# **NAAA eNewsletter**

# Air & Space Quarterly Examines Leland Snow's Ag Aircraft Manufacturing Legacy

Looking for a great read? Check out the feature on Air Tractor founder Leland Snow and the 100th anniversary of the industry in the Winter 2022 edition of *Air & Space Quarterly*, a magazine of the Smithsonian National Air and Space Museum, which has a circulation of nearly 200,000. The article discusses Snow's successes, challenges and making the impossible, possible.

"In an era when astronauts were striving to reach the moon, Snow blazed a lower-altitude frontier: agricultural aircraft, more commonly known as crop-dusters. A precise, efficient flight path eight feet above the crop canopy was Snow's consuming interest and lifetime endeavor," writer Stephen Joiner wrote.

Over a 60-year career, Snow conceived 30 original designs of agricultural aircraft, beginning in the 1950s with the Snow Aeronautical S-2, the first purpose-built commercial ag plane. "If there was a Mount Rushmore of agricultural aviation, Leland Snow would have to be on it," NAAA CEO Andrew Moore said in the piece. Read the full piece **here**.

# NAAA Submits Last Set of Registration Review Comments to EPA for 2021

Last week NAAA submitted the final set of pesticide registration review comments to the EPA for 2021. The comments were on risk assessments for dodine/dodecylguanidine hydrochloride (DGH) and spirodiclofen. Risk assessments are conducted by the EPA for each active ingredient being reviewed and are used to make decisions on whether a product should be reregistered and, if so, determine if any new restrictions are needed to ensure safety. The EPA conducts ecological and human health risk assessments as part of a product's registration review.

The risk assessments for both pesticides were done using the Tier 1 model in AgDRIFT. This model uses many inaccurate assumptions and substantially overestimates the risk of drift associated with modern aerial applications. These faulty assumptions include a smaller than commonly used droplet size, a swath displacement shorter than industry standards, a slight inversion present during the application despite being prohibited on the label, wind speed measured at a height appropriate for ground applications instead of aerial applications and modeling the application to bare ground instead of a standing crop.

In our comments, NAAA referred the EPA to a **letter** submitted to the EPA's Office of Pesticide Programs in **June of 2020** for a detailed analysis of all the inaccuracies of the Tier 1 model and how to use the Tier 3 AgDRIFT model to improve the accuracy of aerial drift estimates. The labels for dodine/DGH require a medium or coarser droplet size, so the risk assessments were conducted with a medium to coarse droplet size. NAAA agreed with using the larger droplet size but pointed out that does not alleviate all the other errors associated with the Tier 1 model. The ecological and human health risk assessments for spirodiclofen were done with different droplet sizes in the Tier 1 AgDRIFT model, which NAAA pointed out adds confusion to the review process.

NAAA will continue to monitor the pesticide registration review process in 2022 and comment as necessary to ensure the agricultural aviation industry has access to the pesticides our customers need.

# **Register Your Private Airport with the FAA**

NAAA fields inquiries every year regarding obstruction incursions to the airspace around members' private airports. The FAA only gets involved in obstructions to publicly used airports. Private airports generally are not afforded protection by the FAA. You probably have a lot invested in your airport: hangers, developed runways and loading areas. You would not have much value left if the airport became unusable. While the FAA as an agency may not help you, having an FAA designation may provide protection from towers, wind and solar energy development and urban sprawl. In some areas when developing wind energy, local zoning authorities have required setbacks from officially recognized airports, private or public.

Local and state zoning and land use statutes may provide protection. However, local zoning authorities often require evidence that a private airport's existence is a legitimate claim. Registering your airport with the FAA is one way to establish legitimacy. Having your airport registered may also be useful in litigation against an entity putting up an obstruction.

To register a new airport or make substantial changes to an existing airport, a form **7480-1** must be filled out and submitted to the associated FAA Regional Office or submitted online at the **Obstruction Evaluation/Airport Airspace Evaluation office**.

**Do you have a privately owned airport that is already registered?** If so, protect it by making sure the FAA does not list it as closed indefinitely in its airport database. The FAA is in the process of removing airports if it has not heard from the manager for several years. For example, in one state alone in the upper Midwest, 54 private airports (several are known aerial applicator airports) will be removed from the database if they do not contact the FAA.

The best way to check and update your airport is at the following link for the FAA's **Airport Data and Information Portal** (ADIP). Once on the site, click on "Public Login." If you haven't done so previously, this site requires you to register as a user. To register, click on "Register"

at the ADIP site. Once you get registered on this site, click on "Update Facility Data," then look at the box that lists "Airport Status." It should say "operational." If not, make the required changes.

# Airworthiness Directive Issued for Bell Textron Canada 206 Model Helicopters

The FAA is adopting a new airworthiness directive (AD) for certain Bell Textron Canada Ltd. Model 206, 206A, 206A-1, 206B, 206B-1, 206L, 206L-1, 206L-3 and 206L-4 helicopters. This AD was prompted by reports of cracked or missing nuts on the tail rotor drive shaft couplings. NAAA reported on the proposed AD in the **September 23, 2021 NAAA eNewsletter**. This AD requires removing certain nuts from service, installing newly designed nuts, and applying a specific torque and a torque stripe to each newly installed nut.

Action is required within 600 hours time-in-service (TIS) after the effective date of Jan. 27. Read the full AD here.

### **Update Your Information for 2022 Membership Directory**

Have you moved or changed employers since you renewed your NAAA membership? Allied companies, have you reviewed your company description lately? Ensure your listing in the 2022 NAAA Membership Directory is correct today by logging into your account. If any information has changed, please let us know right away. You can provide your information by:

- Updating your information at **AgAviation.org**. Log in using your username and password and update your information under My Profile.
- Emailing your changes to information@agaviation.org.
- Responding to the letter or email that you will receive in a couple of weeks.
- Faxing your changes to (202) 546-5726.
- Calling the NAAA office at (202) 546-5722.

We must have your updated information by Jan. 25 to guarantee accurate inclusion in the 2022 NAAA Membership Directory!

# Set Yourself Up for New Year's Success by Renewing Your NAAA Membership

Renewals are now open for the NAAA 2022 membership year. You can renew **online** today or over the phone at (202) 546-5722. As a member of NAAA, you associate with the best and brightest in the agricultural aviation industry and your support is imperative in helping us accomplish our initiatives and celebrate industry milestones. NAAA has spent the past couple of years gearing up to help the industry celebrate 100 years in 2021 and continuing into 2022!

- NAAA developed a 100th anniversary campaign and large public relations effort, including:
  - The long-awaited Agriculture's Air Force: 100 Years of Aerial Application book, which is 268 pages and covers 10 decades of industry history (purchase it here).
  - 100th Anniversary website.
  - 100th Anniversary timeline online and that you can purchase for your operation and/or events.
  - Documentaries: 2-minute video, 8-minute documentary and a comprehensive 19-minute documentary.
  - NAAA has helped the industry celebrate the 100th anniversary at AirVenture 2021 in Oshkosh, Wisconsin; the Aug. 3 centennial celebration in Leesburg, Virginia; "Innovations in Flight Family Day" at the National Air and Space Museum's Udvar-Hazy Center in Chantilly, Virginia; and the National Agricultural Aviation Museum events in Jackson, Mississippi.

Additional important NAAA membership benefits:

- Discounts on NAAA attendee and exhibitor fees for the 2022 Ag Aviation Expo in Knoxville, Tennessee, Dec. 5-8. It is four days packed full of sun, fun, education sessions where you can earn CEUs and tons of networking!
- Legal services on Federal Transportation Laws to NAAA Operator and Pilot Members.
- NAAA provides proof of distance needed to safely turn an ag aircraft to refute claims made by wind farms, towers and other obstructions. Read more.
- You'll receive the 2022 NAAA Membership Directory in May. It is your one-stop shop where you can find professional members that might be looking for help or offering help and a plethora of qualified allied services in the industry.
- Stay up to date on the latest issues affecting your profession through the NAAA eNewsletter, *Agricultural Aviation* magazine, our social media accounts and exclusive member resources online such as our Media Relations Kit.

NAAA is dedicated to protecting and advancing the needs of the industry by improving the public's perception of the aerial application industry and spearheading the industry's environmental stewardship and safety initiatives.

We appreciate your membership as it will help us continue to fight and win to keep aerial application as an essential service during the current global pandemic and on important issues like unfair user fees and taxes; requiring tower marking requirements; and ensure the safe integration of drones into the national airspace; and advocating that EPA keeps a healthy inventory of crop protection products for aerial use without unnecessary restrictions. **Your membership helps us better represent your interests**.

# NAAA Objects to EPA Canceling Aerial Use for Two Pesticides

Last week NAAA submitted comments to the EPA on three registration review proposed interim decisions (PID) for the active ingredients cycloate, inorganic chlorates and napropamide. The EPA is required by the Federal Insecticide Fungicide and Rodenticide Act (FIFRA) to review the registrations for all crop protection products every 15 years. PIDs are released after the EPA completes human health and ecological risk assessments for a pesticide. They are considered interim instead of a full reregistration of a product because the biological evaluations and pollinator protection assessments still need to be completed for most products.

The PID for inorganic chlorates had drift mitigation label language for aerial applications that was largely acceptable. Like many recently proposed interim decisions, the labels for this active ingredient would set the wind speed limit to 15 mph. There would be a requirement that when applying in wind speeds of 11 to 15 mph, the boom length must be reduced to a maximum of 65% of wingspan for fixed-wing aircraft and a maximum of 75% of rotor diameter for helicopters. For applications at wind speeds of 10 mph or less, the maximum boom length would be 75% of wingspan for fixed-wing aircraft or 90% of rotor diameter for helicopters. Swath displacement would be ½ swath on the downwind edge of the field when winds are 10 mph or less, and ¾ swath on the downwind edge of the field when wind speeds are 11 to 15 mph. The EPA also proposed requiring gloves for mixers and loaders supporting aerial applications of inorganic chlorates, which NAAA did not object to.

The PID for cycloate proposed removing aerial application from all labels. While technically not prohibited, the EPA recommended removing aerial application because they indicated it was not commonly used to apply products containing cycloate. NAAA pointed out that even though it might not be common, growers should still have the option to use aerial application for situations when a ground application would not be possible, such as when the soil was too wet for ground rigs.

The PID for napropamide proposed banning aerial applications for the same reason—aerial applications are not common, according to the EPA and the product's registrants. NAAA made the same arguments against this ban—just because aerial application is not common does not mean growers do not need it. When timing is critical and other application methods are not possible, aerial application is the only way to get a product applied. The EPA also listed a potential inhalation risk of concern for mixers and loaders, so NAAA recommended the label require a respirator when mixing and loading for aerial applications.

NAAA stands ready to continue commenting on EPA registration reviews in 2022 and beyond. The EPA recently released its registration review schedule for the next four years, and NAAA has reviewed the schedule to prepare for the upcoming documents.

# 2021 Ag Aviation Expo Highlights from RFD-TV

*Market Day Report* anchor Tammi Arender from RFD-TV was on the scene in Savannah filing reports from the 2021 Ag Aviation Expo. We showed most of the interview segments she taped in the last two eNewsletter issues, but here are all six reports, including Arender's final interview with Mid-Continent Aircraft Corp. VP Dennie Stokes.

Arender has an open invitation to visit again next year at the 2022 Ag Aviation Expo in Knoxville, Tennessee, which is just a few hours away from RFD-TV's Nashville studios!

### RFD's Market Day Report with Mid-Contient VP Dennie Stokes at the 2021 Ag Aviation Expo

RFD's Market Day Report with Mid-Continent VP Dennie Stokes at the 2021 Ag Aviation Expo

01:58

### RFD's Market Day Report with 2021 NAAA President Mark Kimmel at the 2021 Ag Aviation Expo

# RFD's *Market Day Report* with NAAA Government Relations Committeee Chair Damon Reabe at the 2021 Ag Aviation Expo

RFD's Market Day Report with NAAA Government Relations Committeee Chair Damon Reabe at the 2021 Ag Aviation Expo

02:50

# RFD's Market Day Report with Air Tractor President Jim Hirsch at the 2021 Ag Aviation Expo

RFD's Market Day Report with Air Tractor President and CEO Jim Hirsch at the 2021 Ag Aviation Expo

02:55

# RFD's *Market Day Report* with Pratt & Whitney Canada VP Nicholas Kanellias at 2021 Ag Aviation Expo

#### 2021 NAAA Ag Aviation Expo Photos Available for Sale

Hundreds of photos from the 2021 NAAA Ag Aviation Expo are available for viewing and purchase from NAAA's official convention photographer, Randy Thompson Photography. An online gallery is set up at **RandyThompsonPhotography.zenfolio.com**, where photos can be purchased for \$5 per download or a CD of all the images for \$30.

Click the "NAAA 2021 Savannah" photo gallery to view the photos and find your favorite keepsakes from the 2021 NAAA Expo. If you have trouble completing a purchase through the online store or need further assistance, please contact Randy Thompson at randyphoto@att.net.

#### EPA Extends Expiration Deadline for Pesticide Applicator Certification Plans

On Dec. 17, the EPA announced an extension to the expiration deadline of federal, state, territory and tribal certification plans. The 2017 Certification of Pesticide Applicators final rule established stronger standards for people who apply restricted use pesticides (RUPs). It required that agencies with existing certification plans submit proposed modifications by March 4, 2020, to comply with these new standards.

Some of these new standards included the establishment of an aerial application category that would require unique continuing education for that specific form of application. The rule also specified that existing certification plans would remain in effect until the EPA completes its reviews and approves the proposed plan modifications, or until those plans otherwise expire on March 4, 2022, whichever occurs first. Due to the COVID-19 pandemic, along with the complexity of plans, the EPA has decided to extend the existing plan's expiration deadline to Nov. 4, 2022. For aerial applicators, this means they will continue to use their state's current certification plans to obtain the training and certifications they need to use RUPs for the 2022 application season.

During this extension period, the EPA will issue a proposed rule and seek public comment through a Notice of Proposed Rulemaking (NPRM) on the need for extending the expiration date beyond Nov. 4, 2022. In the meantime, the EPA encourages stakeholders to submit comments on this current deadline extension. Comments on this interim final rule will be considered in the development of the final rule. The full interim final rule can be found **here**, and comments can be submitted **here**.

#### Approved Engine List for Unleaded Aviation Gasoline Expanded

General Aviation Modifications Incorporated (GAMI) has released its official list of engines approved for use with its new G100 high octane unleaded aviation gasoline. The list includes most known low compression aviation engines. This includes engines used in agricultural aviation, including the Pratt & Whitney R-1340 and the R-985 radial engines. The updated list can be viewed **here**. High compression engines are expected to be approved sometime in the spring of 2022.

As NAAA reported in the **July 29, 2021 NAAA eNewsletter**, the FAA announced during Air Venture 2021 that G100 had been approved for use in Cessna 172s with Lycoming engines. It is expected that just the engines and not airframes will require approval to use the G100 replacement fuel. Users will need to purchase an STC for the approved engine.

NAAA, while recognizing the need for an unleaded aviation gasoline, has insisted that the development of the fuel consider aviation safety first. This approved fuel satisfies that requirement. There are other potential benefits of G100 over 100LL, such as less plug fouling, cleaner oil and possibly more power. While the availability of G100 is currently very limited, engine approvals are the required next step in transitioning aviation away from leaded fuels.

### Beware of Fraudulent Email with NAAA Branding

NAAA received notification that scammers have sent an email to several members that is titled, "Austin's Support" that is seeking financial support through GoFundMe. The email was sent from "info@agaviation.org" and has the NAAA logo at the top. WHILE THIS EMAIL LOOKS LEGIT, IT WAS NOT SENT FROM NAAA OR A VALID NAAA EMAIL ADDRESS.

If you are unsure if an email is legitimately from NAAA, please feel free to email information@agaviation.org for clarification.

Any message from NAAA will come directly from information@agaviation.org, naaaexpo@agaviation.org or a staff member's email address.

There are several reports of entities trying to scam people by having them give money toward fraudulent efforts. Do not fall victim to one of these scams.

#### Celebrating Ag Aviation's Centennial Made the 2021 Ag Aviation Expo One for the Ages

Attendees had a monumental time celebrating the agricultural aviation industry's 100th anniversary at NAAA's 2021 Ag Aviation Expo last week. Approximately 1,500 attendees came to Savannah to socialize and engage in the business, networking and formal and informal learning opportunities that NAAA's convention provides.

This year's show yielded plenty of highlights, and NAAA was on the scene cataloging them. Let's review!

#### **MONDAY, DEC. 6**

#### **Big Turnout for Kickoff Speaker John Stossel**

The Kickoff Breakfast on Monday crackled with electricity as a sellout crowd turned out to hear John Stossel, the legendary TV correspondent. The former liberal crusader-turned-libertarian discussed his evolution from consumer reporter in favor of government regulation to keep businesses in check to a staunch proponent of free markets and fewer regulations. Stossel ended with a parting observation and piece of advice that drew the audience to its feet. "I've researched your business and I'm convinced you do much more good than harm. Keep fighting for the right to do it," he said.

#### Potentials and Preventing Perils of Aerial Application Automation

The session titled "Potentials and Preventing Perils of Aerial Application Automation" began with a presentation by Madison Dixon from Mississippi State University's (MSU) Raspet Flight Research Lab. Raspet's research is focused on understanding agricultural air traffic to ensure UAV operations can avoid endangering aerial applicators. Raspet collected GPS flight data logs donated by aerial application operations in the U.S. and completed an initial study. All personal information was removed from the GPS logs to ensure anonymity. The flight log data was analyzed and used to model the when, where, and how agricultural aircraft are operated. This information is now used to educate UAS operators and regulators about the proximity and risk of drones operating near low-altitude manned aircraft. The research is continuing in partnership with MIT. Raspet is still collecting GPS logs from 2021 or prior years to improve its data set. On this round of data collection, Raspet requests the make and model of aircraft for the GPS files. Files can be uploaded at https://www.hpc.msstate.edu/raspet-naaa/ or by mailing a USB drive to:

Madison Dixon Raspet Flight Research Laboratory – Building 2 Mississippi State University 114 Airport Road Starkville, MS 39759

For any questions or issues related to submitting your GPS logs, contact Madison Dixon at **mdixon@raspet.msstate.edu**. Your personal information will be deleted from the files you submitted before any analysis takes place.

Next up was a video submitted by Gordon Hedges from Balmoral Engineering. The video provided information about RotaMarka<sup>™</sup>, Balmoral's rotating wire marker, which makes wires much easier for agricultural aviators to see. The presentation also included information about the "Look up and Live" smartphone app that provides the location of power lines in Australia. Balmoral's U.S. distributor, Sicame USA, exhibited at a booth at the Expo trade show with the wire markers being demonstrated. A meeting was held by NAAA and Sicame USA, and a plan was developed to promote wire markers to the electrical transmission industry in the U.S.

The final part of the session was a panel discussion on precision agriculture and aerial applicators. The panel was led by Damon Reabe, a Wisconsin operator and chair of the NAAA Government Relations Committee. The panel included ag operators with experience making variable rate applications and manufacturers of precision aerial application equipment, including GPS, onboard meteorological systems, dry application equipment, pulse width modulation nozzle control systems, and aerial imaging systems.

The panel started by talking about the fact that aerial applicators have been able to make both liquid and dry variable rate applications for many years. Dry applications of fertilizers are the most common; there is less agronomic demand for liquid variable rate applications. There is a need to streamline and speed up the process of creating prescription maps and improve communications between the various platforms involved in the process. The panel agreed on the need to continue to improve precision aerial applications with the creation of an autonomous spray system. The autonomous spray system would utilize various components to, among many tasks, automatically turn the spray on and off when the aircraft was at a proper attitude when entering and exiting the field, respectively; adjust the nozzle

configuration on the boom to compensate for crosswinds during the application and change the gallons per acre application rate called for on a prescription map without changing pressure and droplet size. The panel also stressed the importance of making sure the EPA is aware of the current and future technology used in aerial applications to avoid more restrictive aerial labels.

## **Chemical Session**

The Chemical Session featured company updates from BASF and UPL, with BASF's John Sabatka and UPL's Lynn Justesen presenting on behalf of their companies.

BASF has launched more new innovations than any other basic manufacturer in the last 10 years. More new technologies and products are in the pipeline and due out over the next few years.

In the near term, BASF is bringing two new active ingredients to the fungicide market, two new herbicides and a new insecticide. The insecticide arena hasn't had a lot of new modes or sites of action, Sabatka noted. This year, BASF launched Renestra<sup>™</sup>, a new dualmode of action insecticide. Renestra<sup>™</sup> is a pyrethroid premixed with Sefina, an insecticide with a new mode of action that is "lights out" at treating soybean aphids. Sefina doesn't provide a big spectrum, however. Enter Renestra, a pyrethroid-Sefina premix that provides a broad spectrum. Renestra<sup>™</sup> eliminates resistant and non-resistant soybean aphids as well as other feeding insects.

BASF's U.S. crop strategy for 2022 includes building on its efforts in 2021. BASF expects global and domestic logistics issues to continue, and it is planning accordingly to improve and increase its product capacity for the long term. To that end, BASF is investing \$260 million in North America to improve reliability and boost capacity. BASF is investing more than \$150 million in North American herbicide operations to improve reliability and expand its raw material base.

Supply issues are expected to continue in 2022. BASF advises that aerial applicators plan accordingly with their customers and to have a contingency plan in place if Plan A doesn't materialize, such as using alternate chemistries when feasible.

Justesen is the allied director for the chemical division on NAAA's board. At the start of his presentation, he stated that UPL's name recognition hasn't been very high to this point, yet UPL is the fifth-largest chemical company in the world.

Justesen concurred with Sabatka's overview on the ongoing supply chain issues impacting the chemical industry. "It's rough," he said. "We're the No. 2 provider of phosphonate in North America, and it's rough. We made a bunch more and it's still rough."

UPL has nearly 100 different active ingredients in its portfolio and more than 280 products and product mixes. Many applicators may find that surprising. "There's a pretty fair chance that you may not know who we are, but there's a pretty fair chance that you probably sprayed some of our stuff and didn't even know it," Justesen said. "We're trying to make that connection."

### **Insurance Session**

NAAA Insurance Division Director John "JT" Helms of Old Republic Aerospace moderated the Insurance Session on Monday, Dec. 6.

Panelist Emily Day of Starr Insurance covered the basics of how workers' compensation and audits work. Josh Rittenberry of Mid-Continent Insurance discussed transitioning new pilots into an operation or from piston to turbine aircraft. John Worthing of AeroGaurd Insurance talked about chemical liability and how much operators should buy. Tim Bonnell Jr. of Aeris Insurance reviewed the current state of the agricultural aviation insurance market and the overall general aviation insurance market. Ken Nielsen of USAIG gave an in-depth look at contracts and contractual language to watch out for. And finally, Helms suggested some ideas about operations handling their own claims and covered why it is a disadvantage to over or undervalue your aircraft.

The panel then took questions and provided answers, which mainly centered around transitioning pilots and the possibility of writing policies for more than one year. There were 70 people in attendance.

### Insero AgPilotX Update

Insero provided an update on its AgPilotX GPS, which is now six years old. It works with any Apple product and can be purchased with an iPad Pro. There are three components: the lightbar, the hub, and the iPad or other Apple device, which runs the AgPilotX app. Bluetooth is used to communicate between the lightbar and iPad, while Wi-Fi is used for lightbar to hub communications. The iPad can be connected to the cloud to get background maps.

The lightbar holds the data and has an onboard GPS/GNSS receiver which allows for more satellites than GPS-only receivers. The lightbar has been updated with an antenna guard to prevent cracks. The hub provides a connection platform to other devices and serves as the flow controller. It will work with any metering and control valve. The new hub now has an intelligent charging circuit so that it can charge newer Apple devices that require "smart" charging.

Insero has also introduced AgHippo, a cloud-based data storage and transfer platform. AgHippo communicates directly with AgPilotX and can work with AgSync, Surety, Chem-Man and Flight Plan Online. Work orders and job files can be transferred between the AgPilotX app and these other spray management software platforms. Information on completed jobs can be sent immediately to customers to let them

know when their work has been completed. In the future, Insero will be working on automatic georeferencing, workflow simplicity and sharing data between aircraft.

#### **NAAA Engine Sessions**

RFD's Market Day Report with Pratt & Whitney Canada VP Nicholas Kanellias at the 2021 Ag Aviation Expo

#### 03:09

Several engine sessions were offered for turbine and radial powered aircraft throughout the convention, beginning with two eight-hour maintenance seminars on Sunday, Dec. 5. The maintenance seminars were hosted by CD Aviation Services for TPE331 engines and Pratt & Whitney Canada for PT6 engines. Both courses were fully accredited by the FAA as IA Refresher Training Courses.

CD Aviation Services' training course covered all aspects of the Honeywell TPE331 series engines, including design, model variations, maintenance and troubleshooting. The PT6 seminar covered basic turboprop engine principles and interpretations of engine parameters to enhance pilots' and mechanics' knowledge of engine performance, monitoring and trends.

Logan Simmons from Covington Aircraft was the panelist at the **Radial Engine Session**. He engaged in a great discussion with an audience of over 60 people. Topics covered included the best way to operate a radial engine. One lengthy discussion focused on how much throttle to use on takeoff. It was recommended the throttle should always be full forward on takeoff to ensure as much gasoline as possible flows into the cylinders, which provides additional cooling of the cylinder heads to help prevent cracking. The supply chain challenges and the lack of new parts for the R1340 and 985 were also discussed. Covington provided everyone in attendance with a detailed radial engine overview presentation.

The **PT6 Turbine Session** highlights best practices for operating the PT6A engine in ag aviation. Featured panelists included Wayne Butler of Airforce Turbines Service, Wendel Lambert of Standard Aero, Robert Craymer of Covington Aircraft, John Waldrop of Prime Turbines and Pratt & Whitney Canada's Mathieu Renaud, with Fletcher Sharp moderating. The session was strongly attended, with close to 100 in attendance.

Topics discussed included fuel nozzle maintenance and borescope inspection, including documentation in the engine log box. Commercial support programs currently being offered by Pratt & Whitney Canada also were reviewed, including the recommended replacement of the Second-Stage PT Blades at 5,000 hours on the PT6A-67AG.

The panelists discussed the importance of balancing the propeller and positions on prop balancers on the market. They reviewed different oil approved on the market, including best practices for servicing. The importance of compressor washing and turbine rinsing, with the frequency increasing depending on the operation and operating environment, and the importance of clean air, fuel and oil for a well-running PT6A engine were also discussed.

### **TUESDAY, DEC. 7**

#### **Transland Seminar and Breakfast**

The Transland breakfast seminar was presented by Dr. Dennis Gardisser from WRK of Arkansas. This was the 26th breakfast seminar presented by Transland (or CP Products before Transland purchased CP) at the Ag Aviation Expo and the 23rd presented by Dr. Gardisser. Last year GarrCo sponsored the breakfast. He started by reviewing the important things to consider for successful pest control, including timing, dosage, label instructions, spray solution, droplet spectrum, application uniformity and environmental professionalism.

To optimize an aerial application, pilots and operators need to configure their nozzles and booms to create uniform spray patterns. They also need to know their ideal effective swath width so that each pass maximizes both uniformity and productivity. By creating a uniform spray pattern and using an optimized effective swath width, aerial applicators can achieve a coefficient of variation (CV) of 15% or less. CV is a measurement of the overall uniformity of an application accounting for multiple passes. The lower the CV, the more uniform the application.

It is important to ensure every aerial application follows the pesticide label. Many labels require a medium or coarser droplet size. When calibrating your aircraft to achieve both the target gallons per acre (GPA) application rate and droplet size, a pilot must know the maximum speed they can operate at and still maintain a medium droplet size. The USDA-ARS Aerial Application Technology Research Unit has a

feature on its latest aerial droplet size models that will calculate this for pilots. Rotary atomizers should be used with caution as they can create a small droplet size if not set up properly for the aircraft they are mounted on.

Application height also plays a major role in application uniformity. The optimum minimum application height for aircraft is 25% of the wingspan or rotor diameter. Flying higher can result in more off-target movement because of greater exposure to wind. Flying too low places spray in ground effect, which distorts the pattern and can also increase the risk of off-target spray movement.

Boom shutoffs include both half boom shutoffs, where either the right or left boom is turned off, or partial boom shutoffs, which reduce the total length of both booms. Half boom shutoffs should be configured to turn off the boom on the torque side of the propeller. Using a shortened boom can reduce drift potential. When using boom shutoffs pilot must account for changes that occur to the swath width and pressure when a section of boom is turned off. It is best optimized with a GPS controller that can accommodate for the changes in swath width and pressure with dual swath widths or partial boom configuration options. WRK has a worksheet that aerial applicators can use to calculate an expected effective swath width when using shortened booms. Dr. Gardisser recommends setting the center section of the aircraft to provide ½ of the spray volume compared to the rest of the boom.

Another issue covered was record keeping. Aerial applicators should keep GPS log files in addition to accurate and complete records. These records should note any application technology used that improves accuracy and mitigates drift. Spraying during inversions continues to be a problem. Safety issues include not thoroughly scouting fields and pushing foggy weather.

### **NAAA General Session**

The 2021 NAAA General Session featured the premiere of the extended version of NAAA's documentary "Aerial Applicators' Growing Role: 100 Years of Agricultural Aviation" (view it in the next story) and two excellent panel discussions exploring the industry's progression over its first 100 years and how the industry could change and grow over the next several decades and beyond. Watch the full panel discussion below.

The high-interest level in the 2021 Ag Aviation Expo wasn't limited to attendees and exhibitors from within the interest. Media interest in covering the show was high as well. Aviation Week, The Farm Babe, Farm Life Media, and RFD-TV were all here reporting about the ag aviation industry.

*Market Day Report* anchor Tammi Arender from RFD-TV filed reports that aired throughout the day on Dec. 8, and many of them are including for viewing in this article. NAAA Government Relations Committee chairman Damon Reabe, Air Tractor's Jim Hirsch and Pratt & Whitney Canada VP Nicholas Kanellias all shined in their interview segments.

The NAAA Trade Show featured 142 exhibitors and 14 aircraft, including several vintage models on display to commemorate the industry's centennial. Twenty-five companies and individuals donated items to Tuesday's NAAA Live Auction, including a brand-new PT6A-34AG engine donated by Pratt & Whitney Canada and purchased by Thrush Aircraft. Two Ag-Cats also were auctioned. John Pew and Michael Rutledge purchased a Grumman-Schweizer G-164A Ag-Cat that Boyd Morgan donated to NAAREF, and Billy Whitfield is the new owner of the two-seat, open-cockpit Grumman G-164A Ag-Cat that Darrel and Deb Mertens donated.

# WEDNESDAY, DEC. 8

# **Relationship Drift Session**

Personalities affect relationships; the stresses in relationships affect accidents. This year's relationship drift session featured insight into personalities using DiSC. The acronym DiSC stands for the four main behavioral styles. D stands for Dominance, I stands for Influence, S stands for Steadiness, and C stands for Conscientiousness.

The session started with an exercise involving a timed exercise to pick out numbers in numerical order from a page full of seemingly random numbers. Searching for the numbers randomly on a page caused stress among the participants. After the time was up, the participants were informed that there was an order to the placement of the numbers on the page. Once that was known, the time was started again, and it was much less stressful after knowing the extra information. The point was that relationships can be less stressful if we know information about the people we interact with.

Next, the audience was split into two groups. Operator and pilot roles are largely but not exclusively the dominion of men, as female ag pilots and a few female operators in the audience could attest, but for the sake of discussion, the audience was separated by gender into two groups. The women remained in the main room, and the men went to another room. In the separate rooms, the four different dominant personalities were explained. People are typically a mixture of all four, but one tends to dominate. In the men's group, all considered themselves to be part of the task-oriented grouping.

Anonymously the attendees were asked which group they would put their spouse or significant other in as to their dominant personality. After the groups got back together, they could share that information with their spouse/significant other if they chose to. Anecdotal reports indicate that some did not have the same perspective on themselves as their spouse/significant other did about them.

Information was provided on what you can do to help yourself move toward your partner and what you can do to help your partner move toward yourself. Just knowing the differences is a big help in relationships. More information about DiSC may be found at **www.discprofile.com**.

### **Helicopter Session**

Longtime moderator Jeff Reabe of Reabe Aircraft Improvement led a new round of hangar talk at the Helicopter Session. Reabe encourages audience participation. He pointed out that the answer to someone's question is more likely to come from the floor than from him, given the level of experience among the 60 or so audience members.

Several safety topics were discussed, including working around wires and creating a simple safety management system. Other issues raised included supply chain challenges, inflation, the importance of maintaining profitability, pilot training and more.

The audience included a special guest—Jim Viola, the president and CEO of Helicopter Association International (HAI). HAI is looking for a helicopter applicator to serve on its safety working group. HAI has representatives from every sector of the helicopter industry except ag aviation and would like to find a volunteer to serve on that committee. Anyone interested can contact Viola for more information at james.viola@rotor.org.

Incoming NAAA Secretary Ray Newcomb emphasized the importance of every helicopter applicator being a member of NAAA and HAI. He mentioned Sen. Corey Booker's proposed bill that would ban chlorpyrifos, neonics, paraquat and any other pesticides prohibited by the EU or Canada. The bill would also allow local communities to ban pesticides, dissolving states' preemption. "Guess what? That affects every one of our livings," Newcomb said. "We as an industry need to come together with more memberships so that they have more money in the coffers to fight this."

# **Thrush Safety Class**

The Thrush Safety Class examined trends in ag aviation accidents from 2010 to 2020. It was presented by John Graber and Patrick Humphrey of Thrush Aircraft. They used a model developed by Boeing that has been used since 1959 to analyze the data. Accidents were grouped into controlled flight into terrain (CFIT), human factors and mechanical categories.

The Thrush representatives discussed the following:

There were 727 ag aviation accidents from 2010 to 2020 and 12% of them were fatal. On average, there are eight fatal ag aviation

accidents annually. That works out to be roughly one fatal accident every 45 days. The application phase of aerial application missions was the deadliest—50% of the fatal accidents occurred in this flight phase. Of the remaining half of fatal accidents, 30% occurred during the ferry phase of flight, 13% during ground operations, and takeoff and landing each accounted for 3% of fatal accidents. In other types of aviation, the most dangerous phases are takeoffs. Stalls are fatal 55% of the time.

When looking at total accidents, the top cause is power loss, followed by CFIT. In many of the CFIT accidents, pilots hit wires they knew were there. This likely occurs because the pilot becomes distracted and diverts their attention away from hazards already identified. Pressure to complete work also impacts accidents. Thrush suggests pilots wear some type of smartwatch to track their health and help them make more informed decisions about their health and how it might affect their ability to safely fly an ag aircraft.

Smartwatches can measure, among other things, heart rate, electrodermal activity (EDA) and sleep. EDA is used to calculate the level of stress the smartwatch wearer is experiencing. By monitoring these factors, the watch can provide insight into the level of fatigue and stress a pilot is experiencing and aid in the decision of whether they are safe to fly.

### **Capstantastic Boom System**

Capstan highlighted its SwathPRO boom system at the convention. The big news is the company will be submitting a supplemental type certificate to the FAA to approve the next generation boom system in January of 2022 for full commercial use. Air Tractor is a master dealer of the system. By spring an FAA decision will likely be made for the liquid application system with individual nozzle control using pulse width technology on each nozzle to treat up to 1 to 10 gallons per acre at up to 40 continuous PSI and 60 to 100 intermittent PSI. The system may be used to perform variable or constant rate application work with ease of use in activating and deactivating individual nozzles.

Capstan is presently in the lab working on incorporating an on-board wind measurement system to further fine-tune the system to control the nozzles based on outside air movement. Multiple operators testing the system—from Kenneth Lauderdale in Texas to Larry Graf and Casey Novak in Louisiana—spoke about the multiple benefits of the system, such as helping to mitigate drift and streaming when activating and deactivating. Graff has treated over 800,000 acres with the SwathPRO boom system. All of the operators were very confident about the system and showed pictures of how it can paint herbicide burndown work in straight lines (*see picture below of soybean burndown work in Texas*) resulting in fuel savings of up to 5 gallons per hour as a result of not having to return ferry to fields to complete work.

# Leading Edge Aerial Technology's Application Drones

Leading Edge Aerial Technologies participated actively at the Ag Aviation Expo led by Bill Reynolds, its president and CEO. The company was one of the first to receive certification and perform drone spray applications for agricultural products in vector control, forestry, agriculture and noxious weed control. In 2015 Leading Edge received its first FAA 333 Exemption for the use of UAS in mosquito control for the specific purpose of aerial imagery and applications. Reynolds emphasized that they are a complementary, not competitive, form of application to manned aerial applications in that they try to do niche aerial application work, not large-quantity acre work.

Currently, the company operates in 22 states and American Samoa and Australia. The maximum acres they can treat a day is 300. Its drone application equipment is carried in a 12-foot trailer with 100 gallons of water capacity to refill the drone. Leading Edge uses shapefiles from Insero's AgPilotX on its drones. They are also equipped with LiDAR—light detection and ranging technology—a remote sensing method that uses light in the form of a pulsed laser to measure ranges (variable distances) to avoid obstacles. If the programmed drone senses it will collide with an obstacle, it stops, hovers and allows the operator to take control manually to steer around the object.

Leading Edge is currently taking orders for drone production, which takes two to three weeks to fulfill. The company manufactures drones a dozen at a time. The payload of its PrecisionVision 35X drone is 25 pounds compared to Embraer-Pika's newest Pelican drone, which has a 500-pound payload.

# **DynaNav Session**

Reg Moen from DynaNav Systems reviewed the DynaNav flow control systems and how to make them (and other brands' flow controls) work properly. Flow control is a universally accepted technology to ensure accurate applications by monitoring and adjusting the amount of liquid being delivered. Flow control works best when using the correct pressure and nozzle setup, allowing the flow control valve to operate in mid-range of the valve's capacity. Often an operator should be using a smaller capacity system. Motor-driven pumps (electric, gas-powered, hydraulic) can also be used to assist with flow control. DynaNav has a stand-alone flow control system for customers who prefer that option.

The DynaNav system also works with electric, hydraulic and rotary vane gates for dry materials. When using dry products with inconsistent flow characteristics, such as some fertilizers, the DynaNav auto-adjust mode can automatically adjust the rate on each subsequent load to compensate for the flow characteristics.

### **Aviation Specialties Unlimited Session**

Aviation Specialties Unlimited's session focused on how ASU can get your aircraft ready for night vision goggle (NVG) operations. ASU provides many of the NVG systems used in the domestic aviation market. While NVGs will not blind you if a bright light suddenly appears, your cockpit must still be fitted with NVG compatible lighting. NVGs work best with more light outside the cockpit and reduced light inside.

It takes a minimum of two months to get NVGs installed in your aircraft, which includes time for a supplemental type certificate (STC). ASU uses filters to reduce light from certain gauges, while for others, it changes the light bulb itself. The installation of the NVG system allowing operators to spray at night has been beneficial to avoiding treating fields when bees and farmworkers are present.

# **Turbine Conversion Session Focuses on Aerial Application Setups in Brazil**

The Turbine Conversion Session featured Henrique Campos from SABRi and São Paulo State University in Brazil, who spoke on aerial applications in Brazil. Brazilian crops are subjected to high disease and insect pressure. Because of this, the use of aerial application is growing in Brazil. In Brazil, rotary atomizers are commonly used for aerial applications of fungicides and insecticides, while hydraulic nozzles are more common for herbicide applications. The average farm size in Brazil is 25,000 acres, and most growers are growing the same crop at the same time. Few people live in Brazil's agricultural areas—"only farms and jungle."

Aerial applications to sugarcane are typically made at spray application volumes of 3 to 5 gallons per acre (GPA). Historically Ipanema aircraft have been used to treat sugarcane, but that is changing to more Air Tractors and Thrush airplanes. The target droplet size spectrum is to create a volume median diameter (VMD) of 300 microns or greater and a DV0.1 (droplet diameter of which 10% of spray volume is contained in droplets of that diameter or smaller) of greater than 150 microns.

Aerial applications of 1 GPA are used for aerial fungicide and insecticide applications to both corn and soybean. For herbicide applications to these two crops, 2 GPA is used. Rotary atomizers are commonly used for these crops with a VMD of between 150 and 200 microns. With this small droplet size, AT-502s typically have a swath width of between 92 and 104 feet. Compos stressed the importance of setting the blade angle correctly on the rotary atomizers. It should be noted that in the U.S., most product labels do not allow for 1 GPA applications or a droplet size that small. Cotton aerial applications in Brazil are similar to soybean applications, except that ULV applications are used to control boll weevils.

Campos recommends the exact GPA for an application based on humidity. A lower humidity results in a higher GPA to compensate for the loss of droplet volume due to evaporation. When setting up the boom and nozzles on an aircraft, the challenge is to avoid turbulence from the aircraft. He typically configures an airplane with a boom length of 60% of the wingspan. Rotary atomizers are kept away from the belly of the aircraft. Booms need to be kept clean, and atomizer and nozzle flow rates must be checked periodically to verify correct calibration.

### **Hydrovant Session**

Hydrovant is a new water-based polymer adjuvant that works to protect the pesticide once it has reached the target. It has low toxicity and is highly rainfast, which means it is resistant to being washed off and remains effective even after rainfall or irrigation. It is both hydrophilic and lipophilic, so it locks the active ingredient on the leaf. Because the active ingredient stays on the leaf longer, it improves the application's overall performance. Hydrovant keeps the active ingredient on target even after rain. It is not phytotoxic and there are no tank mixing issues with other pesticides or adjuvants. It does not function as a drift control agent or surfactant, so those adjuvants can still be added if needed. It can benefit both pesticide and fertilizer applications.

Hydrovant was developed by Corbet Scientific and is being distributed by Thomas R. Summersill Inc. in Florida. It is registered in 14 countries and is supported by numerous research studies. A Cornell University study found Hydrovant significantly increased rainfastness by 35 to 45%. A study by the University of Florida revealed it improved control of Asian citrus psyllid with applications of Mustang. Another study in Florida found that Hydrovant provided longer effectiveness of disease control with fungicide applications on corn.

# THURSDAY, DEC. 9

### **Thrush Aircraft Session**

Mark McDonald, president and CEO of Thrush Aircraft, started the session by reviewing the goals and strategies he presented at last year's NAAA Expo. McDonald reported that the company has made progress on some of its goals but not on all of them. Supply chains are causing problems, such as the material used to make wing spar caps being on a ship outside a port that cannot unload; however, McDonald does not accept that as an excuse for not following through on commitments. Thrush is committed to the industry and continues to learn the market both on their customers' and their suppliers' sides.

Thrush continues to work on the development of the 510P2 and the 510P2+. The P2 uses the Pratt & Whitney Canada PT6A-34AG engine, and the P2+ uses the Pratt and Whitney Canada PT6A-140AG engine. Thrush will be certifying the P2+ first, with both aircraft expected to have their flight testing done before Christmas 2021. Thrush believes both of these 500-gallon models will be well-performing based on airframe improvements of the 510G and the new Pratt & Whitney Canada engine options.

Thrush is also working on an engine conversion certification process using Pratt & Whitney Canada engines for the currently in service GE H80-powered 510G aircraft. Going forward, Thrush will be certifying a dual-cockpit version of both the P2 and the P2+.

Air Tractor President Jim Hirsch covered the company's activities this year and its plans for 2022 at Air Tractor's session. Air Tractor has built more than 4,000 airplanes since it opened in 1974, including 941 802 series aircraft through 2021. The company should produce its 1,000th AT-802 in the fourth quarter of '22.

The manufacturer is working to increase its capacity to build more airplanes to meet market demands. Hirsch touched on a number of capital improvements the company has made, such as adding Inspect Vision, an automated optical inspection tool for sheet metal parts.

Air Tractor's biggest challenge has been supply chain disruptions. "Every day right now we have a disruption in the supply chain. The freeze in February in Texas really hurt us," Hirsch said.

The company was scheduled to produce 175 aircraft in 2021, including 50 AT-802As, 43 AT-502Bs and 31 AT-502XPs, but it may not be able to deliver a dozen or so of those orders before year-end. Difficulty obtaining certain parts has held up the completion of about 15 airplanes that are off the assembly line but can't go to flight line because they are waiting for a part.

"We can't get airplanes to flight line for the first time right now," Hirsch said. "We're still pushing them off the [assembly] line, but they need a tack generator and a wrench tank or something—two or three little parts to bolt on. So we're chasing. All those materials are now on the way, so we'll start to close this gap."

Those hiccups aside, Air Tractor's production in 2021 is up 46% from 2020, when it built 120 airplanes in the first year of the pandemic.

The material Hirsch worries about is the supply of sheet aluminum. "As long as we can start an airplane and weld it up and built it, and all we have to do is chase after a completed airplane to quote, finish it, we'll recover. We'll get through that. It won't have a great effect on our production schedule. That's the challenge we face right now. Right now, we're OK."

Even with those ongoing disruptions and the increased costs associated with them, Air Tractor expects to increase its aircraft production in 2022.

Air Tractor has been working with Capstan Ag Systems for a couple of years on its SwathPro aerial spray control system, and Hirsch thinks it's going to be a game-changer. "This is going to be one of those next disruptive technologies that's a very good thing for our industry to increase the precision of the application."

He added, "The ability to preset what valves you want and what flow rate you want out of each individual valve—at first it puts a lot on the pilot. But once you get that system up and running, and you get your presets selected, you can go from 3 gallons an acre to 5 gallons an acre, a 75-foot swath to a 65-foot swath—things like that with a simple touch of a button."

Air Tractor will be leveraging Capstan Ag's STC into its type certificate to install SwathPRO on new airplanes. FAA certification is pending, but once it is achieved, sales of SwathPRO will go through Air Tractor's dealer network.

Hirsch also updated attendees on Air Tractor's long-running AT-1002 development program. Air Tractor is developing a new prototype for the 1,060-gallon AT-1002. It wants to have the new 1002 prototype flying by the summer of '22 and in the FAA's flight test program by the fall. "Our goal is to be certified by the end of '23 or the first of '24 now," Hirsch said.

#### Perfect Flight App Session

Igor Coelho of Perfect Flight announced the kickoff into the U.S. market of its Aerial Spray Management and Traceability App. Perfect Flight has been in Brazil for five years. Its platform is a data gathering and data management system that can develop reports related to spray applications. These reports are used to improve applications. From these reports, they can generate shapefiles that contain the areas that the initial application missed. They can then send in another spray platform such as a ground unit or drone to spray the areas that could not be sprayed by conventional aircraft. The Perfect Flight App is also used to generate work orders and maps. In the U.S., they plan to include hazards such as sensitive sites and obstructions, including towers, powerlines, and wind turbines. The app is also used to

plan the most efficient route to and from the field. Perfect Flight integrates with most GPS guidance systems and Microsoft Power BI, a business intelligence platform.

# **NAAREF Safety Session**

The 2021 NAAREF Safety Session dealt with the Controlled Flight Into Terrain (CFIT) accidents. In 2021, CFIT accidents were the most common type of ag aviation accidents; 67% of the fatal accidents were CFIT. A CFIT accident is one where an airworthy aircraft under the control of a qualified pilot is flown into terrain. While terrain implies the ground, it encompasses all other obstacles that originate from the ground, such as trees, wires and towers. It also includes water. The key elements in a CFIT accident are that there is nothing wrong with the aircraft and it's under control. For various reasons, the pilot fails to see or avoid an obstacle or the ground.

To help better understand what causes CFIT accidents, five CFIT accidents were discussed in the NAAREF safety session. The pilots who survived the accidents were interviewed to get their accounts and talk about what they felt contributed to their accident. Time was given during each accident review for the audience to discuss the accident and what they felt led up to it. The stories shared by the survivors included lessons on the importance of thoroughly scouting a field, sticking with an established plan, asking more experienced pilots why certain fields are flown the way they are, avoiding distractions during an application, and keeping track of obstacles throughout an application. For more information on CFIT accidents, read "Don't PAASS Up Safety in 2020" in the Spring 2020 issue of *Agricultural Aviation*.

#### **Aviation Safety Consultants Session**

The Aviation Safety Consultants session was presented by Keith Cianfrani, who began by promoting helicopter flight data monitoring on behalf of the FAA and Helicopter Association International (HAI). He stressed that good data drives good decisions and that the most devastating tragedy of an aircraft accident happens if we as an industry fail to learn something from it. Focusing on helicopters, Cianfrani reported that aerial applications represent a large number of helicopter accidents. While aerial application only represents 7% of total helicopter flight hours, it represents 23% of the accidents.

The helicopter flight data recorder can be a stand-alone device or be integrated into existing systems. An Aviation Safety Information Analysis and Sharing (ASIAS) is a collaboration to share and analyze data from flight data recorders from numerous operators to learn how to proactively prevent accidents. For instance, tracking the distance maintained from obstacles can show the common distance the industry maintains from obstacles such as towers. An operator can compare this with the distance maintained by the operation's pilots to see if they are safe enough. The same can also be done with autorotation recovery. The ability to compare an operation's safety standards with the rest of the helicopter industry provides operators a chance to identify and change unsafe behaviors.

The rotorcraft ASIAS is confidential; it was developed and is maintained by an independent third party with strong ties to HAI and helicopter operators. Flight data recorders and ASIAS are voluntary means for improving safety. Each operator who submits data can have it wiped of any details they want, such as the pilot's name. The rotorcraft ASIAS is looking for aerial applicators to get involved.

Cianfrani talked about Safety Management Systems (SMS) next. An SMS must be pushed from the head of an operation if it is to be successful. There are numerous elements to an SMS, including but not limited to a safety manual, an emergency response plan, hazard tracking log, safety training, and a fatigue management program. One way to develop an SMS is to hire an outside consultant to conduct a gap analysis of your operation. The analysis begins with a review of existing operational documents, followed by an on-site analysis. The consultant will then prepare a report that details how to develop the SMS.

### NAAA Working on Power Line Marking

In 2021, seven ag aviation industry fatalities were the result of a collision with power lines. The issue of collisions with power lines, guy wires and other hard-to-see objects has been problematic since the inception of the aerial application industry 100 years ago. Prior to and during the 2021 Expo, NAAA has been having conversations with **Balmoral Engineering** regarding its RotaMarka<sup>TM</sup> wire marker.

RotaMarka is a unique 3D wire/cable marker that features color, reflectors and movement to provide high visibility. It is distributed in the U.S. by Sicame USA, a company that markets products to utility companies. Balmoral provided a video presentation that was shown during the 2021 Expo, and Sicame USA exhibited the product during the trade show. The most common comment from pilots stopping at the booth was, "This is what we need." In eastern Australia, where the marker was developed and first used, incidents have been dramatically reduced and there have been no reports of wire strikes where the marker was installed. A video of the RotaMarka can be viewed below.



NAAA Safety Committee Chairman Dale Patterson and NAAA staff met with Gary Conn of **Sicame USA** to discuss strategies for getting wires and cables marked with the RotaMarka. It was decided that the quickest way to reach the most troublesome wires was to first work with the rural electrical cooperative power companies to promote marking of power lines. Electrical cooperative safety officials meet at different locations across the U.S., and plans are being made to present the problem and possible solutions to them. Other power distribution companies, tower companies and state regulators of those companies will also be contacted.

# **MENTORING OFFERINGS**

# **Compaass Rose Session**

The PAASS Compaass Rose series provides professional support and direction for agricultural pilots who are new to the industry, want to learn more about the industry and what it takes to get into ag aviation. The goal is for participants to enhance their knowledge, continue to gain agricultural aviation experience and improve their professionalism.

The Compaass Rose program again this year was a popular, well-attended session. Veteran PAASS presenters Rick Boardman of Henderson, Nebraska, and Mike Rivenbark of Morehead City, North Carolina, presented to 56 attendees who put themselves in the category of five years or less of experience, with many having no experience at all. There were also 26 veteran pilots and operators with greater experience in attendance. After brief introductions, the pilots with less experience moved into a separate room. A series of multiple-choice questions were then asked of both groups, with participants answering using mobile polling. This year's Compaass Rose followed the human factors theme of the 2021–2022 PAASS Program of inadvertent flight into Instrument Meteorological Conditions.

Questions the new pilots were asked included: Specific to ag flying, have you had any training regarding weather conditions and making go/no go decisions? Experienced pilots were asked: How can you mentor a new ag pilot regarding weather conditions and go/no go decisions?

The topics of moving up in aircraft size and weight and the use of inexperienced pilots during very busy times were also covered. Many questions from the group included such topics as how to gain experience and employment. These were addressed by the veteran pilots and operators in attendance.

Having the groups split up allowed the participants to discuss their answers in a judgment-free zone. After each group discussed the topics, they reunited to review their responses to the survey questions together. The whole group discussed each topic with an emphasis on areas where there was greater variance between the more seasoned pilots' and newer pilots' views. The attendees looking to get into the industry found the session to be very helpful and expressed appreciation throughout the Expo.

# **Speed Mentoring Session**

NAAREF's "Ask the Expert" Speed Mentoring Session was once again one of the more popular events for pilots new to the industry. The session included a record 76 "mentees"—those with five years or less experience. A large percentage of the mentees had no experience and were looking into breaking into the industry.

A total of 28 mentors helped with this event. The mentors included operators, pilots, flight training representatives and individuals from the insurance industry. The 76 mentees were divided up between eight tables. Two to four mentors staffed each table. After brief introductions, mentees asked questions for 25 minutes before the mentors rotated to different tables. This format allows for a more direct, personal interaction and benefits mentees by enabling them to hear views from several different perspectives.

The pilots and those with no experience had a range of questions, including training, how to get the first seat, how to transition to turbine aircraft and how to safely operate in the low-level environment. Some also had questions about starting their own business or being managers of an existing company.

Much of the discussion centered around how to build relationships with potential employers and how to pick a company for which the pilot would want to work. Mentors stressed the importance of loyalty and how much additional cost employers incur when taking on an

inexperienced ag pilot, such as time invested and increased insurance premiums. Agricultural aviation is a small industry, and attitudes and work ethic follow pilots as they progress in it.

#### **NAAA Jobs Board**

A popular feature this year was the NAAA Jobs Board. The board featured a section for pilots looking for seats and one for operators looking for pilots. Thirty-four people filled out the pilots looking for seats section, and 21 operators filled out the operators looking for pilots section. Those who did not qualify as ag pilots but wanted an opportunity to break into the industry were encouraged to fill out the pilots looking for seats section and state that they were willing to work on a ground crew.

The boards were placed near the registration desk and the entrance to the exhibit hall in the convention center. Throughout the Expo, individuals would stop and check the board, taking pictures of the section of the board they were interested in. Then they would make calls either during the Expo or at a later date. Did you miss the opportunity? As an NAAA member, you can also post or look for jobs at the career tab on the website at AgAviation.org/joblistings.

#### In Closing ...

We could go on, but we'll save a few things for NAAA's magazine, including details of 2021's best and brightest acknowledged at the concluding Excellence in Ag Aviation Banquet. If you like what you learned in Savannah or read here, mark your calendar for Dec. 5–8, 2022, and join us in Knoxville, Tennessee, at our 56th annual Ag Aviation Expo.

#### Watch NAAA's New Full-length Documentary Celebrating a Century of Ag Aviation

Cap off a year of celebrating industry's centennial in 2021 by watching the latest and final installment of NAAA's "Growing Role" family of videos! The extended, episode-length version of NAAA's documentary, "Aerial Applicators' Growing Role: 100 Years of Agricultural Aviation," is now public after premiering at the 2021 Ag Aviation Expo last week. The 19-minute documentary debuted during the General Session on Dec. 7.

The video project has been 3½ years in the making (or 100 years, depending on how you look at it) and now includes three differentlength versions of NAAA's new "Growing Role" family of videos: a 2-minute trailer, a 9-minute consumer version and the new 19-minute documentary.

The expanded version was created with our industry audience in mind. It delves deeper into of the story of the agricultural aviation industry's rich history.

Watch it above or **on Vimeo here**. Then share it with your friends and colleagues so that they can learn about the industry's importance after a century of agricultural aviation!

#### Petition to Eliminate Organophosphate Pesticides Uses Filed with EPA

Last month the United Farm Workers and several other non-governmental organizations (NGOs) filed a petition with the EPA to revoke all food tolerances and cancel registrations for organophosphate (OP) pesticides. The petition seeks final EPA actions to revoke tolerances and cancel registrations for 15 OPs by the registration review deadline of Oct. 1, 2022. The NGOs are using a strategy similar to the one successfully used to ban chlorpyrifos.

The 15 OPs currently going through registration review are Acephate, Bensulide, Chlorethoxyfos, Chlorpyrifos-methyl, Diazinon, Dichlorvos, Dicrotophos, Dimethoate, Ethoprop, Malathion, Naled, Phorate, Phosmet, Terbufos and Tribufos.

Petitions are an important signaling document that the petitioners use to outline how the EPA should approach a registration review deadline. It signals that unless the EPA completes all elements of a registration review, including a full ESA assessment and an endocrine disruptor review—which may be impossible for the agency to complete—then the EPA should act now to revoke the tolerances listed in the petition in light of arguments contained in the petition. This OP elimination petition stresses the environmental justice commitments announced by the Biden administration, arguing that evidence is clear, in their view, of the need to take immediate action to end OP use across virtually all of the members of the class.

# **EPA Releases Pesticide Registration Review Schedule**

In early December the EPA released its pesticide registration review schedule for the next four years. The EPA is required by the Federal Insecticide Fungicide and Rodenticide Act (FIFRA) to review the registrations for all crop protection products every 15 years. Risk assessments are conducted by the EPA for each active ingredient being reviewed. The EPA conducts both ecological and human health risk assessments as part of a product's registration review. Proposed interim decisions (PIDs) are the next phase of the review process. They use the risk assessments as basis for deciding whether a product should be re-registered and what restrictions should be placed on how it is used.

The final interim decision (ID) follows, which may include changes made by the EPA based on public comments received on the PID. The decisions are considered interim instead of a full re-registration of a product because the potential risks the pesticide represents to threatened and endangered species and their designated habitat as well as pollinator protection assessments still needing to be completed.

The review schedule provides a timeline for the EPA up to 2025 that lists pesticides being reviewed, the case number, the action to be completed (PID, draft risk assessment, interim decision, etc.), and the year and quarter the action is expected to be completed. The schedule lists 297 pesticides including 2,4-D, captan, carbaryl, chlorpyrifos (forestry and human health applications), DCNA, difenoconazole, diuron, ethoprop, famoxadone, fluxapyroxad, imidacloprid, malathion, mancozeb, mesotrione, methomyl, metribuzin, naled, napropamide, norflurazon, oxyfluorfen, penthiopyrad, picoxystrobin, pronamide, propargite, propiconazole, pyrethrin, rotenone, saflufenacil, spirodiclofen, spiromesifen, tebuconazole, tetrachlorvinphos, tetraconazole, thiamethoxam, thiodicarb, thiophanate-methyl, topramezone, triadimenol and tribufos. The timeline is intended to be an estimate and is subject to change based on shifting priorities. NAAA will continue to monitor the registration review process and comment as needed to ensure aerial applicators have access to the pesticides their customers need.

# **Bell 206 Air Conditioning System Airworthiness Directive**

The FAA is adopting a new airworthiness directive (AD) for Bell Textron Canada Limited Model 206L-1, 206L-3 and 206L-4 helicopters with certain Air Comm Corporation air conditioning systems installed. This AD requires visually inspecting the drive ring spline teeth and the mating area spline teeth on the oil cooler blower shaft for signs of deformation and fretting and, depending on the results of the inspection, removing certain parts from service.

The effective date of the AD is Jan. 18, 2022. The inspection must be done within 300 hours time-in-service (TIS) after the effective date of this AD and thereafter at intervals not to exceed 300 hours TIS. If there is deformation or fretting on the drive ring spline teeth, before further flight, remove the drive ring from service and replace it with an airworthy part. To view the complete AD, go here.

# Thank You, NAAA Ag Aviation Expo Sponsors!

NAAA sincerely appreciates the companies that supported NAAA and the agricultural aviation industry with a sponsorship for the 2021 NAAA Ag Aviation Expo last week. We have been fortunate over the years to be able to count on many of our Allied Industry and operator members who sponsor a convention program, activity or item that benefits attendees.

Thank you to our 2021 Ag Aviation Expo sponsors:

- Diamond Sponsors: BASF, Darrel & Deb Mertens, Pratt & Whitney Canada, Syngenta, UPL North America
- Platinum Sponsors: Corteva Agriscience, Transland
- Gold Sponsors: Ag-Nav, AgriSmart Information Systems/Flight Plan Online, Air Tractor, Bayer CropScience, Covington Aircraft Engines, GarrCo Products, Insero, Perfect Flight App, Starr Insurance Companies, Wilbur-Ellis
- Silver Sponsors: Aeris Insurance Solutions, AgAir Update, AIG, AssuredPartners, Atticus, CapstanAG, Chuck Holzwarth Flying Service, Davidson Solid Rock Insurance, FMC, Kimmel Aviation Insurance Agency, Lane Aviation, North Star Aviation Inc., Old Republic Aerospace, Packer & Associates, Raven Slingshot, Southeastern Aircraft Sales & Service, Turbine Conversions
  Bronze Sponsors: Aerial Guidance Solutions, Chem-Man, Praxidyn, Star-Flex

We know that sponsoring companies can support many organizations, so we very much appreciate their support of NAAA! If you're interested in a 2022 Ag Aviation Expo sponsorship Knoxville, Tennessee, please contact **Lindsay Barber**, NAAA's Director of Meetings, Marketing & Special Projects.

# **Order Aerial Application Centennial Specialty Items**

Are you looking for holiday gifts for ag pilot enthusiasts in your life? The Support Fundraising Committee has sourced great 100th anniversary of aerial application products so that you can commemorate the anniversary for years to come. These products are for sale until Jan. 31 and will be mailed directly to you.

Click here to view the items and download and fill out the order form. *Please do not send the form to NAAA; email it to* **sales@bobscustomtrophies.com**. *Call* (515) 961-7342 with questions.

- 1. Wooden Cutting Board: 9" x 13": \$40
- 2. Single Cork Coaster (left in photo): 4" with faux suede back: \$10 or 4/\$35
- 3. Blue leatherette coaster with bottle opener: \$15
- 1. 100th Anniversary Logo-etched stemmed wine glass: \$20
- 2. 100th Anniversary Logo-etched pint glass: \$20
- 3. 100th Anniversary Logo-etched stemless wine glass: \$20
- 4. 100th Anniversary Logo-etched rocks glass: \$20

#### Additional 100th Anniversary Resources

- 1. AgAviation100.com, featuring two and eight-minute videos, historical timeline and news articles featuring the anniversary from across the U.S.
- 2. Purchase Agriculture's Air Force: 100 Years of Aerial Application book.
- 3. Download the 100th anniversary logo for your use.
- 4. Attend the 2021 Ag Aviation Expo in Savannah, Dec. 6-9.

#### We All Have a Telling History: Use Yours and NAAA's Materials to Broadly Communicate Agricultural Aviation's

#### By Andrew Moore, NAAA CEO

If you are an active citizen in the world of aerial application, don't be a static audience member during this epic centennial event. Take the stage with us and bring out your inner thespian as we enunciate the gospel of agricultural aviation to the public.

History is not just documenting famous or infamous people, times and events. We all have a history—a story to tell about ourselves that can contribute to the next and future generations' betterment. One could also believe that sharing our history is one of the meanings of life —to improve and evolve our world by sharing the key to living a good life and sharing the hazards and obstacles that may hinder such living.

NAAA has reached the climax in the centennial epic of sharing our industry's history to the public, which of course was Aug. 3, 2021. But just because the official centennial anniversary date is behind us doesn't mean all efforts to share the importance of our industry to the public have passed you by. We will be celebrating the centennial of agricultural aviation for an entire year. We continue to reach out to policymakers, our brethren in the fields of agriculture and aviation, to the trade press, to the public and to the national news media. We continue to share our history of improving the cultivation of food, fiber and bioenergy consumed globally and how we've learned from harrowing experiences and evolved technologically to fine-tune our craft, use less product to cover more acres and better care for Mother Earth. We are continuing to use all types of media to educate the public—three different length video documentaries, a comprehensive book of our history, social, print, trade and news media releases and a special website, **AgAviation100.com**, to share the 10-decade story of ag aviation and we will continue to due so through July of 2022.

If you are an active citizen in the world of aerial application—whether an operator, pilot, crew member, service-parts-equipment provider or related tangentially to the industry in another way—don't be a static audience member during this epic, year-long centennial event. Take the stage with us as we enunciate the gospel of agricultural aviation to the public. Inform your local television stations, newspapers and radio stations about the industry's 100th anniversary, even if it is by simply directing them to AgAviation100.com. On that site, there is a "Get Involved" tab with a draft press release about the 100th that discusses the importance of the industry, its progressive evolution, and directs readers to AgAviation100.com to learn more. Feel free to cater that press release to your own operation and experience and send it to your local news outlets.

You can also brush up on the ag aviation script about the importance of ag aviation, environmental safeguards that are common practice today and other industry talking points on NAAA's media relations kit webpage that may be found **here**.

The media relations kit also includes suggestions on how to best communicate to the media and public when espousing ag aviation's significance. If you don't feel comfortable communicating directly, no worries. NAAA staff and an assortment of ag aviation ambassadors can be used as understudies and take over that role, but do make sure the public and news media in your area are informed of our centennial milestone to maximize the value of this pivotal once-in-a-lifetime event.

Don't forget, we all have a great story to tell about this industry. Whether it is how one got into the industry; the training to fine-tune ag aircraft and the application equipment; how ag aviation provides to local employment and the local economy; or how after five generations, our technology and experience are such that we produce more per acre, showing that our care for the environment continues to progress —all of these anecdotes are both important and fascinating to public audiences.

It's up to us all to tell the story to continue this industry's remarkable legacy. And again, just because the official anniversary date has occurred, our centennial lasts a year and you can still contribute plenty. Please join the ag aviation cast for this once-in-a-100-year performance that is leading to glowing public reviews and will continue to do so throughout the year.

# NAAA Releases Book of the Century! Buy It Today

NAAA has released the book of the century—a century of agricultural aviation, that is.

One hundred years ago, an aerial crop dusting experiment spawned the birth of the agricultural aviation industry. To commemorate agricultural aviation's 100th anniversary, NAAA is pleased to present *Agriculture's Air Force: 100 Years of Aerial Application*.

*Agriculture's Air Force* provides a new, updated account of aerial application's history, 35 years after Mabry Anderson's masterpiece, *Low* & *Slow: An Insider's History of Agricultural Aviation*, was published. NAAA's meticulously sourced book is based on a collective history of the agricultural aviation industry based on material from *Agricultural Aviation* magazine, *AgAir Update, Low & Slow* and other resources.

Beginning with *Agricultural Aviation's* Spring 2021 issue, NAAA has been publishing excerpts from *Agriculture's Air Force* and will continue to do so through the Fall 2021 issue. Those stories are just a small slice of what's in the 268-page hardback edition, however. The complete book contains so much more.

*Agriculture's Air Force* delves into the intersection of agriculture and aviation. It chronicles the agricultural aviation industry's growth from its infancy in 1921 through the boom times after World War II and on to today's modern era of high-tech aerial application.

The finished hardback book has been years in the making but well worth the effort. "This is a significant piece of work covering not just the industry's history, but its essence," NAAA CEO Andrew Moore said. "We are proud of it and believe it will make a lasting contribution to the industry."

The story of agricultural aviation is much like the broader story of aviation: It is mostly punctuated with interesting smaller moments sandwiched between milestone developments. Aerial application is also the story of technological leaps and bounds.

Agriculture's Air Force covers five eras spanning more than 10 decades. In addition, it features 34 Spotlight pieces focused on significant individuals, organizations, trends, technologies and topics related to aerial application.

*Agriculture's Air Force: 100 Years of Aerial Application* may well be NAAA's most enduring 100th anniversary initiative. One thing's for sure: It is no textbook. The commemorative book is written from a fresh perspective that is entertaining and enlightening. Readers will come away with a new appreciation for agricultural aviation as a profession and the dedicated individuals who propel it forward.

# Order Your Copy of Agriculture's Air Force Today!

Agriculture's Air Force retails for \$45, excluding shipping. Order it from AgAir Update's Online Store.