unable to absorb the increased costs.

NAAA has joined with a coalition of organizations to express the ag community's concerns with the Waxman-Markey bill. Through correspondence with Sec. Vilsack, the House Ag Committee and other stakeholders, NAAA is working to ensure that the interests of the ag aviation industry are taken into consideration as policy is crafted.

Climate Change Legislation And its Impact on Aviation

All U.S. aviation combined contributes only 3 percent of the country's greenhouse gas emissions, a percentage that is noteworthy considering that the aviation sector has expanded immensely in the last four decades. The International Civil Aviation Organization (ICAO) found that in the past 40 years, aircraft fuel efficiency has improved by more than 70 percent. During this time, the automotive industry's fuel efficiency improved only 15 percent.

Despite the aviation industry's advances, the costs of aligning with the government's proposed climate change goals could cost the industry billions of dollars. NAAA has joined forces with other representatives of the aviation industry to outline principles for lawmakers to consider when examining the relationship between aviation and climate change.

Data from the U.S. Department of Energy shows that one gallon of Avgas produces approximately 18.4 pounds of CO_2 when burned. By comparison, automotive gasoline emits approximately 19.4 pounds of CO_2 per gallon burned and Jet A releases 21.1 pounds.

Based on figures from the Nature Conservancy's Carbon Footprint Calculator, agricultural aviators and pilots of most small aircraft produce nowhere near the 25,000 tons of CO_2 emissions that would require coverage by the cap-and-trade system as put forward in the Waxman-Markey climate change bill.

However, as previously mentioned, the EPA has the authority to begin passing climate regulations through the Clean Air Act should this legislation fail in the Senate. These regulations could include emissions standards for smaller, mobile emissions sources.

NAAA Emphasizes Industry's Role in Mitigating Carbon Emissions

NAAA has made the case that the agricultural aviation industry is vital to maintaining success and productivity in both the agricultural and forestry sectors. NAAA has requested that Congress and other regulatory authorities examine the positive effects of aerial application since the industry assists in producing crops, protecting forests and promoting ecological balance, all of which contribute to the offsetting of CO_2 emissions. NAAA has emphasized the importance of investing in the research and development of new technologies that would mitigate carbon emissions without an excessive system of fees and regulations. Given the current economic climate, imposing unnecessary financial burdens on the industry, particularly upon small businesses, would be counterproductive.

NAAA is reiterating that combined with farmers, growers and other farm service providers, the agricultural aviation industry is an essential part of a system of carbon creditors, since the end agricultural product contributes to the offset of carbon emissions. It is important for policymakers to recognize that emissions generated by agricultural aviation's use of carbon-based fuels are largely offset by oxygen created by the protected plant life.

Should a cap-and-trade policy or similar method of taxing gas emissions be implemented, NAAA would request that considerations, options and exemptions be made available to the agricultural aviation industry. As these policies are developed, it is hoped that agricultural aviation will be seen as a fundamental benefactor to the agricultural sector and thus avoid being encumbered by a costly and burdensome cap-and-trade system.

NAAA will continue to monitor the climate change legislation that is currently before Congress and all climate change regulation that could affect the industry. The Association is committed to influencing this policy on behalf of the industry as appropriate. ■

Senators John Kerry (D-Mass.) and Barbara Boxer (D-Calif.) released their proposal for climate change legislation Sept. 30. The language of the Kerry-Boxer bill is similar to that passed by the House in June. At the time this article was written, the Senate had not yet marked up or voted on a climate change bill, and it remains unclear whether any action will be taken this year.

Cultivate Your Future at NAAA'S 2009 CONVENTION

DEC. 7–10

cul·ti·vate *(transitive verb)*

1: to prepare or prepare and use for the raising of crops; *also*: to loosen or break up the soil about (growing plants)
2a: to foster the growth of <*cultivate* vegetables> 2b: to improve by labor, care, or study: refine <*cultivate* the mind>
3: further, encourage <*cultivate* the arts>
4: to seek the society of: make friends with

Like the definition of the word itself, the theme of NAAA's 43rd Annual Convention & Exposition—"Cultivating our Future"—has many meanings. But a common thread exists regardless of how you define it or interpret the multifaceted slogan. To cultivate something requires *action*. You have to do something.

Whether you are a newcomer to the industry or an experienced ag pilot, there will be plenty to do and a lot to learn at NAAA's action-packed annual convention Dec. 7–10 in Reno, Nev. How do you cultivate your future and the industry's?

One of the advantages of meeting in Reno is that the exhibit hall can accommodate more airplanes. Several ag planes and helicopters will be on display next month.

By Jay Calleja & Keeley Mullis
Staff Writers

1. By preparing for the 2010 season and beyond by staying on top of the latest technologies, trends and agricultural products.

2a. By fostering your own growth and that of others.

2b. By cultivating your mind through labor, care and study. NAAA's annual convention offers an unparalleled variety of educational, technical and concurrent sessions, and this year is no exception. You'll have access to more than 25 hours of educational programming, 100 booths and 1,000 attendees. Attend as many sessions, explore as many exhibits and meet as many people as you can.

3. By supporting NAAA and your state or regional association. Belonging to NAAA, attending the annual convention, staying at our headquarters hotel and contributing to Ag-Av PAC, NAAA's political action

committee, are a few of the many ways you can further the success of the aerial application industry.

4. By making friends with and seeking the society of other aerial applicators, NAAA allied trade companies and NAAA staff. NAAA's annual convention is the largest aerial application show in North America, bringing people together from all over the country and around the globe. This is an outstanding opportunity to reconnect with old friends and forge important new relationships.

Hundreds and hundreds of aerial applicators will rendezvous in Reno Dec. 7–10 to take charge of their future. Give yourself an early Christmas present and make plans to join us. **To register for NAAA's 2009 Convention, return the pre-registration form on pg. 23 by Dec. 1 or sign up online at www.agaviation.org/conventionpage.htm.**

Book Today at NAAA's Headquarters Hotel

Want to make the most of your time in Reno? Then stay where the action is—at the Silver Legacy Resort & Casino. NAAA's headquarters hotel is the place to see and be seen if you work in the aerial application industry. NAAA and the Silver Legacy have enjoyed a longstanding relationship, so the decision to team up again was easy.

Between its prime location, luxurious rooms, fabulous amenities and enough entertainment options to keep you partying well into the night, the Silver Legacy has it all. The Silver Legacy boasts an 85,000-square-foot casino floor with over 100 slot machines, table games and an MGM Mirage Satellite Race & Sports Book.

Take advantage of the special NAAA Convention Package by making your reservations with the NAAA room block!

- 10 percent off any retail purchase in the Silver Legacy's retail shops
- Two-for-one tickets to the Catch a Rising Star Comedy Club
- Two-for-one cocktails at the casino bar
- Complimentary cocktails on the floor of the hotel's casino

The room rate is $79 per night, but don't delay.

To reserve your room, call 1-800-687-8733 or book online at www.silverlegacyreno.com. Use the group ID NAAA9 to obtain NAAA's special group rate.

NAAA will present more than 25 hours of educational programming in Reno.

Stay at NAAA's headquarters hotel by calling the Silver Legacy Resort & Casino at 800-687-8733. Use the group ID NAAA9 to obtain NAAA's group rate.

KICKOFF

From the Passenger to the Pilot's Seat

Captain Dennis Fitch Sr., Kickoff Speaker

NAAA's 43rd convention promises to get off to a stirring start at its Kickoff Breakfast Dec. 7 when Captain Dennis Fitch Sr. recounts the harrowing ordeal of United Flight 232, which crashed in Sioux City, Iowa, 20 years ago.

The DC-10 instructor pilot was a passenger aboard United Flight 232 on July 19, 1989, when one of the plane's engines failed, destroying all three of the DC-10's hydraulic systems. At the flight crew's request, Fitch took over the controls as they prepared for an emergency landing. The plane broke up on impact, killing more than 100 passengers. However, the death toll would have been even higher had it not been for Fitch. Due to his heroism and the skill of the United crew, 175 passengers and 10 crewmembers survived.

Captain Fitch received a commendation from President George H.W. Bush and a Senate resolution "for his outstanding effort, poise and courage in assisting the crew in attempting a difficult emergency landing" of United Flight 232. You don't want to miss his inspiring account.

SPEAKERS

General Session Speakers Tackle Important Issues

As current operators retire, everyone recognizes that a major concern for the aerial application industry is helping new pilots enter the industry and eventually become successful aerial applicators. That's a primary reason why NAAA chose "Cultivating our Future" as this year's convention theme.

The first of two General Session programs on Dec. 8 will address recruiting pilots into the aerial application industry. A panel assembled by the NAAA Insurance Committee will facilitate this discussion from the viewpoints of a new pilot, the operator trying to hire a new pilot and of the insurer. The aerial application industry needs solutions that will help guarantee a strong future for everyone. Attend NAAA's General Session to weigh in with your input on this important issue.

Allison Wiedeman, Branch Chief, Water Permits Division, from the Environmental Protection Agency (EPA) Office of Water will speak as well. NAAA asked has asked

Kickoff Breakfast at NAAA's 2006 Convention in Orlando, Fla.

Wiedeman to discuss the recent decision by the U.S. Court of Appeals, 6th Circuit, and EPA's involvement in writing a new rule requiring permits for pesticide applications made over or near water. This is one of the most important issues facing agriculture today. A costly and cumbersome system requiring water permits for applications would be detrimental to agriculture. This section of the General Session will focus on EPA's policy direction and allow our industry to comment to the Agency directly about this direction.

EDUCATION

ASABE Sessions Offer Insights on Technologies and Advancements

The American Society of Agricultural and Biological Engineers (ASABE) will present several educational panels at this year's convention. These sessions will include discussions on a number of new aerial application technologies and techniques that help to mitigate drift, conserve fuel and ensure proper crop coverage. Be sure to attend the presentations Monday, Dec. 7. Some states offer CEU credits for attendance at these sessions; check with your state or regional association to see if you can receive CEUs by attending ASABE sessions. See pg. 37 for more detailed information about each of the ASABE sessions.

SPONSOR	EVENT AND/OR SIGNAGE
Silver Legacy	Welcome Reception
PLATINUM SPONSORS ($20,000+)	
BASF	Convention Shuttle Service and Kickoff Breakfast
DIAMOND SPONSORS ($10,000+)	
Bayer CropScience	Attendee Breakfast Bags and Email Kiosks at Convention Center
Dow AgroSciences	General Session
syngenta	Auction Reception
GOLD SPONSORS ($5,000)	
	Convention Program Guide
DUPONT	Farewell Banquet
SILVER SPONSORS ($2,500)	
Allianz	Farewell Banquet
FMC	Attendee Lounge
CHARTIS	General Session
BRONZE SPONSORS ($1,000)	
	Lobby Signage
STAR-FLEX	Aisle Signs
	NAAA Museum Booth
EMERALD SPONSORS (UPTO $999)	
Souther Field Aviation	Aisle Sign and Bench

Concurrent Sessions

NAAA's allied industry companies will be hosting several concurrent sessions covering topics such as application technology, chemical, aircraft airframe and engine manufacturing. Special sessions will also cover security, propulsion units, helicopters and aerial firefighting. If you are new to the industry, you won't want to miss the Com*paass* Rose presentations. The concurrent sessions will be held throughout the convention. See pg. 34 for more information and a schedule of the concurrent sessions.

Don't Miss the Industry's Largest Trade Show & Exposition!

The trade show floor is always the center of the convention action. The trade show and exposition offer you the chance to preview cutting-edge products and valuable services offered by NAAA's allied companies. The trade show will take place from noon to 6 p.m. on Tuesday, Dec. 8, and pick up again on Wednesday, Dec. 9, from 10 a.m. to 4 p.m. For an advance look at what companies have in store, see our special exhibitor preview on pg. 25.

Several Sponsorship Opportunities Remain

NAAA would like to express its gratitude to each of the companies sponsoring an event at the 2009 Convention & Expo (see sponsor box). Additional sponsorship opportunities

The live auction is a perennial highlight at NAAA's convention. Judging by the sampling of auction items, this year's event should be no different.

remain, including the General Session program, coffee breaks and several other options. Sponsorships are listed in the Convention Program Guide, Jan./Feb. 2010 *Agricultural Aviation* and on NAAA's website. For more information, please call the NAAA office at 202-546-5722 or visit the NAAA website at www.agaviation.org and click the Convention link.

SAMPLING OF AVAILABLE AUCTION ITEMS	
COMPANY OR PERSON	**AUCTION ITEM**
AeroFlow Systems	30 AFS standard check valves
Ag-Nav Inc.	Two $500 Gift Certificates
Air Tractor Inc.	Four Amsafe air bag retrofit kits—AT 400–800 (installation not included)
BASF	Large leather duffle bag with BASF-embossed logo filled with BASF branded merchandise
CP Products Company Distributors	50 11TT nozzles and 50 CP-06 Swivels
Janet Foster, of Hardy Aviation Insurance	Two Brighton purses, new in original boxes
Lane Aviation	One 1111 small electric brake and one 111F blade assembly
NAAA Museum Committee	Harold Miller Trophy
Kristina Orcutt, of Chartis Aerospace	Cropduster cross stitch
Pratt & Whitney Canada	$20,000 Certificate
Prime Turbines	One set of fuel nozzles for small PT6 engine (includes 14 adapter assemblies, 14 sheaths and gasket kit)
S & T Aircraft Accessories Inc.	Aux. Fuel Boost Pump & Motor Assembly
Thrush Aircraft	Thrush Aircraft Leather Jacket
Transland	One set of custom-made stainless steel booms

Live and Silent Auctions Need Donations

NAAA's live and silent auctions are some of the most anticipated and entertaining events at the convention. This year's list of auction items boasts a wide array of products and prizes that are sure to ramp up the competitive bidding! Support the aerial application industry by donating an item to either or both of these auctions. The live auction and a reception take place from 5:30 to 7 p.m., Dec. 8. The silent auction ends at 3 p.m., Dec. 9. To donate an item, contact NAAA at 202-546-5722 or information@agaviation.org.

Farewell Banquet and Awards Ceremony

The convention will close with a bang at the Farewell Banquet and Awards Ceremony on Dec. 10. Join us as we acknowledge the significant contributions people have made to the aerial application industry and celebrate another successful show.

That's enough talk.
It's time for action.
Sign up today!
See you in Reno Dec. 7–10! ■

Reno-Sparks Convention Center

43rd Annual NAAA Convention & Expo

Reno, Nev. – Dec. 7–10, 2009

Pre-registration must be received by Tuesday, Dec. 1, 2009. Use this form and register today!

MEMBER REGISTRATION: You must be the designated member of an Operator or Allied Industry Company, State Association Executive, or have a Pilot, Affiliated Operator, Affiliated Allied, Associate, International or WNAAA membership in your name, or be the spouse of an NAAA member to qualify for member rates.

Registration at the convention site will cost $50 more per person!

NAAA Members	Registration With Banquets	Registration Without Banquets
Member	$320	$220
Spouse	$265	$165
Child (under 12)	$170	Free

Non-NAAA Member	Registration With Banquets	Registration Without Banquets
Non-member	$440	$340
Spouse	$380	$280
Child (under 12)	$170	Free

Banquets: Kickoff Breakfast and Farewell/Awards Banquet

EXTRA BANQUET/RECEPTION TICKET FEES:

NOTE: Attendance at the Welcome Reception, Auction Reception and Farewell Reception are included in your registration fee. Purchase Kickoff Breakfast or Farewell/Awards Banquet tickets only if you purchased a "without banquets" package. Purchase extra Welcome Reception and Farewell Reception tickets only for guests with no registration package.

Monday, Dec. 7	Kickoff Breakfast	$40/each	# needed ___
Monday, Dec. 7	Welcome Reception	$40/each	# needed ___
Thursday, Dec. 10	Farewell Reception	$30/each	# needed ___
Thursday, Dec. 10	Farewell Banquet/Awards	$75/each	# needed ___

REGISTRANT: First Name _____ MI _____ Last Name _____

(Please print your name as you would like it to appear on your convention badge.)

Company _____ Phone _____

Address _____ City _____ State_____ Zip _____

Country _____ Fax _____ Email _____

SPOUSE REGISTRANT: _____

(Please print name as you would like it to appear on convention badge.)

ADDITIONAL REGISTRANTS:

First _____ MI ____ Last _____

First _____ MI ____ Last _____

First _____ MI ____ Last _____

First _____ MI ____ Last _____

PAYMENT:

Registrant Fee $_____

Spouse Fee $_____

Add'l Registrants $_____

NAAA Dues $_____

Banquet Tickets $_____

TOTAL DUE $_____

(U.S. funds only, must accompany registration)

Credit Card _____ or Check # _____

Card# _____

Exp Date: _____ Phone _____

Address _____

City _____ State _____ Zip _____

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"Signature is permission to bill Credit Card."

Mail payment and registration form to: NAAA – 1005 E Street SE – Washington, DC 20003
Print registration form at www.agaviation.org – Fax 202-546-5726 – Questions? Call 202-546-5722

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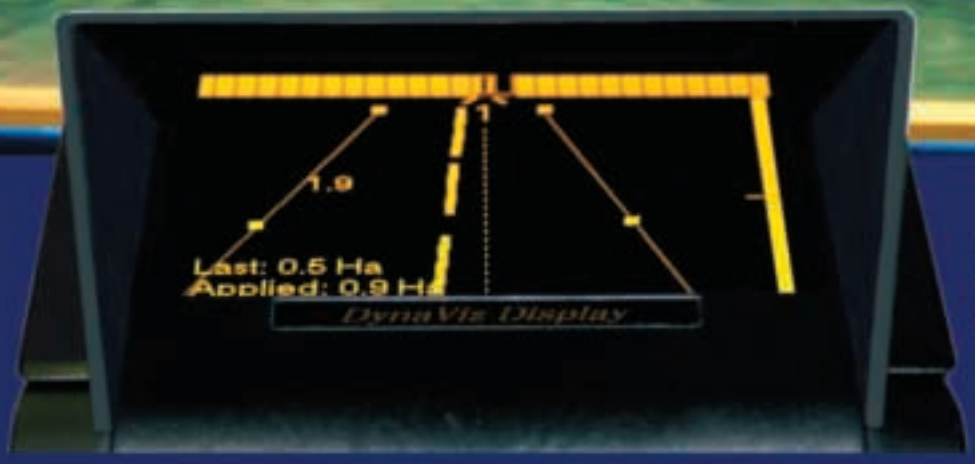

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Your Guide to Who's Who & What's What at NAAA's 2009 Expo

With more than 25 hours of educational programming, 100 exhibits and 100,000 square feet of exhibit space, there is much to see and do at NAAA's 2009 Convention & Exposition. The activities commence with the kickoff breakfast on Dec. 7 and continue at a frenetic pace until the farewell banquet on Dec. 10.

To get the most out of your convention experience, it pays to plan ahead. To assist in your decision making *Agricultural Aviation* put together a handy **Who's Who List of NAAA Convention Exhibitors**. We invited companies that had committed to NAAA's trade show by the end of August to describe their exhibits. Brief explanations are provided for the companies that responded to our request. The complete exhibit lineup is on pg. 30. For information on programming and other events, see pgs. 16–42.
—Jay Calleja, Manager of Communications

Editor's Note: All listings are provided for informational purposes only. Inclusion does not constitute an endorsement by NAAA. NAAA is not responsible for claims made by exhibitors.

Ag Air Turbines Inc.

Booth #: 507

See our ad on pg. 53

AgAir Update

Booth #: 824

What's new: Visit our website, www.agairupdate.com, for up-to-date agav classified ads and breaking news.

Why stop here? *AgAir Update* is agricultural aviation's newspaper. Stop by our booth for the latest edition, complete with our show guide, which showcases the latest products and services for the agricultural aviation industry.

Ag Container Recycling Council (ACRC)

Booth #: 1319

What's new: Increased access to pesticide container recycling.

Why stop here? Learn how to eliminate pesticide container disposal costs by having ACRC contractors recycle them at your door!

Ag-Nav Inc.

Booth #: 1125 & 1225

What's new: Lots of new features for 2010, including full automatic spray control system.

Why stop here? Save time and money—talk to our support team and tell us what you need. See hands-on demos of our latest guidance system.

See our ad on pg. 32–33

AgriData Inc.

Booth #: 1004

What's new: We have added Satloc job file exports and a labeling tool to Surety® Online Mapping.

Why stop here? See a demo of Surety® Online Mapping, the No. 1 aerial application mapping program, and learn how to receive four free maps.

AgriSmart Information Systems

Booth #: 1000

What's new: Flight Plan Online—an information management system for aerial applicators

Why stop here? See a better way to communicate with your customers and manage your business so you can focus on spraying more acres.

See our ad on pg. 35

Air Tractor Inc.

Booth #: 417

What's new: Air Tractor has a new precision application laser altimeter and a 406 mHz ELT now available for new

Attendees have the opportunity to visit more than 100 companies at NAAA's Exposition Dec. 8-9.

orders and as retrofit kits. FAA certificated heavy duty flap actuator is also expected to be on display.

Why stop here? As AT-504 trainer/spray plane orders continue coming in, find out why the 504 is the plane that lets operators "earn while you learn." Hear the latest update on the highly anticipated 1,000-gallon capacity AT-1002. And, as always, check out the latest Air Tractor aircraft on display.

See our ad on the back cover

Allianz Aviation Managers

Booth #: 501

What's new: Ask about our Professional Aerial Applicators Coverage Endorsement (PAACE).

Why stop here? Find out if PAACE is right for you. Have an insurance question? Our agricultural underwriting experts have the answers.

ApplicationMGMT.com

Booth #: 612

What's new: ApplicationMGMT.com is a complete, preconfigured work order system designed with your customer in mind. This online system is extremely user friendly because it was designed by aerial applicators for aerial applicators.

Why stop here? ApplicationMGMT.com is a web-based software solution that simplifies the work order process and is accessible on any computer or mobile device with an Internet connection.

BASF Crop Protection

Booth #: 901

What's new: Coming soon: HeadlineAMP, a new fungicide designed to prevent disease, improve plant health and increase yield.

Why stop here? BASF Crop Protection is committed to bringing new technologies to the market so aerial applicators can do what they do best: provide growers with unparalleled disease and weed control, exceptional plant health improvement and unprecedented yield. Come by to learn about HeadlineAMP, as well as our exclusive partnership with AgSync, an online software program that solves communication and scheduling problems between aerial applicators and their retail ag facilities.

See our ad on the inside front cover

Bayer CropScience

Booth #: 1031

What's new: Bayer will be introducing new fungicides and insecticides in 2010 for the 2011 growing season.

Why stop here? Discuss Prosaro, Stratego, Leverage, Baythroid XL and Oberon, and learn about Bayer's new technologies. Also, register to win a replica 6-foot model Air Tractor Airplane.

See our ad on pg. 43

Cascade Aircraft Conversions

Booth #: 1127

What's new: Cascade Aircraft Conversions will be adding the new GE/Walter H80/800HP turbine engine to our existing STC'd D-11 604HP and E-11 751HP GE/Walter turbine engine options for Air Tractor 401/402/502 models and Thrush 400- and 500-gallon models.

Why stop here? Hear how Cascade Aircraft Conversions' products can benefit your operation. Cascade Aircraft Conversions continues to cool all PT6-powered Air Tractor and Thrush with our "Better by Design" Cascade Pressure Cowl. Barrier Filter Systems for Soloy-powered Hiller and Bell helicopters now available.

Chartis Aerospace (formerly AIG Aviation)

Booth #: 803

What's new: Only our name has changed—we still provide the same great service.

Why stop here? Chart your course to Chartis Aerospace. Visit Booth 803 for more information.

Covington Aircraft Engines

Booth #: 614

What's new: Our hangar is complete and we're booking customers for everything from 100-hour inspections to engine overhauls.

Why stop here? Most engine models are readily available for exchange and our "light overhaul program" is expanding to include large 60 series engines.

See our ad on pg. 56

CP Products

Booth #: 708

See our ad on pg. 52

Crowley Ridge Aviation

Booth #: 610

See our ad on pg. 50

Curtis Agri-Line ASC

Booth #: 107

What's new: New innovations in Rotary Atomizer Technology

Why stop here? Let us show you why so many pilots/operators have made the switch from conventional hydraulic nozzles to our ASC Rotary Atomizers.

Davidson Solid Rock Insurance

Booth #: 1026

See our ad on pg. 58

DTC DUAT Service

Booth #: 120

What's new: As an FAA-certified weather and flight planning service, DTC DUAT now offers forecast graphic products depicting Doppler radar, cloud cover, echo tops and surface visibility. These new products provide forecasts for nine hours in the future and are updated every three hours. And still free!

Why stop here? See live demos showing the major features of DTC's DUAT System.

DuPont Crop Protection

Booth #: 704

What's new: Several insecticides and herbicides, including DuPont™ Altacor® insect control (reliable control of key pests in grapes, pome and stone fruits); DuPont™ Coragen® insect control (effective control of key pests in fruiting and leafy vegetables); and DuPont™ Accent® Q herbicide (post-emergence grass weed control in corn, popcorn and sweet corn).

Why stop here? Learn about DuPont Crop Protection's new insect control and herbicide solutions and the consistent, high-quality performance they deliver.

Executive Aircraft Maintenance

Booth #: 503

What's new: The factory is manufacturing new TPE331 Honeywell turboprop engines.

Why stop here? See John Phoenix and Terry Cooley and talk TPE331 Garrett Turbo Prop engines. They have been assisting aerial applicators for almost 20 years, helping them keep their cost of ownership at an affordable level, while building quality CAM engines.

FMC Corporation

Booth #: 519

What's new: The latest in aerially applied crop protection chemicals for corn, beans, rice, TFV and other crops

Why stop here? Learn about new products that can help build your aerial application business.

See our ad on pg. 45

Frost Flying Inc.

Booth #: 725

See our ad on pg. 2

GE Aviation

Booth #: 1025

What's new: The GE H80 turboprop engine was recently selected to power Thrush 510.

Why stop here? Learn about GE Aviation turboprop engines, including the new H80 engine that will deliver 800 shaft-horsepower along with improved fuel efficiency, increased temperature margin and an extended service life; and Walter M601E-11 engine that continues to deliver reliable, cost-efficient power solutions for agricultural aviation.

Genuine Aircraft Hardware Co.

Booth #: 930

What's new: Additional products and new revisions to our Reference Book, available in print and CD.

Why stop here? We offer a huge selection of aircraft hardware and related items.

Hardy Aviation Insurance

Booth #: 700

What's new: Market trends change often. We stay informed so you stay informed.

Why stop here? Informed agents active daily in the aerial application industry. Highly educated staff specializing in ag insurance so you don't have to.

See our ad on pg. 2

Hemisphere GPS

Booth #: 617

What's new: The IntelliStar Guidance System with street maps, XM weather & radio and Internet capability. Plus, see the TrackerStar II, the new HGPS Iridium-based tracking system.

Why stop here? Surf the Internet on the new IntelliStar. Experience our new systems and play with the new mapping and XM weather. Give us feedback on our new software features. Most importantly, talk to us and let us know what you think.

See our ad on pg. 1

Junge Control Inc.

Booth #: 907

What's new: Even more great solutions for filling your spray plane quickly, efficiently and accurately.

Why stop here? On display, new Departure Link models that are more cost-effective and even easier to use. Departure Link will accurately measure products from one or more tanks and record the transaction.

Kawak Aviation Technologies Inc.

Booth #: 815

What's New: Nothing! However, we still have the same quality products designed to make you choice of aerial application platform (Fixed or Rotor Wing) reliable, profitable and precise.

Why Stop Here: To talk to Mike and Pete. It is worth the effort. Our job is hydraulics. Whether it's a spray system on your helicopter or airplane, a problem with a loading truck or you simply want to know about our latest products for dry variable rate application, we have the solutions and want you to have them too.

Lane Aviation Inc.

Booth #: 719

What's new: Discounted brakes, fans and CP nozzles during exhibit hours

Why stop here? Stop by for upcoming sales and special pricing not advertised.

See our ad on pg. 56

Micronair Sales & Service

Booth #: 918

See our ad on pg. 63

Mid-Continent Aircraft Corp.

Booth #: 1010

What's new: The GE Walters Engine on Thrush. STC approved for the Load Hawg. The SAFRA Diesel Engine for Cessna Skylanes

Why stop here? Visit the best parts service in the world.

See our ad on pg. 19

Nufarm Americas

Booth #: 1024

What's new: The fastest-growing crop protection portfolio, including an entire spectrum of range and pasture products.

Why stop here? Learn how to provide your customers with better choices that will help you build a better business.

PIM Aviation Insurance

Booth #: 219

What's new: PIM is now partnering with life insurance companies that aren't afraid to provide coverages while you're operating your aircraft. And best of all, we can offer you this protection at competitive rates.

Why stop here? In order to succeed in agricultural aviation, your aircraft must be in full operation during spraying season. Stop by our booth and learn how we can keep you Wheels Up. PIM has solutions not only for your aircraft hull and liability, and chemical liability but also numerous other exposures including your hangars, buildings and contents, business auto and workers compensation.

Precision Laboratories Inc.

Booth #: 119

What's new: New supplemental label allows for PROTYXTM Fungicide Activator in aerial applications with Headline® Fungicide.

Why stop here? Learn about PROTYXTM, one of the most widely used non-crop oil additives for fungicides.

See our ad on pg. 27

Prime Turbines

Booth #: 801

What's new: Prime Turbines is now doing PT6 ENGINE OVERHAUL in addition to hot sections, fuel nozzles and power section inspections.

Why stop here? Find out about our new PT6 ENGINE OVERHAUL capability, PT6 small engine FLAT RATE HOT SECTIONS, and details on our PT6 fuel nozzle auction donation.

See our ad on pg. 31

PROAIR + PROAIR Risk Retention Group Inc.

Booth #: 414

What's new: Learn about new developments in hull, chemical and non-chemical liability coverage with competitive rates for safety-conscious ag operators. Membership is now open to ALL aircraft types!

Why stop here? Find out how you can join a pool of safety-conscious operators and take control of your own risk management program. Get information about membership benefits including Fly Right Safety Data, Air Evac Life Team air medical service and SPOT satellite tracking devices.

Rocky Mountain Propellers

Booth #: 113

See our ad on pg. 50

RT Turbines

Booth #: 729

See our ad on pg. 44

NAAA's 2009 exhibitors will use more than 100,000 square feet of exhibit space at the Reno-Sparks Convention Center.

S & T Aircraft Accessories Inc.

Booth #: 731

What's new: Possibly you as a customer…please stop by and meet us.

Why stop here? We would enjoy seeing you and saying hello. It's always good to see old friends and make new ones.

See our ad on pg. 62

Sikorsky Aircraft

Booth #: 214

What's new: Sikorsky Global Helicopters showcases its S-300C fully equipped for agricultural applications.

Why stop here? See it for yourself! Demo aircraft and system on site.

Sky Tractor Supply

Booth #: 825

What's new: All the latest innovations available from your complete ag aircraft dealer

Why stop here? See your friends and pick up.ading service center.

See our ad on pg. 63

Southwest Turbine Inc.

Booth #: 817

See our ad on pgs. 8 and 40

Starr Aviation

Booth #: 916

Why stop here? Visit our booth to discuss all your aerial application insurance needs.

Syngenta Crop Protection

Booth #: 911

What's New: In 2010, we are introducing Quilt Xcel™ as the next evolution of elite systemic fungicides. Quilt Xcel contains the Power of Two™ active ingredients to provide both curative and preventive disease control to optimize Plant Performance™.

Why Stop Here? Syngenta is an industry leader continually investing in the future of agriculture. Stop by to visit with your Syngenta Plant Performance team and enter for a chance to win an aerial applicator helmet.

Thrush Aircraft Inc.

Booth #: 917

See our ad on pg. 39

Turbine Conversions

Booth #: 125

What's new: Hatfield Hydraulic Firegate has received IAB Level 3 approval for Air Tractor 802. We will also feature our line of high-quality Aluminum Bi Folding Doors. These can be custom built to meet your specific facility needs.

Why stop here? See our Single Point Fueling System in action. Free demonstrations using a working model of our FAA STC Single Point Fueling System (available for most ag aircraft) will occur throughout the convention. For firebombing needs, the Hatfield Hydraulic Firegate, with its new IAB Level 3 approval, will be on display.

See our ad on pg. 58

Turbine Engine Consultants Inc.

Booth #: 505

What's new: Online R.F.Q.'s now available at www.teci.com.

Why stop here? Find out about Honeywell TPE331 parts and/or engines for your Air Tractor, Dromader, Ag-Cat or Thrush.

Valley Air Crafts

Booth #: 818

See our ad on pg. 59

Western Skyways Inc.

Booth #: 601

What's new: PT6—complete overhaul with new test cell!

Why stop here? Drawing for two complete sets of PT6 nozzles (exchange) ■

NAAA CONVENTION EXHIBITORS (as of September 10, 2009)

More than 100 companies have signed on to exhibit at NAAA's 43rd Annual Convention & Exposition in Reno, Nev. If you are interested in exhibiting, we still might be able to get you in if you hurry. Contact Peggy Knizner at 202-546-5722 or pknizner@agaviation.org.

COMPANY	BOOTH NUMBER
ACES Systems	Booth 313
Aero-Engines Inc.	Booth 828
AeroFlow	Booth 905
Aero Recip, Canada	Booth 808
Ag Air Turbines Inc.	Booth 507
AgAir Update	Booth 824
Ag-Nav Inc.	Booth 1125 & 1225
AgriData Inc.	Booth 1004
AgriSmart Information Systems	Booth 1000
AgSync	Booth 902
Air Repair Inc.	Booth 707
Air Tractor Inc.	Booth 417
Allianz Aviation Managers	Booth 501
ApplicationMGMT.com	Booth 612
APS Brakes	Booth 319
Avenger Aircraft & Services	Booth 115
Aventech Research Inc.	Booth 412
BASF Crop Protection	Booth 901
Battlefords Airspray	Booth 830
Bayer CropScience	Booth 1031
Blue Stripe Distributine	Booth 927
Cascade Aircraft Conversions	Booth 1127
Chartis Aerospace	Booth 803
Compton's Flying Service Inc.	Booth 611
Covington Aircraft Engines	Booth 614
C P Products	Booth 708
Crowley Ridge Aviation	Booth 610
Curtis Agri-Line ASC	Booth 107
Dallas Airmotive	Booth 604
Davidon Inc.	Booth 1006
Davidson Solid Rock Insurance	Booth 1026
Desser Tire & Rubber Co.	Booth 805
Dow AgroSciences	Booth 814
DTC DUAT Service	Booth 120
DuPont Crop Protection	Booth 704
Dynanav Systems Inc.	Booth 418
Executive Aircraft Maintenance	Booth 503
FAA FAASTeam	Booth 108
Falcon Insurance Agency	Booth 600
Farm Air Inc.	Booth 512
First Pryority Bank	Booth 517
Flight Grip LLC	Booth 603
FMC Corporation	Booth 519
Frost Flying Inc.	Booth 725
Garrco Products Inc.	Booth 806
GE Aviation	Booth 1025
Genuine Aircraft Hardware Co.	Booth 930
Gibson & Barnes	Booth 413
Hardy Aviation Insurance	Booth 700
Hemisphere GPS	Booth 617
Isolair Helicopter Systems	Booth 1133
Johnston Aircraft Services	Booth 1131
Junge Control Inc.	Booth 907
Kansas Aviation of Independence	Booth 602
Kawak Aviation Technologies Inc.	Booth 815
Kugler Company	Booth 909
Lane Aviation Inc.	Booth 719
Leading Edge Technologies	Booth 826
Makhteshim Agan of North America Inc. (MANA)	Booth 914
Micronair Sales & Service	Booth 918
Mid-Continent Aircraft Corp.	Booth 1010
NationAir Aviation Insurance	Booth 831
National Flight Services Inc.	Booth 513
Nufarm Americas	Booth 1024
Nutra-Flo Company	Booth 515
P2 Aviation Technology	Booth 232
Perkins Technology	Booth 810
Pickett Equipment	Booth 710
PIM Aviation Insurance	Booth 219
Pratt & Whitney Canada	Booth 809
Precision Aviation Group	Booth 812
Precision Laboratories Inc.	Booth 119
Prime Turbines	Booth 801
PROAIR + PROAIR Risk Retention Group Inc.	Booth 414
Queen Bee Air Specialties Inc.	Booth 511
Rocky Mountain Propellers	Booth 113
Roehrich Financial Services	Booth 317
Rosen's Inc.	Booth 605
RT Turbines	Booth 729
S & T Aircraft Accessories Inc.	Booth 731
Serv-Aero Engineering Inc.	Booth 608
Sikorsky Aircraft	Booth 214
Simplex Manufacturing Co.	Booth 1219
Sky Tractor Supply	Booth 825
Sound Propulsion	Booth 609
Southwest Turbine Inc.	Booth 817
Spectrum Electrostatic Sprayers	Booth 925
Starr Aviation	Booth 916
Syngenta Crop Protection	Booth 911
Teledyne Battery Products	Booth 733
Tennessee Aircraft Co. Inc.	Booth 121
Thrush Aircraft Inc.	Booth 917
Timken Aftermarket Solutions	Booth 900
Transland LLC	Booth 715
Turbine Dromader LLC	Booth 509
Turbine Conversions	Booth 125
Turbine Engine Consultants Inc.	Booth 505
Turbines Inc.	Booth 213
Valley Air Crafts	Booth 818
Weatherly Aircraft	Booth 713
Western Petroleum Co.	Booth 109
Western Skyways Inc.	Booth 601

2009 NAAA TRADE SHOW FLOOR PLAN

Reno-Sparks Convention Center

The Ag-Nav Inc. team invites you to visit us at **Booth # 1224** during the 43rd NAAA convention in Reno, Nevada. FREE navigation demo software and GIS post-processing software will be available to all visitors. Visitors to our booth will also have the opportunity to see our new products and will be able to speak with our staff.

With 24 years of manufacturing and service to the airborne industry, Ag-Nav Inc. has the experience required to offer the best products and customer support. When you purchase from Ag-Nav, we offer you reliable factory service and support as well as FREE software updates for the life of your product.

This year, Ag-Nav Inc. is pleased to introduce the new **AG-NAV CONNECT**, a product which allows you to upload and download files to and from your aircraft wirelessly. We are also proud to introduce a new GPS receiver which is more powerful, accurate, and faster than its predecessor. This innovative new product will not receive interference from any other equipment in the aircraft.

Our **SPRAYVIEWW** software has been very successful with helping our clients interface applied data to GOOGLE EARTH. During the 2009 season many customers used this software to get accurate maps and geo-referenced data for their applications by interfacing with Google maps. With SPRAYVIEWW, data analysis is easy and reporting is better than with other agriculture GIS software on the market.

Many of our clients have asked for the small **SMART BAR** hardware to suit their requirements with helicopters. We listened to your comments and have produced a medium size **NAV-BAR**. The NAV-BAR is physically identical to the small SMART-BAR, but has the same state-of-the-art technology from the NAV-BAR. The NAV-BAR is able to give you four alphanumeric messages with four digits for each selection; thus, displaying more accurate information. This new design is brighter than any other intelligent light bar on the market. It is lightweight and aerodynamically designed to fit any type of aerial application aircraft. All models will be on display at Booth # 1224.

When you visit us at our booth, we will have several systems on display for you to interact with, such as the popular Ag-Nav **GUIA** "GOLD" model for aerial application. The Ag-Nav GUIA is a DGPS navigation system designed to meet and exceed specific requirements for guidance in aerial applications. Features such as the USB port allows for fast uploading and downloading of files, saving you time and money. One USB stick can store data for a whole season, making the Ag-Nav GUIA very safe and reliable. No data cards, no PCMCIA, no memory cards to carry or lose, just a plain USB key will do the trick. With the Ag-Nav GUIA, your data stays in the hard drive until you decide otherwise.

Unlike other heavy and bulky systems on the market, the Ag-Nav GUIA is packaged in a compact design to save weight and space in all aircraft. The user-friendly software makes it easy to navigate through menus for set-up and real-time application and its built-in light bar is useful, convenient and sufficient for some operations. Installation and removal are done in a snap!

The operating system for the Ag-Nav GUIA allows pilots to navigate through menus in a similar fashion to Windows software on your home computer. It runs on LINUX platform; thus, there are no attacks from viruses most common in Windows operating systems. The "GOLD" model is able to interface with a variety of automatic flow controllers and its automatic booms ON/OFF feature makes the unit versatile, saving you from buying additional equipment to make this option.

The Ag-Nav GUIA uses features with full data logging that has proven user-friendly and successful in agricultural, forestry, mosquito control and many other airborne applications where accurate guidance is required.

The **FLIGHTMASTER** navigation system has been designed to meet Mosquito Control Aerial Application specific requirements in the battle against field infestation. This system carries an on-board weather station (AIMMS20) and provides real-time information on wind speed, wind direction, relative humidity, temperature and barometric pressure. Data is updated on every pass and displayed on a Moving Map during navigation. FLIGHTMASTER provides the pilot with swath, directional guidance and other navigational information required to carry out precise aerial applications. The **FORESTMASTER** works in similar fashion but with features geared for forestry application.

The **AG-FLOW** automatic flow control system has been designed to ensure a steady distribution of application rates by automatically adjusting its flow. This system consists of a flow meter or sensor, a valve and DC motor to adjust the valve position, and a controller box. The flow rate is adjusted automatically by the valve position; thus, controlling the required flow to the spray booms. The controller box is a state-of-the-art computer which has serial ports and CAN bus used for communications with other systems. The simple and easy installation process guarantees that the AG-FLOW is ready to use right after installation as calibration is very fast and effective.

TRACKERNAV is an advanced Automated Vehicle Location (AVL) system designed with fleet management in mind. GPS technology and existing cellular networks provide for a robust, scalable system with no upfront telemetry costs. TRACKERNAV consists of an in-vehicle 12 channel GPS receiver coupled with a GSM/GPRS cellular modem. Combined with TRACKERNAV software on your PC, TRACKERNAV puts you in control of your data which is kept on your computer network. Other AVL systems store data off site which can lead to costly monthly data hosting fees. When deployed as part of a fleet management system, TRACKERNAV delivers accurate real-time information enabling route planners to compare where the vehicle should be and where the vehicle actually is.

For more information on the above systems and other Ag-Nav products such as **FIRE-NAV**, **TRAX-NAV**, **GROUND-NAV**, **LI-NAV** and **PHOTO-NAV**, please visit us at NAAA BOOTH # 1224 or contact us today at 1-800-99 AGNAV (24628). You can also visit our website at www.agnav.com.

DURING THE 43RD NAAA CONVENTION, PLEASE SIGN UP AND JOIN US AT THE SILVER LEGACY CASINO HOTEL FOR A FREE SESSION OF AG-NAV TRAINING.

AG-NAV INC.

EVENT SCHEDULE

2009 NAAA Convention & Expo

Sunday, Dec. 6	
9 a.m.–4 p.m.	Pratt & Whitney Canada PT6 Seminar
10:30 a.m.–6 p.m.	Registration
12–4 p.m.	PAASS Program Development Committee
4–6 p.m.	NAAA Board Meetings
4–6 p.m.	WNAAA Board Meeting
4–6 p.m.	Concurrent Session Com*paass* Rose
6–7 p.m.	Operation S.A.F.E. Analysts

Monday, Dec. 7	
7:30 a.m.–6:30 p.m.	Registration Open
8–9:45 a.m.	Kickoff Breakfast
10–11 a.m.	WNAAA Welcome & Karen Gilmore Presentation
10 a.m.–5 p.m.	Canadian Aerial Applicators Board Meeting
10 a.m.–2:30 p.m.	ASABE Sessions
1–3 p.m.	WNAAA Open House
1–8 p.m.	Exhibitor Setup
2:45–4:15 p.m.	Concurrent Sessions FAA/Security Honeywell Engines Hemisphere GPS
4–5 p.m.	ASABE Presenters Meeting
4:30–6 p.m.	Concurrent Sessions Helicopter Chemical Company Session PROAIR
6:30–7:30 p.m.	Welcome Reception

Tuesday, Dec. 8	
7–8:30 a.m.	CP Products Breakfast
7:30 a.m.–6 p.m.	Registration Open
8–11:30 a.m.	Exhibitor Setup
8:45–9:30 a.m.	NAAA Business Meeting
9:30–9:45 a.m.	Coffee Break
9:30–11:30 a.m.	WNAAA Program—Athena
9:45 a.m.–12 p.m.	General Session 1) Allison Wiedeman, Branch Chief, Water Permits Division, EPA Office of Water 2) Mentoring, Operators, Pilots, Insurance
10:30–11:30 a.m.	Allied Industry Meeting
11:30 a.m.	WNAAA Ladies Lunch
12–6 p.m.	NAAA Trade Show Hours
3–5 p.m.	NAAREF Board of Directors
5:30–7 p.m.	Live Auction & Reception
7:30 p.m.	Pratt & Whitney Reception

Wednesday, Dec. 9	
7–9 a.m.	PAASS Presenters Meeting
7:30 a.m.–3 p.m.	Registration Open
8–9:30 a.m.	Concurrent Sessions Application Technology Aerial Firefighting
9–10 a.m.	WNAAA Breakfast, Awards & New Officers
10–11 a.m.	WNAAA Program—Bruce Vincent, Providers Pals
10 a.m.–4 p.m.	NAAA Trade Show

Wednesday, Dec. 9 (cont'd)	
12–1 p.m.	Past President's Lunch
3 p.m.	Silent Auction Closes
4–5:30 p.m.	Concurrent Sessions Pratt & Whitney Ca, Turbine Company Session AgriSmart Information Systems

Thursday, Dec. 10	
8 a.m.–6 p.m.	Registration Open
8–9:30 a.m.	Concurrent Sessions Com*paass* Rose GE Engines
9 a.m.–1 p.m.	Company Session AgNav Guia Training
9:45–11:15 a.m.	Concurrent Sessions Air Tractor, Inc.
11:30 a.m.–1 p.m.	Concurrent Sessions Thrush Aircraft
1:15–2:45 p.m.	Concurrent Sessions Pratt & Whitney Ca, Piston
1:15–5 p.m.	Company Session AgSync—Mapping
5:30–6:30 p.m.	Farewell Reception
6:30 p.m.	Farewell/Awards Banquet

WNAAA 2009
Convention Information

Ladies, whether you're a spouse or business employee attending the 2009 NAAA Convention, WNAAA has an event that's right for you!

Each year WNAAA offers an array of high-quality clothing, apparel and accessories for sale at its booth.

WNAAA
WOMEN OF THE NATIONAL AGRICULTURAL AVIATION ASSOCIATION

Don't Miss These WNAAA Events

Monday, Dec. 7, 10–11 a.m.
Karen Gilmore from the Southwest Center for Agriculture presents "Runway to Health," a program packed with practical tips on nutrition and sleep for you, your family, pilots and ground employees. Karen, who had a popular booth at last year's convention, designed the program based on surveys completed at her booth. She is a dynamic woman with a fun and informational program planned for us!

1–3 p.m.
The WNAAA President's Open House is back by popular demand. Stop by the president's suite on Monday afternoon for a drink, snack and informal visit time!

Tuesday, Dec. 8, 9:30–11:30 a.m.
WNAAA presents an Athena program, followed by lunch. The always fun, always informative program also allows time for you to share your experience and ask questions about working and living the agriculture aviation lifestyle.
Stay for lunch on us!

Wednesday, Dec. 9, 9–11 a.m.
Start your morning with breakfast hosted by WNAAA and enjoy Elaine Gustafson's President's Awards.

Afterward Bruce Vincent with Provider Pals will discuss how WNAAA can help Provider Pals with its mission to build a common-ground bridge of understanding and respect between urban youth, rural youth and their natural resource providers. Bruce is a very entertaining and motivational speaker. Come and enjoy!

WNAAA 2009 Raffle Prizes
WNAAA has secured a dazzling top prize for this year's raffle, a beautiful jewelry set designed by Alwand Vahan. The two-tone, silver and gold, cuff-style bracelet with diamonds and matching hoop earrings has a $3,500 value! Second prize is a $500 cash bonus.

WNAAA Booth
Whether you want to complete some Christmas shopping or simply say hello, stop by WNAAA's booth, which opens at noon on Dec. 8. WNAAA is offering several new items for sale, including duffle bags, golf towels, small backpacks and hooded sweatshirts, along with returning favorites like NAAA button up shirts and T-shirts.

WNAAA Convention Schedule

Schedule subject to change

Sunday, Dec. 6

4–6 p.m.	WNAAA Board Meeting

Monday, Dec. 7

8–9:45 a.m.	NAAA Kickoff Breakfast Speaker: Dennis Fitch Sr.
10–11 a.m.	WNAAA Welcome & Presentation by Karen Gilmore "Runway Health"
1–3 p.m.	WNAAA President's Open House in the President's Suite
6–7:30 p.m.	NAAA Welcome Reception

Tuesday, Dec. 8

9:30–11:30 a.m.	Athena Presentation
11:30–12:30 p.m.	WNAAA Luncheon
12–6 p.m.	Trade Show Open
5:30–7 p.m.	Live Auction & Reception

Wednesday, Dec. 9

9–10 a.m.	WNAAA Breakfast & President's Awards and Presentation of New Officers
10–11 a.m.	Bruce Vincent with Provider Pals
10–4 p.m.	Trade Show Open *Silent Auction closes at 3 p.m.*

Thursday, Dec. 10

5:30–6:30 p.m.	Farewell Reception
6:30–9:30 p.m.	Farewell Banquet/Awards Ceremony

Morning Session:
10 a.m. to 12 p.m., Dec. 7
Afternoon Session:
1–2:30 p.m., Dec. 7

Sessions are continuous and not repeats.
The author in bold is the presenting author.

2009 ASABE/NAAA Technical Session Program

Dec. 7, 2009—Reno, Nev.

The American Society of Agricultural and Biological Engineers will present nine technical sessions on the opening day of NAAA's convention. The sessions will cover new technologies and techniques to help mitigate drift, conserve fuel and ensure proper crop protection.

Increased Glyphosate Efficacy from Aerial Applications

*By **Dr. Dan Martin***

Recent global glyphosate supply deficits and increased global demand have resulted in a two-fold price increase for this broad-spectrum herbicide in just the past two years. With tightening profit margins for growers and the expansion of genetically modified varieties that allow over-the-top glyphosate applications, commercial growers and aerial applicators alike are looking to optimize the deposition and efficacy of these herbicide applications. Aerial herbicide application costs can be minimized either by reduced spray rates or by increasing efficacy, requiring less applied product. The objectives of this study were to characterize deposition and efficacy of aerial applications of glyphosate on broadleaf and grass weeds when applied at spray rates of 3 GPA (Target VMD of 350 µm) with conventional hydraulic and rotary atomizer nozzles and 1 GPA with electrostatic nozzles. Remotely sensed efficacy data from both an aerial and ground platform will be discussed. Aerial applicators will be able to use the information presented as a guide when selecting and setting-up spray nozzles to achieve maximum efficacy from glyphosate applications.

Bio: *Dr. Dan Martin is a Research Agricultural Engineer with the USDA's Aerial Application Technology Research Project in College Station, Texas. His focus is on aerial application efficacy studies and precision aerial application research projects. He is also an Operation S.A.F.E. analyst and educator.*

Hydrogem—A New Technology for Aerial Application

*By A.O. Destefano and **Alan McCraken***

For many years growers and applicators have been searching for technical options to improve the application of agrochemicals. This paper deals with development tests of a new glycerine based additive that is under evaluation in Brazil and shows great promise in improving the efficiency of the aerial application of agrochemicals. This product has been developed from approximately 10 percent of the byproducts from the production of biodiesel that otherwise would be wasted and presents an excellent alternative to more expensive mineral or vegetable oils as a vehicle for low volume applications. Field tests have confirmed that the product improves spray deposition particularly when added to spray solutions that are applied at low volumes of 5–10 liters/ha [0.5 – 1.0 gpa] for the control of soybean rust.

Bio: *Alan McCracken is president of MACBRI Produtos Agricolas Ltda, Brasil. He has experience in product development and chemical application technology with various multinational companies in more than 100 countries.*

Evaluation of Spray Drift Reductions Technologies and Practices

*By **Bradley Fritz**, Clint Hoffmann, B.E. Bagley, J.W. Thornburg, N.B. Birchfield and J. Ellenberger*

Drift continues to be one of the major concerns of the spray application industry. The U.S. EPA initiated a testing program for measuring the performance of drift reduction technologies (DRTs) in 2004. A protocol for testing DRTs in high-speed wind tunnels was previously reported and expanded to test spray nozzles.

The work in this manuscript will report on the initial implementation of the DRT program for conducting

DRT evaluations of three spray nozzles under high-speed conditions (i.e., 100–140 mph). The spray nozzles were evaluated in the USDA-ARS High Speed Wind Tunnel facility. Droplet size of each of the nozzles with different airspeeds, spray pressures and orientation were measured with a Sympatec Helos laser diffraction instrument. The droplet size spectra for each test was input in a spray dispersion model (AGDISP), which calculates the downwind drift expected from a typical aerial application scenario. As compared to the reference nozzle, the three spray nozzles reduced spray drift by 12–26 percent from zero to 350 m downwind from the spray block. The nozzles generated spray droplets with volume median diameters 60–80 µm larger than the reference nozzle.

One of the aerial application industry's Best Management Practices (BMP) is not to spray directly on the downwind edge of a field. The spray swath near this edge is moved up wind (i.e., offset) by ½ to 1 swath width. When this BMP was combined with the drift reductions from the spray nozzles, the amount of drift reduction increased to 56–76 percent. These results demonstrate the possibility of combining multiple drift reduction techniques/technologies to greatly reduce spray drift.

Bio: *Dr. Bradley Fritz is an Agricultural Engineer with the USDA-Agricultural Research Service (ARS) in College Station, Texas. His primary research efforts include environmental impacts on spray drift, biological impacts resulting from spray applications, optimizing spray applications for maximum on target deposition, and evaluation and modification of sampling methodologies for assessing transport and fate of applied sprays.*

Evaluation of On-Board and Ground-Based Meteorological Measurements

*By **Clint Hoffmann** and Bradley Fritz*

All pilots and especially agricultural pilots know the importance of monitoring weather. For an ag pilot, weather not only affects the safe completion of a flight but also the effectiveness of a spray job. Years of research have shown that wind speed and direction are the primary factors that influence spray drift. As pesticide labels become more descriptive regarding meteorological conditions under which products may be applied, it is essential to both monitor and record wind speed and direction and insure that applications are made under the specified conditions.

This study reports on the correlation between wind speed and direction measurements from an on-board aircraft probe and from hand-held and sonic anemometers on the ground. An Aircraft-Integrated Meteorological Measurement System (AIMMS) was mounted onto an AirTractor 402B. The AIMMS system reports wind speed and direction in real-time to the pilot and can be integrated into the application log of a GPS system. A

LISTEN UP! *These conference attendees are all ears.*

spray track was set up in a cotton field over which the aircraft made repeated passes under a variety of meteorological conditions. Simultaneous to the spray runs, a variety of hand-held and sonic anemometers were operated on the ground. The outcome of these studies will allow applicators to ensure that they are complying with a pesticide label and will allow regulators to have correlated measurements taken by a field technician with those measured by the AIMMS probe.

Bio: *Dr. Wesley "Clint" Hoffmann is an Agricultural Engineer with the USDA-Agricultural Research Service (ARS) in College Station, Texas. His research efforts are focused on effects of physical properties and nozzle operational parameters on spray atomization, spray evaluation and development, and sampling methodologies for measuring spray droplet transport in the environment.*

Ground-Based Spectral Reflectance Measurements for Glyphosate Efficacy Evaluation

By H. Zhang, ***Yubin Lan****, R. Lacey, Clint Hoffmann, Dan Martin, Bradley Fritz and J. Lopez*

Aerial application of herbicides is a common tool in agricultural field management today. The objective of this study was to evaluate the efficacy of Glyphosate herbicide applied aerially with both conventional and emerging aerial nozzle technologies. A weed field (30.525871°N, 96.406217°W) was used to for this study. Four aerial spray technologies treatments, Electrostatics Off, Electrostatics On, CP-11TT and AU-5000, were tested. Spectral reflectance measurements were acquired with a ground-based sensing system for all treatment plots to evaluate the Glyphosate efficacy and performance of aerial spray technologies. The statistical analysis indicated that Glyphosate applied with different methods killed the weeds effectively compared to untreated areas at 17 days

after treatment. The research results are useful for aerial applicators on herbicide saving and application in other crop fields.

Bio: *Dr. Yubin Lan is an Agricultural Engineer with USDA-ARS in College Station, Texas. His research mainly focuses on remote sensing and development of new sensor and instrumentation for precision agriculture in aerial application.*

Aerial Application Optimization

*By **Dr. Jim Gaffney***

Aerial application is the No. 1 method of applying fungicides to corn and remains a nearly equally important service for soybeans, wheat, and numerous other crops. As the plant health segment has grown over the past five years, the visibility of aerial application to those unfamiliar with agriculture has also grown. At the same time, customer expectations for aerial services and the cost of running an aerial operation remain high, and the entire crop protection industry faces regulatory pressure. Research and evaluation of, and investment in, various tools, technology and services to optimize aerial application were initiated in 2008 and 2009 to meet the numerous challenges faced by the agricultural aviation industry. For the purposes of this paper, application optimization includes minimizing drift and other non-target incidents, maximizing efficacy, improving efficiency for the operator, and stewardship of the industry. Investment in and evaluation of mapping technologies was initiated to determine the ability of applicators to create best routes, view obstacles, and evaluate wind direction and other weather events before leaving the ground. Studies were initiated to evaluate application volume, application equipment, droplet size

and coverage for impact on efficacy and drift potential, as well as efficiency for the aerial operator. Based on the results of these evaluations and initiatives, we believe the agricultural aviation industry has the tools and technology available to meet the needs and expectations of a diverse group of customers, which include growers, regulators and the public.

Bio: *Jim Gaffney is a Technical Marketing Manager with BASF Corp.'s Crop Protection Division. He has held numerous positions in product development, technical services, and marketing with BASF Corp. and American Cyanamid.*

Effects of nozzle type and spray solution on fungicide applications to corn

*By **Scott Bretthauer** and Robert Wolf*

This presentation will cover two projects on fungicide applications to corn, one from Illinois and another from Kansas. In Illinois, deposition in corn between flat-fan nozzles and rotary atomizers were compared. A spray application rate of two gallons per acre was used for both nozzle types. Deposition was sampled using Kromekote cards mounted on aluminum sample holders located at ear height and Vision Pink Dye. Samplers were attached directly to the corn stalks using zip ties.

In the Kansas project, four spray solutions were compared, including four different fungicides and a spray adjuvant. All applications were made at three gallons per acre. Spray deposition was measured using Kromekote cards attached to leaves in the upper, middle, and lower portions of the corn canopy and Vision Pink dye. Results to be described for both projects include percent of card area covered, droplet size statistics, disease ratings and yield.

Bio: *Dr. Scott Bretthauer is an Extension Specialist with the Pesticide Application Technology Program at the University of Illinois.*

Aerial Comparisons of Drift Reducing Tank Mixes

*By **Robert Wolf**, Scott Bretthauer and Dennis Gardisser*

A field study was conducted to determine the influence on drift when adding spray drift control products to tank mix solutions for fixed wing aerial applications. The study involved using a drift collection tower to compare a variety of drift control products to each other and water. This paper summarizes the differences found in comparing several drift control tank additives for drift reduction in a 3 GPA application volume. A single fixed-wing aircraft configured with CP-11TT (#15) flat-fan nozzles flying at an average speed of 156 MPH was used. With new nozzle configurations, higher pressure recommendations, increased application speeds, and with the continued development of drift reducing tank mix materials, applicators seek to better facilitate making sound decisions

Dr. Dan Martin will present findings from his research on "Increased Glyphosate Efficacy from Aerial Applications" at one of ASABE's technical sessions in Reno.

regarding the addition of drift control products into their tank mixes. The data reported in this study should enable aerial operators to adapt in their operations.

Bio: *Robert Wolf is an Extension Specialist at Kansas State University with responsibilities in the pesticide application area. His major area of focus is with technologies related to the application of pesticides with aerial, commercial and grower ground and turf application equipment.*

Progress on field evaluation of aerial variable-rate systems for liquid application

By Steven J. Thomson and Y. Huang

Researchers at the USDA-ARS, APTRU in Stoneville, Miss., have evaluated flow control systems for liquid application of material during the past eight years. Much progress has been made since researchers first tested flow control systems that were designed simply to assure a constant application rate with changing ground speeds. Intermediate years focused on evaluation of variable-rate systems for accuracy of field application and system response to changing rates. New tests were conducted in 2008 with a refined flow control program, and new results of response testing will be summarized. A new aircraft setup has been developed that allows two brands or types of guidance system/flow controller pairs to be evaluated: one controlling a hydraulically operated spray pump, the other using an electrically operated inline ball valve to control flow to the spray boom. These systems are immediately switchable depending on our needs for field evaluation. Preliminary testing of this new system setup on an Air Tractor 402B will be illustrated.

Bio: *Dr. Steven J. Thomson is a Research Agricultural Engineer with USDA-ARS in Stoneville, Miss. His research primarily focuses on spray sampling methods, improving chemical deposition into crop canopies, reduction of off-target spray drift, variable-rate aerial application and remote sensing for detection of crop stress and in support of variable-rate aerial application.* ■

Can Aerial Applicators and Wind Energy Developers Learn to Coexist?

By Jay Calleja
Manager of Communications

When Probasco Flying Service brought Gaylon Stamps in as a pilot during the summer of 2008, operator Mitch Probasco handed Stamps his spraying assignment and offered a word of caution. "There's several towers around here, and I can't tell you where they all are, so just be careful."

Stamps hails from Panhandle, Texas; Probasco Flying Service, located in Floydada, Texas, was unfamiliar territory. Mindful of the warning, another piece of advice came to Stamps' mind: *Ferry above five and stay alive*. The PAASS slogan is a familiar one for Stamps, who doubles as a PAASS presenter.

"I'd done a pretty good job keeping my eyes open until one day when I was circling a field trying to 'make the map fit,' making sure I was in the right field," Stamps said. "I was in a heavy AT-502 circling to the left and looking out the left window. For some reason, I looked up. Just ahead about a hundred yards or so and 20 degrees to the left was one of those dang towers!"

Stamps rolled out of the turn and into a slight right bank to miss the tower. If he had continued with his turn, it might have been a different story. Stamps downplayed the incident, saying it wasn't "that close a call," but it certainly got his

If wind towers continue to sprout up across America's ag land, it could be difficult, if not impossible, to access a farmer's land to treat it with aerial application.

attention. "It was close enough my heart started to pound in my shirt and I felt a real rush of adrenaline! And any time either of those two effects happen, it's too close for comfort."

Getting a scare from an unmarked and unmapped tower is just one of many hazards meteorological testing towers, wind turbines and communications towers pose to aerial applicators. The problems are well documented, and they are becoming more and more prevalent as towers and turbines proliferate on ag land.

Amid mounting safety and accessibility concerns, NAAA, its state and regional partners and aerial applicators around the country have taken up the cause of advocating the industry's concerns to policymakers, commodity groups and aerial application customers. These efforts aren't new, but there are signs progress is being made.

Wind is In

It has been an uphill battle. In the eyes of policymakers, investors and many farmers, wind is definitely in. Although wind currently supplies less than 2 percent of the country's energy, it is growing more rapidly than any other

energy source. The U.S. Department of Energy has suggested that wind energy could supply up to 20 percent of the nation's power by 2030.

Last year, the Congressional Research Service (CRS) examined the state of wind power in the U.S. According to the June 2008 report, federal wind energy policy has focused primarily on a production tax credit (PTC) as an incentive for businesses to operate wind facilities. New investments dried up after the economy tanked and the renewable energy PTC expired at the end of 2008.

On Aug. 31, *The Wall Street Journal* reported that financing for new wind facilities was picking up again after an almost six-month lull thanks to a new federal program that started July 31 and runs through the end of 2010. As a result of the program, which is part of the federal stimulus package, the government will provide "a cash rebate for 30 [percent] of the cost of building a renewable-energy facility, awarded 60 days after an application is approved."

Demand for the rebate could rival that of another government cash incentive, the cash-for-clunkers program. Requests for $800 million in grants were submitted during the first four weeks of the cash grant program, a government spokesperson told the *Journal*. Compare that to the $3 billion the Energy and Treasury departments have said they expect to spend on the entire 17-month program.

Aside from financing incentives and other applicable federal requirements, local and state jurisdictions play the most important role in siting and permitting wind energy projects. CRS's Report for Congress identified three key siting and permitting issues as potential drawbacks to wind power: wildlife constraints, aesthetic and social issues and radar/aviation security issues. Concerns about aviation safety and the potential lack of access to prime agricultural land were absent.

Another drawback is the fact that significant new transmission infrastructure may be needed to send wind-generated power to where it needs to be. According to the Department of Energy, 12,000 miles of new transmission lines would need to be constructed in order for wind to supply 20 percent of the country's power by 2030.

Of course, there are several compelling reasons to expand the production of wind power. In terms of economic benefits, two popular reasons cited

Grassroots Effort: One Aerial Applicator's Action Plan

By Damon Reabe
Reabe Spraying Service, Waupun, Wis.

Editor's Note: *Tip O'Neill, a longtime Speaker of the House, once declared, "All politics is local." NAAA members like Damon Reabe have taken those words to heart by wading into zoning debates, talking to landowners and working with local agencies to regulate the marking and placement of wind towers. But Reabe hasn't stopped there, making a persuasive case that the lack of access to aerial application would have a detrimental effect on potato and processing vegetable production fields in Wisconsin. His efforts have gotten the attention of state legislators and the Wisconsin Department of Agriculture. This is his story.*

Reabe Spraying Service began researching wind energy in great detail shortly after writing our policy letter to our customers. Specifically, we wanted to understand the positive and negative aspects of hosting wind turbines from a landowner's viewpoint, the positive and negative aspects of hosting wind turbines from the political subdivision's viewpoint, and how wind energy development was regulated. This research led to several courses of action.

First, we began meeting with customers who owned land in areas where we observed MET towers. During those meetings we shared the information we found regarding the negative aspects associated with hosting wind turbines. Our customers found this information very helpful, and in many cases these landowners decided not to host wind turbines or hire an attorney and begin the process of "getting out" of the agreement to host wind turbines.

We then began to meet with township and county officials at public meetings in areas where we observed MET towers. During those meetings, we presented our research. At the

are that it will create "green jobs" and help rural development by giving landowners income from land leases. Citing a 2004 GAO report, CRS stated that farmers and ranchers "typically receive from project developers $2,000–5,000 per year for each turbine on their land."

Getting Ag Aviation's Message Out

That's the upside landowners hear about. That easy money could come at a steep price some day. In the future, if wind towers continue to sprout up across America's ag land like stalks of corn, it will be extremely difficult, if not impossible, to access a farmer's land to treat it via aerial application.

NAAA's efforts to educate policymakers about the impact of wind power development on agricultural aviation are beginning to pay off.

Over the summer, NAAA met with the USDA's Rural Business Cooperative Service and the Rural Utilities Service and urged the USDA to educate farmers and landowners about the industry's concerns that placing wind energy towers on cropland may jeopardize the safety of ag pilots and restrict their ability to treat farmland with aerial application.

NAAA also wrote to Secretary of Energy Steven Chu, expressing similar concerns about the Department of Energy's policies promoting wind energy. The DOE's Wind and Hydropower Technologies Program replied in September with a letter emphasizing its commitment to "the responsible development of wind power." The letter highlighted the wind program's work "with the agricultural community to provide farmers and ranchers with timely and

EASY MONEY? *According to a GAO report, farmers and ranchers typically receive $2,000 to $5,000 per year for each turbine on their land.*

conclusion of those meetings, most Townships placed moratoriums on the construction of wind energy facilities while they researched the subject in greater detail.

Our next course of action was to meet with state government officials. We gave a one-on-one presentation to one of our State Senators and another to a State Representative. The presentation included a detailed explanation of the critical role aerial application plays in Wisconsin agriculture. One of the most powerful documents in that presentation was a two-page letter from a University of Wisconsin plant pathology professor that explained the significant negative environmental impact associated with the loss of access to aerial application on potato and processing vegetable production fields.

Next, we contacted the associations that represented our customer base and explained our policy. These associations represent segments of Wisconsin agriculture that has an annual economic impact of one billion dollars. This resulted in those associations sending position letters to our State House and Senate committees that are working through the difficult task of regulating the development of wind energy in Wisconsin.

We then provided testimony at a public hearing on the subject of wind energy at our state capitol. Our active participation regarding this subject matter prompted the Wisconsin Department of Agriculture to contact us. We are drafting a letter requesting to meet with the Deputy Secretary of the Wisconsin Department of Agriculture, the Wisconsin Public Service Commission, the associations that represent our customers, and the University of Wisconsin Professor Emeritus of Plant Pathology. Our goal is to educate these officials of the critical role we play in protecting this segment of Wisconsin agriculture and the environment.

It should be noted that the amount of acreage in the state of Wisconsin utilized in the production of potato and processing vegetables is a very small percentage of the total agricultural land in our state. This provides wind energy developers with large volumes of agricultural land to develop.

We are not trying to prohibit the development of wind energy in Wisconsin. We are simply informing the appropriate governmental entities that a large segment of agriculture (one billion dollars worth, annually) is at risk due to improper wind energy facility siting. ■

accurate information on the benefits and challenges of wind power" and welcomed NAAA's input. NAAA is following up with the Wind and Hydropower Technologies Program and continues to reach out to legislators and other relevant entities.

Establishing a Wind Placement Policy

State ag aviation associations that have adopted wind placement policies are encouraging members to do the same and inform their customers that aerial spraying could be reduced or eliminated if wind turbines are erected on their property.

Someone who has been very active on this issue in Wisconsin is Damon Reabe and the Reabe family. With the help of his father Tom, Reabe runs the Waupun, Wis., location of Reabe Spraying Service. His uncle, J.R. Reabe, operates the company's Plover, Wis., division. Uncle Jeff Reabe operates the Plainfield, Wis., unit, and Bob Reabe, another uncle, supports all three outfits.

Reabe Spraying Service doesn't mention the policy on its invoices. At first, the Reabes simply told customers about it. That changed last March. "We became more actively involved in March of 2009 when it was brought to our attention wind energy developers were misrepresenting our position regarding operations in wind energy facilities," Damon said. "We assume this was unintentional."

Shortly thereafter, the Reabes sent a mailer to all of their customers explaining their company policy and the reasons for it. (See sidebar below for more details.)

"Many of our customers simply did not understand why our policy prohibited operations in wind energy facilities," Damon said. "The stand-alone letter was an effective tool [that garnered] a lot of positive feedback from our customers thanking us for taking the time to explain our position."

An Unacceptable Risk

Rotating blades in the pilot's peripheral vision are a distraction. The fear is that shadow flicker and the blades themselves could cause an ag pilot to lose track of other obstructions like telephone wires, trees and buildings.

Reabe Spraying Service believes performing an aerial application near a wind energy facility poses an unacceptable risk to its pilots, the company and its aircraft, which is why it refuses to treat ag land within range of such facilities.

To date, the policy has cost the company roughly 3 percent of its gross sales, Damon Reabe said, "with the potential for much greater losses as wind energy development in Wisconsin expands." Losses like those beat the alternative.

Last spring Reabe Spraying Service sent a letter to its customers clearly explaining why it's unsafe to perform aerial application inside of a wind energy facility. The company cited the size and amount of wind turbines in a given treatment area, which result in visual distractions and less maneuvering space than an ag pilot needs to perform an application, and wake turbulence as reasons for the policy.

Customers have been very understanding. "The message is very well received provided you take the time needed to explain your profession in detail," Reabe said. "As

Local Zoning Victories

NAAA members have also worked with local zoning authorities on marking and placing of meteorological testing towers. Brian Rau, owner of Medina Flying Service in Medina, N.D., was able to convince his county officials to require new met towers to be lighted or marked.

The process started over a year ago when Rau wrote a letter to his local newspaper explaining the industry's concerns about met towers and wind turbines on prime ag land. After the letter was published, a county attorney invited him to a zoning meeting where developers were seeking approval to install new 60-meter met towers. At 200 feet, the FAA requires towers to be lighted. Sixty meters is the equivalent of 197 feet.

The discussion began at a subcommittee, went to the full zoning committee and finally to the Stutsman County Commission. "Along the way, I needed to be there to bring up the concern that met towers [raise] and to offer suggestions," Rau said.

There was general agreement at each step in the process that towers should be marked and lighted, according to Rau, and county officials considered

Unmarked guy wires are difficult for pilots to see. NAAA guidelines call for two visible warning spheres on each guy wire.

aerial applicators we have a tendency to describe our profession in a manner that minimizes the public's perception of the level of risk we accept in performing an aerial application."

Such modesty can lead customers and wind energy developers to conclude that ag pilots can easily perform these operations "since we are already 'used to working around obstructions anyway.'"

"If we take the time to explain everything that goes into applying a plant health product to a singular field, two things are accomplished," Reabe said. "One, your customer/Senator/neighbor/wind energy developer now has a better understanding of what you do, and two, these people will understand that your policy regarding operations in or near wind turbines is not a matter of personal convenience, it is a matter of personal safety." *–J.C.*

Reabe Spraying Service explained its policy prohibiting aerial application within wind facilities in a letter to its customers last spring.

REABE SPRAYING SERVICE, INC.
P.O. BOX 112
WAUPUN, WISCONSIN 53963-0112

WAUPUN 920-324-3510; PLAINFIELD 715-335-6810; PLOVER 715-341-9393

May 5, 2009

Dear Customer:

This letter is intended to inform you that Reabe Spraying Service has a policy prohibiting aerial application operations within a commercial wind farm. This will include fields within one half mile of the boundary. Below are the reasons for our policy:

Modern wind turbines are very large structures, measuring approximately 400 feet high with a blade diameter of up to 270 feet. When you combine the physical size of these structures with blade rotation, the result is a visual distraction. Aerial applicators must divide their attention between aircraft systems, treatment volumes, swath spacing, aircraft performance, weather, and obstruction avoidance. When operating within a wind farm, the visual distraction created by the wind turbines further divides the pilot's attention, exponentially increasing the likelihood of a life threatening error.

In a typical commercial wind farm there are approximately 5 or 6 turbines per square mile. In any given aerial application operation, a radius of three quarters of a mile from the target site is utilized for maneuvering between swath runs, clean up passes, and target site surveillance; equating to an operations area of approximately two square miles. This results in 10 to 12 turbines within the operations area. Unlike other obstructions that aerial applicators must avoid, wind turbines are taller than the maximum height achieved during the turnaround. This means that a pilot never reaches a safe altitude allowing the pilot to check aircraft systems, treatment volumes, etc. Simply said, the number and height of wind turbines within an aerial application area, exponentially increases the likelihood of a life threatening error.

Finally we come to the hazard of wake turbulence. This hazard is the most dangerous because it is invisible. All airfoils in motion create wake turbulence. The turbulence created is proportional to the weight and angle of attack of the airfoil; the heavier the weight and greater the angle of attack, the greater the wake turbulence. A commercial wind turbine's three blades can weigh as much as 40,000 pounds and operate at a very high angle of attack. The result is turbulence severe enough to induce loss of control to an aerial application aircraft. Again, this hazard is invisible and difficult to avoid while performing all of the other tasks necessary to perform an aerial application safely.

We encourage you to voice your opinion with local government regarding this potential threat to your access of our services. Additionally we invite you to visit Better Plan, Wisconsin's website: http://betterplan.squarespace.com/. This website can provide you with information from land owners and residents that are currently living within and around commercial wind farms and the effects of these wind farms on their communities. Lastly, we request you give us a call if you are aware or become aware of any activity regarding commercial wind farm development in your growing area.

Sincerely,

Tom, JR, Jeff, Bob, and Damon
Reabe Spraying Service
Waupun, WI 53963

applying the FAA requirements to structures under 200 feet. "The wind companies really balked at that because where most of these met towers are going up, they don't have power to them," he said.

Rau presented NAAA's tower marking guidelines, which stipulate that towers erected with guy wires should be marked with two visible warning spheres on each guy wire, highly visible sleeves on the lower end of the cables and properly lit. Ultimately, the zoning authority gave companies the option of lighting new towers or using marking that doesn't require any electricity, Rau said. Those regulations apply to new tower structures in Stutsman County, not preexisting ones.

"Up until even the very last meeting where the full commission approved this, there were representatives from wind energy there suggesting that this wasn't necessary," Rau said. "If I hadn't even been there at the last one, it probably would have gotten dropped."

Common-sense Solutions for an Inconvenient Problem

One way to lessen the chance of surprises like the one Gaylon Stamps had would be to have a searchable database of all tower locations. Structures over 200 feet require FAA notification, but companies don't have to report the locations for anything under 200 feet.

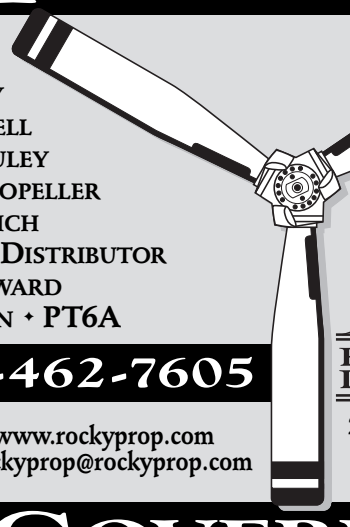
"Unless it was required by law, I don't believe you can get an accurate database for location of met towers," Rau said. "They'll do what's required by law, but they're not going to voluntarily give up that information."

Wind energy companies have balked at providing a database of met towers because they don't want competitors to know what areas they are considering developing. Rau noted that one company in North Dakota did volunteer that it had more than 100 met towers in the state, but it did not want to provide the latitude and longitude coordinators for a database.

In general, wind power companies do like to hold their cards close to their vest, but some members have gotten advance notice from wind companies. NAAA President Doug Chanay received a fax from Kansas-based Zephyr Wind Power over the summer providing the coordinates for a meteorological tower being constructed in his area. Zephyr's notification stated: "This tower will stand approximately 195 feet tall and will not be equipped with lights to indicate its location or height. Guy wires will be used to stabilize the tower, and these will not have any additional markings on them. The tower will be red and white in color."

That's a far cry from the lighting and marking features aerial applicators would like towers to have, but it's a start. It's likely there isn't a single solution; it is going to take a multipronged approach at the macro and local levels in order to reach a sensible middle-ground solution with wind energy proponents. This includes targeting commodity groups and enlisting the support of third parties to advocate on the aerial application industry's behalf.

"We have to get information to the different commodity groups in hopes that they'll get it to the growers," Rau said. "The growers and landowners are the ones that can make a difference on this issue." ■



NAAA's Esteemed Leadership Training Program Marks its 15th Year

By Keeley Mullis
Coordinator of Government & Public Relations

One of NAAA's most valuable and rewarding initiatives is its Leadership Training Program. The program, which Syngenta generously sponsors, has greatly benefitted the association, NAAA members and the agricultural aviation industry since its inception in 1995 by helping individual members strengthen their professionalism, increase their confidence and augment their leadership skills.

The Leadership Training Program teaches participants how to effectively communicate with the public, media and government, use those tools to improve the image of aerial application and serve as strong industry leaders.

More than 200 ag pilots and operators—approximately 13 percent of NAAA's membership—have completed the course. Many of these participants have gone on to serve as outstanding leaders within NAAA, their state associations and their communities.

The program was the concept of former NAAA Executive Director Jim Boillot and Dick Foell of Zeneca (now Syngenta). The two men recognized a need within the industry for members to be equipped with the necessary tools to effectively address the public and respond to the media. Boillot recalled a leadership program in Missouri called Ag Leaders of Tomorrow (ALOT). He felt that a similar program would be extremely beneficial to NAAA and its members. Foell jumped at the opportunity to help and said that Zeneca would be fully supportive.

"After just a couple of conversations with Dick, we had the program ready to set into motion," Boillot said. "I still remember some of the guys from that very first class. Most of them went on to do great things for the association and the industry."

The curriculum of the Leadership Training Program includes comprehensive lessons in public speaking and interaction with the media. The attendees complete exercises that allow them to better understand their individual personalities and build upon their leadership and management capabilities. Additionally, they learn to utilize these skills to strengthen themselves, their businesses and the industry as a whole.

Members of the 2006-2007 NAAA/Syngenta Leadership Training Program display their certificates of completion.

LTP Attendees Praise Program

Agricultural Aviation contacted several graduates of the Leadership Training Program to find out how it has benefited them professionally and personally.

Mark Hartz, who attended the program in 1998 said, "I have nothing but the highest praise for this program. It equipped me with the tools I need to effectively communicate with the media, my customers and those in my community."

"Sometimes our industry comes to the forefront of media attention, and it's important to have the tools and confidence to address the media in a way that represents our industry in the best possible light," he added.

Hartz, an operator from Arkansas, said finishing the leadership program inspired him to serve as a positive representative of the industry; he did just that, serving as NAAA treasurer from 2001–2002 and as president of the Arkansas Agricultural Aviation Association.

Hartz noted a very important benefit of the Leadership Training Program. "It helps people who may have a desire to serve the industry in a leadership capacity but aren't sure how to go about it. The leadership program gives people a vehicle to step into those roles and reach out to the community about the benefits of our industry. It's an excellent way to gain the necessary skills to serve at the state level, as well as the national level."

NAAA's current president, Doug Chanay, was a member of the 2003–2004 leadership class. "Overall, the program helped me gain a tremendous amount of confidence when speaking to people. It also gave me a new perspective on how to run my business and deal with customers," Chanay said. "I think we all felt a little intimidated going into the program, but we each left with a new sense of confidence. That's exactly what the program is designed to do."

Chanay said that after going through the program he felt encouraged to continue strengthening his leadership skills by serving as president of the Kansas Agricultural Aviation Association. "I felt that I had an obligation to give something back to the industry."

As NAAA president, Chanay feels that he has improved upon himself and the industry. "I'm honored to be doing my part on the national level."

Drew Keahey, an operator from Louisiana, attended the leadership program in 2005–2006. "I had always heard great things about the Leadership Training Program, and it

Members of the 2006-2007 NAAA/Syngenta Leadership Training Program.

was something I really looked forward to," Keahey said.

"The presentations were very helpful. I received a lot of great advice on dealing with my customers, and it taught me to be more aware of my interactions with them." Keahey said the program encouraged him to take on a leadership position within the industry, and he now serves as the state director from Louisiana on NAAA's board of directors.

Gaylon Stamps said the program helped him realize the importance of strong communication skills. "Even today—14 years after I completed the program—I oftentimes remember and utilize the tools I learned," the 1996 attendee said.

Stamps said he enjoyed working with and learning from his other classmates. "When we got started, I only knew one or two of the other guys in my class," Stamps said, "but by the end I'd made a room full of lifelong friends." Stamps commented that the opportunity for networking with others in the industry is one of the program's greatest incentives.

"The communication tips I learned have been extremely helpful in my career," Stamps said. "The verbal skills I acquired even allowed me to become a better one-on-one communicator."

Stamps, who owns an operation in Texas, serves as his state's representative

on the NAAA board, is a member of the NAAREF board of directors and is also a PAASS presenter.

He joked that, although he was never shy, the program helped him hone his skills as a presenter. "As a PAASS presenter, the tools I developed through the Leadership Training Program have been invaluable."

Stamps also spoke highly about the media training elements of the program. "It's very important to our industry that we be well-spoken and confident when addressing a reporter. The leadership program equips you with the tools you need."

Marc Mullis, a pilot from Arkansas who attended the inaugural Leadership Training Program, expressed how it has helped him throughout his career. "It is an excellent program, and I gained a tremendous amount of knowledge."

The program's biggest benefit for Mullis? "I learned a great deal about myself and how other people view me," he said. "The program allowed me to build self-confidence in my public speaking abilities, which encouraged me to go on to become a PAASS presenter and eventually serve as treasurer on the NAAA board."

"I have remained lifelong friends with my classmates," Mullis said. "I formed a bond with those guys that has been a great asset to me. When I'm traveling the country it never fails that I'll run into someone I met through the program. It's great to have that support system."

Training the Next Generation

Mullis is anxious to see new faces coming up through the program. "The power to continue strengthening the NAAA lies in the Leadership Training Program. The leadership skills NAAA members learn become valuable tools that can be used to recruit new members into the association and convey the importance of agricultural aviation to the media and the public."

Congratulations to the 2009–2010 Leadership Class!

Bruce Downs
Association of Montana Aerial Applicators

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Northeast Aerial Application Association

William Allen Whitfield
North Carolina Agricultural Aviation Association

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Michigan Agricultural Aviation Association

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Pacific Northwest Aerial Applicators Alliance

Sam Styron
Kansas Agricultural Aviation Association

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South Dakota Aviation Association

David Songer
Indiana Agricultural Aviation Association

Jason Wooten
Texas Agricultural Aviation Association

Doug Johnson
Nebraska Aviation Trades Association

Travis Smith
Association of Washington Aerial Applicators

Joe Varjassy
Canadian Aerial Applicators Association

Brian Whitmore
Louisiana Agricultural Aviation Association

The 2009–2010 participants completed their first round of the Leadership Training Program at NAAA's fall board meeting Oct. 9–11 in Savannah, Ga. They will continue their training Feb. 12–14 at NAAA's spring board meeting in Washington, D.C.

NAAA would like to extend special thanks to Rex Martin, Syngenta's head of industry relations, and Steve Powell of Bouvier Kelly who continue to make the Leadership Training Program a valuable and successful experience for all involved.

"Syngenta is committed to ag leadership," Martin said. "We believe it's important for NAAA members to be strong representatives and advocates for the industry in their communities, their states and in Washington."

Martin pointed out some of the most valuable tools attendees take away from the program. "Those who take part in the leadership program go on to become leaders among their peers, they learn to take an active role in addressing policy and media issues that affect them, and they gain a tremendous amount of confidence and public speaking skill."

The Leadership Training Program is an exciting and a worthwhile opportunity! If you are interested in participating in future Leadership Training Programs, talk to your state or regional executive director. Each state/regional organization can submit one candidate each year. Visit the NAAA Web site at www.agaviation.org for more information. Applications will be due in May 2010 for the 2010–2011 class. ■

"The Leadership Training Program helps people who may have a desire to serve the industry in a leadership capacity but aren't sure how to go about it. It gives people a vehicle to step into those roles and reach out to the community about the benefits of our industry." –Mike Hartz, a 1998 LTP attendee who went on to serve as NAAA treasurer and president of Arkansas AAA

The Value of NAAA Membership

(From the View of Your Insurance Company)

By Randy Hardy
NAAA Insurance Committee

Last issue you read an article about why membership in NAAA is important. So, what is the value of that membership and how does it affect you?

Let me begin by saying your NAAA membership has less benefit if you don't use the tools provided through your association. I'm of the opinion that most, if not all people, are aware of the benefits and tools NAAA provides.

So, how does this relate to insurance? Being a state and national association member, participating in Operation S.A.F.E. clinics, attending the seminars provided like the PAASS program, Com*paass* Rose and various

Insurance companies want customers who are involved in organized groups that promote credibility, education and management skills.

other educational seminars—these functions, plus all the direct benefits already talked about, equate to PROFESSIONALISM.

Insurance companies want competent professionals who continue their education, even when they think they know it all. What are the criteria for being a professional?

- **Training**—There is an extensive period of training and apprenticeship, even into the later years of life, due to ever-changing environment, crop and technology issues.
- **Intellectualism**—Judgment, values, service, dedication and pride. A professional strives to provide an environment of public acceptance and promotes ethical practices. How you look, talk, write and work determine whether you are viewed as a professional or an amateur. "Just getting by" is an attitude of amateurs.
- **Competence**—A professional learns every aspect of the job, carefully determining what is needed and wanted. A professional is focused and clear-headed, does not let mistakes slide by, and jumps into difficult assignments to achieve a competent outcome. A professional remains level headed and optimistic, carefully handles money and accounts and produces a product or performs a service to a higher quality.

Professionalism involves training, education, achieving credentials, participation in continuing education opportunities and joining and actively involving oneself in professional associations like NAAA. Insurance companies want customers who are involved in organized groups that promote credibility, education and management skills.

Support through state associations and NAAA, such as offering conventions, recertification hours, lobbyists working on your behalf and public awareness or education, is afforded to you whether you join their organizations or not. But in today's environment "just getting by" isn't enough. Insurance companies give greater consideration—whether it be offering better rates, being adaptive to various needs (higher limits, adding new pilots, considering special contract needs) or, in some cases, the simple willingness to write an account—to aerial applicators that are members of NAAA and their state or regional association. It's quickly changing from insurance companies hoping that an operator will act in a professional manner to them expecting and demanding professionalism.

To show you are committed to being a professional, join NAAA, take an active role and use the opportunities your NAAA membership gives you each day. ■

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Proper Maintenance Essential to Safe Flying

By Ken Degg
NAAA Director of Education & Safety

Many of the mechanical problems service facilities find with ag aircraft and related equipment are caused by two things: a lack of cleanliness and preventative maintenance. I heard that message repeatedly as I researched the maintenance module of this season's PAASS Program. These service facilities also found that some operators that have transitioned into more complex equipment do not understand all of the maintenance requirements.

Both John J. "Dusty" Dowd of Syracuse Flying Service, Syracuse, Kan., and Craig Bair of Ag Flight Inc., York, Neb., warned about the use of a pressure washer when cleaning the outside of an aircraft. The soap and high-pressure water do a good job removing dirt, grease and chemicals. If used incorrectly, however, the pressure washer may force the dirt it removed into seams in the skin. Particular care should be used when washing the propeller to avoid forcing impurities, including soap, into the hub. A photo in the upcoming PAASS maintenance program shows a propeller blade from an R-1340 that was ruined by corrosion after wash water was forced into the hub by a pressure washer.

In some cases, over-washing can also cause problems with the aircraft. Corrosion and rusting can accelerate when an aircraft is left wet, without lubrication, after washing. As several operators and shops have reiterated, it is important to dry and lubricate washed areas that aren't protected by paint with WD-40 or a similar product.

Inspection and maintenance are critically important after a wire or propeller strike.

Another area of concern is the inspection and maintenance of an aircraft after a wire or other propeller strike. A wire strike on the propeller of a turbine-powered aircraft becomes particularly hazardous because of the close tolerance between rotating parts of the engine. In some cases, the arcing of the wire as it breaks will cause electrical discharge pitting in internal parts of the engine. A thorough inspection of the equipment should be conducted as soon as possible after the incident.

Bruce Hubler of Ag-Air Turbines in Midvale, Idaho, has worked on the Honeywell TPE-331 for several years. The most important action after a wire strike, whether on the Honeywell or another engine, is to follow the manufacturer's recommendation for possible damage inspection, Hubler said.

Ag Flight Inc.'s Bair believes owners tend to inspect the engine better after a wire strike during the warranty period but are more inclined to avoid a teardown inspection if it isn't under warranty. Consider the view expressed by one overhaul facility that the damage from a wire strike is probably covered by insurance. If the engine is not inspected and there has been arcing, the pitting may cause premature wear and failure, which may not be insurable. Continuing to run the engine may also cause other components to fail that were not initially damaged, thereby increasing the cost of the repair.

Hubler also noted that many of the problems with turbine (or any engine) can be traced to fuel supply problems. Always make sure you are supplying clean fuel for the engine. Other overhaul shops advised against the prolonged use of "tractor" diesel fuel for aircraft use. Most felt that the occasional emergency use would not be a problem if the fuel handling equipment is well maintained to provide a supply of clean filtered fuel. However, with continued use, over time, the dye and sulfur that may be added to fuel types other than Jet A could have a detrimental effect on engine components. NAAREF in no way recommends the use of fuel that is not directly prescribed by the powerplant's manufacturer.

Operators using radial engines should be aware of the possible cracking of the cylinder heads on their engines. Several AD's have been issued to ensure that the engine cylinders are regularly inspected. Make sure to go to the extra effort of checking for cracks on the preflight inspection to head off a cylinder failure.

Statistics gathered by NAAA and the FAA indicate that the engine power loss rate as a cause of ag accidents has remained nearly constant for more than a decade. This has happened in spite of the fact that our fixed wing fleet is now about one-third turbine powered. The industry expected the turbine to be more dependable than the piston engine but statistics do not prove that. Our challenge is to correct this situation.

Operators like Dusty Dowd and Craig Bair both echoed the sentiments that operators transitioning to turbine aircraft must learn the tricks of proper maintenance on a new type of engine. A completely different set of practices may be required since the turbine engine operates with very little daily maintenance, with no spark plugs to foul, timing to set or valve clearance to adjust. Jim Hirsch from Air Tractor believes that with all of the transitioning to turbines, they must be maintained correctly to make them last and be cost efficient. These maintenance points are just a taste of what you will discover at the 2009–2010 PAASS Program. ■

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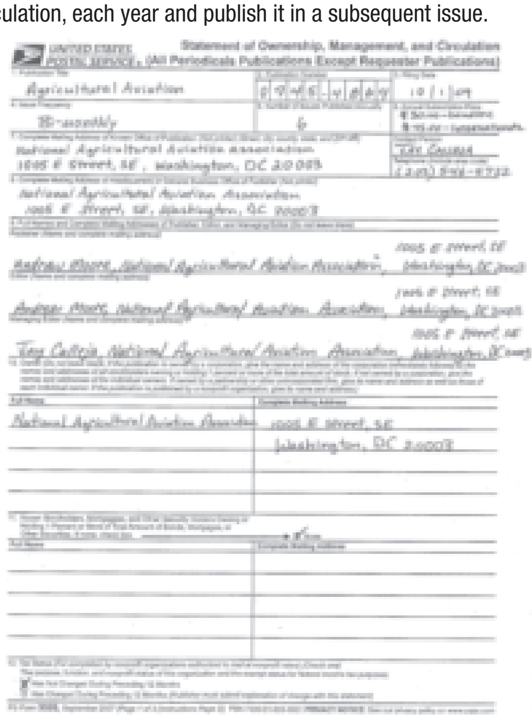
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05/29/09	Mendota	IL	AT-502	198LA	Minor	Unable to get airborne on TO
06/12/09	Trumann	AR	AT-402A	50956	None	Forced into terrain by thunderstorm downdraft
06/19/09	Ogden	UT	Ce A188B	731GE	None	Power loss on TO—Loose induction hose
06/27/09	Preston	ID	PA 25-235	8600L	Minor	Fuel exhaustion
07/07/09	Ocean Shores	WA	Bell 47G-3B-2	8169J	Minor	Hit water while programming GPS
07/08/09	Turlock	CA	Bell 47G-2	6768D	None	Impacted terrain--unable to maintain RPMs
07/10/09	Reydell	AR	AT-502B	60023	None	Unable to maintain climb after TO
07/11/09	Elwood	NE	Ce A188B	4990Q	Minor	Unable to get airborne on TO
07/16/09	Suring	WI	Ce A188B	9747G	None	Power loss
07/23/09	Miller	MO	PA25-235	6689Z	Serious	Loader hit by rotating propeller
07/28/09	Riverdale	CA	G-164A	8741H	Minor	Power loss
07/29/09	Firebaugh	CA	AT-301	23189	None	Power loss—hit ditch on forced landing
07/31/09	Minter City	MS	AT-502B	60237	Serious	Hit terrain after TO
08/03/09	Royal	IA	PA25-235	6701Z	Minor	Hit crop on field entry
08/04/09	Waterloo	IA	AT-401B	60747	None	Power loss
08/10/09	DeWitt	IL	AT-301	5018S	Minor	Settled into terrain during turn
08/20/09	McRae	GA	Ce A188B	4842R	None	Power loss—forced landing

The Few, the Proud: How One Man Made the Jump from Marine Pilot to Ag Pilot

By John Thomas, Nebraska City, Nebraska

Finally…I'm in! It's been a long road trying to break into the aerial application business as an "outsider" but, after four years of pursuit the door opened and I humbly stepped in. The "hard" part was over, that of getting "in"…now the "harder" part was about to begin—trying to become a good, safe and efficient ag pilot.

I recently retired from the Marine Corps where I was lucky enough to fly AV-8B Harrier "Jump Jets," and now I was entering what I hoped would become my new vocation as an aerial applicator. Despite being an attack pilot and flying a challenging and unique aircraft, I did not assume that I possessed the needed skills or mindset to be a successful ag pilot.

My interest in "crop dusting" began in 2004 when I saw these funny looking yellow planes working over the well irrigated soil of the "lettuce capital of the world," Yuma, Ariz. I thought to myself, This is truly the last vestiges of a bygone era of aviation, pure and simple stick and rudder flying. Sign me up!

Little did I know then, just how "not" simple ag aviation is. I would quickly learn that it requires a very unique skill set involving mastering a GPS guidance system, understanding the spray system and its crucial setup, learning about a myriad of chemical products and being in tune with the ever changing weather conditions (to name a few), all the while maneuvering a heavily laden aircraft just 10 feet off the ground. Although there were many parallels to military flying…could I really do all this?

During the fall of 2004, I attended Flying Tiger's basic ag course where I got my introduction to ag aviation. In addition to the great instruction I received, one of the big takeaways was the need to get involved with my state's aerial application association. So, in February of 2005 I attended my first Nebraska convention.

John Thomas demonstrated his commitment to aerial application by attending several Nebraska ATA conventions. A few of the ag pilots he met took him under their wing, and Thomas eventually found a seat with Shenandoah Flight Service (SFS) of Atlantic, Iowa. He just finished his first season flying for SFS.

At Nebraska's 2008 convention I met Jared Storm of Storm Flying Service. Jared took an interest in helping me. He introduced me to other pilots, insurance folks etc. I sat next to him during briefings and he elaborated on things the speaker said. To put it simply, he was what I would call the role model representative of ag aviation for a "wanna be" like me.

At the 2009 convention, Dennis and Trudy Brosius of Brosius AG and Waylon Woods of Woods Aviation were just as helpful and supportive and they took me under their wing. I also met Doug Johnson of Mid-State Aviation who heard that I was looking for a "seat". Several weeks later Doug offered me one! One of the reasons Doug offered me a seat was the fact that he had seen me attend several conferences over the last couple of years and that proved to him that I was serious; it was not just some passing fancy. Although that "seat" would later fall through, I had a foot in the door of ag aviation.

What am I saying? Go to your state's convention, as well as NAAA's national convention, and meet the people you'll be asking to entrust you with their livelihood, and learn about the many aspects of this industry and the fine people in it.

While state conventions are well attended by sponsors and companies, the NAAA Convention & Expo brings them ALL to one place and I have been told that it provides a fantastic networking opportunity.

Although my foot was bruised, I kept it in the door and ultimately found another "seat" with Shenandoah Flight Service of Atlantic, Iowa. Thanks to the support and mentoring I received, I grew a lot as an ag pilot and had a fantastic 2009 season. I still have a long way to go to become a good, safe and efficient crop duster, but I think I am finally on my way. ■

Editor's Note: This is John Thomas's first article for Agricultural Aviation. *He will chronicle further adventures from his first year as an ag pilot in future issues. John will be attending NAAA's convention for the first time in Reno, Nev.*

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