Governor's Aerospace Advisory Council

January 4, 2022, Virtual Meeting

10:00am – Noon

Chair Del. Mark Sickles

Welcome to the last GAAC meeting of 2021; a great year as far as our visibility, probably the most visibility that we've had in our short existence. Next year – hope to work in a continuous improvement mode.

Review of the aviation and aerospace summit. Terrific event - Northrop Grumman manufacturing facility unbelievable. We are preparing a workforce for that industry, and we have a good working relationship with our higher education system by providing technical workers. 'Space' has never gotten as much attention in the general public as it has in 2021.

Ted Mercer: Outstanding conference at NG and relevant topics.

David Pierce: This council is about action, working together as a team across the Commonwealth to advance aerospace and exploration. I think we have made great strides working together.

Mary Sandy: Excellent conference, great information, chairing, networking, and wonderful to be back together.

Del. Shelley Simonds: I really enjoyed the opportunities that we had at our last meeting, to be in an aircraft hangar, and to have the manufacturing tour.

Mark Flynn: Fantastic meeting; really useful to see the United Airlines hangar and to see what's going on there and at Northrop Grumman. Great meetings - it is going to be a challenge to equal that.

Tom Michels: Thank you everybody who came out and to NG for hosting the program. I think we came away with a whole lot of exciting ideas about education and workforce opportunities.

Jon Greene

C2IAS - The Commonwealth Center for Innovation in Autonomous Systems was funded initially by the Virginia research investment fund, and then sponsorship passed to VIPC January 2021. Concept is to provide early stage seed funding to promote technology transition into the marketplace. Three scenarios are envisioned: University-based startups, faculty technical assistance to small Virginia companies, and tech transition from a university to any Virginia-based company.

Five projects were funded in 2020; 10 projects in 2021; and 12 projects have recently been selected for 2022 (its final year of funding). The projects are a collaborative effort between Virginia Tech and Old Dominion University.

The Build Back Better Regional Challenge

1. VA Tech team has been selected as one of 60 finalists to receive up to $100 million in EDA funding
2. "The Future of Logistics" focusing on autonomy and electrification
3. Three projects envisioned:

   Autonomous-electric heavy vehicle testbed on I-81 corridor

   a. Advanced Air Mobility (AAM) testbed – Raytheon, UPS, ANRA Technologies are key partners
   b. Network of facility, training, technical and entrepreneurial resources
   c. AAM testbed led by the Mid-Atlantic Aviation Partnership at VA Tech (MAAP)
4. MAAP/Langley collaborating to make this effort synergistic with planned UAS beyond visual line of sight corridor in Hampton.

Jason El Koubi

Rocket Lab will deepen their commitment to their partnership with Wallops and Virginia Space regarding their planned neutron rocket program. We are developing exciting new materials to articulate Virginia's tremendous value proposition for the aerospace sector.

Vince Barnett: Vice President of the business investment team. Welcome to Molly Olson, who recently joined VEDP, will be the day-to-day point of contact on the aerospace industry. The VEDP is aggressively targeting a sector with a wide variety of outreach – whether it be virtual meetings or trade shows, domestic or international. This is a critically important sector to us, and we are delighted to share some of these materials.

Jason El Koubi: How do we articulate the full Virginia value proposition for some of the most exciting industries that we are trying to cultivate in Virginia? There's a great story to tell about the many advantages to locating, growing, and expanding a business in Virginia, and to make Virginia the home of businesses of a wide variety of sectors. One of the biggest ones that we've focused on recently is aerospace and defining the comprehensive value proposition of Virginia. We have created an attractive web page for the aerospace sector. We have also taken all of the key points of Virginia for these industry sectors and put into a variety of materials used in proposals, responses to requests for information, etc. We've also created an attractive brochure that is easy to share and valuable in our marketing efforts.

Our marketing efforts talk about:

- The dynamic industrial and innovation ecosystem for this sector in Virginia
- That it is a top state for talent with project-ready sites
- Our world-class transportation and connectivity infrastructure
- Our attractive, stable and predictable operating environment
- Virginia's exceptional quality of life
- The great schools and universities
- Site development
- The wide variety of companies that are in the sector that are already doing business in Virginia.

Bud Oakey, President of the VABA

We are getting ready to go into a legislative session, and we are going to be saying 'we're not doing well enough in prepping kids who come out of high school to work.' We are having a problem in the MRO business – maintenance repair and overhaul facilities. We need to promote that we have an aviation parts and the supplies tax credit. We have a lot of attractive inventory to develop, but we don't have the workforce. It's incumbent upon all of us that we have coordinated messages for the legislature for funding, and that we're acting proactively to meet the demand.

The number one reason that anybody goes to any state is the availability of a workforce. We have a good program, but it's only as good as the last budget. Requests currently outweigh our resources – mechanics are badly needed.

Delegate Shelly Simonds: How can we create an upgraded website and a brochure that's accessible at the level of a school counselor that can also be shared with students in high school who are interested in technology? We need to make those connections with our high schools.

Jason El Koubi: We are happy to partner with folks to make that connection happen. Our marketing materials should not only point out Virginia's tremendous strengths, but also identify some of the weaknesses in ways that we can prove. There is a lot of exciting information that we can share where we are already working every day with higher education partners. We welcome any guidance from this group or others on how we can make this material most valuable in other ways as well.

Mary Sandy: We have a concept pending that may be part of a budget amendment for aviation and aerospace workforce development. It is the creation of a portal that will help student counselors and parents readily connect to opportunities in these fields in Virginia.

Bud Oakey: Mechanics are one of the biggest needs in the industry, and right now, we can take a child out of high school and put him in a certificate program. There are a lot of technology companies that need people working on their equipment, and they are taking students away from aviation. There is such a demand that we've got to get the interest coming out of high schools, colleges, and vocation technology centers. This portal that Mary just brought up is critical in coordinating a very fragmented approach and putting out the training that's available in the Commonwealth; the internship programs to introduce them to aviation; and expanding the BLAST program from aerospace to the aviation side.

John Eberhardt - ATALLC

ATA is a technical support contractor for the Department of Aviation to ensure safe, effective UAS operations in the Commonwealth and that ranges from small UAS for doing things like package delivery in the Blacksburg region to how can we share information with state and local agencies and share it with operators in the industry. This has become VA-FIX (Flight Information Exchange). The data belongs to the Commonwealth and is a free public service. We believe that this in one of Virginia's great assets in improving situational awareness through information sharing and supporting the overall development of the industry.

Examples of information sharing: information between Department of Conservation and Recreation on takeoff and landing restrictions; state parks and the Virginia Department of Forestry on rules requiring notification for takeoff and landings; localities describing ground hazards, such as fuel storage facilities, or obstructions, such as radio towers. What is interesting is that we're demonstrating that state and local government can step in and help fill in the navigation information that it tends to be missing from the FAA charts. The FAA is naturally focused on traditional manned aviation and a reliance on FAA charts.

Once you get down to the lower altitudes, a lot of navigational aids that pilots take for granted do not exist for urban air mobility or small UAS operations.

Dr. Amber Wilson is the technology manager at the Department of Aviation and oversees the VA-FIX user group, who meet monthly to provide guidance.

"The Bottom Line Up Front" identifies the need to:

1. Ensure safe UAS operations
2. Answer needs of government and maintain Virginia as a 'UAS Friendly' state
3. Make things clearer and less ambiguous for operators and industry
4. Leverage existing federal standards and technology to deploy quickly and cheaply (gaining rapid adoption).

Identified need: DOAV UAS Work Group identified the need for information sharing to:

1. Provide guidance to operate, coordinate and collaborate UAS flight operations at the state and local government level
2. Promote/enable awareness and information sharing (the establishment of data standards) between government and UAS Operators
3. Support recommendations of the Virginia UAS Working Group.

VA FIX provides a central clearing house for authoritative advisories and information under the authority of the Department of Aviation.

Key Stakeholders: Department of Aviation, Virginia Innovation Partnership Corp(VIPC), VDOT, Secretary of Public Safety and Homeland Security, state and local agencies including public safety, DOAV UAS work group, VA-FIX user group, UTM and USS providers, and UAS operators.

VA-FIX consists of 35+ state and local government agencies, 100+ user accounts, 1,000 advisories, and 400 'active' advisories. We are working with other states on implementing shared governance, and the FAA, DHS, and NASA see VA-FIX as a solution to certain federal problems that need authoritative data.

Virginia is leading the nation: other states see an opportunity to create a national working group for consistent state and local data for UAS.

Nick Devereux – Wing

Our own technology called "OpenSky" where we put an app in the hands of operators that enables them to check what flying conditions might be around them before launching their drones. The app is a free mobile and web application that provides airspace information to drone operators, such as when and where it's safe to fly, so they can safely navigate the sky. OpenSky supports all types of drone users, including recreational or commercial.

Ted Mercer, Virginia Space

Our story – we needed to establish mission and vision values for our company, VA Space. It's no longer just a Commonwealth asset – VA Space and MARS are national assets.

We live by integrity, respect and inclusion, service, and excellence. Our mission is to operate, maintain, and grow our premier spaceport for small and mid-class rocket systems; to support flawless launch to orbit for domestic and international government customers; to provide state of the art secure facilities for training and testing of unmanned systems; a key driver of the Commonwealth's economic development.

Our vision: We want to be the premier spaceport and unmanned systems testing and training facility and the number one economic engine for job creation and development in Virginia. We want to be the first choice for assured access to space by government and commercial customers in this nation.

Launching: NG17 in late February and NG18 is slated for late summer of 2022. Sometime this year, we expect to see the first Electron launch. We are working on the design for a commercial hangar – the Melfa Hangar. The Commonwealth provided $2 million for Accomack County.

Inaugural flight of the Northrop Grumman MQ-8C Fire Scout – an unmanned helicopter developed for the U.S. Navy with autonomous take-off and landing capability. It is designed to provide reconnaissance, situational awareness, aerial support and precision targeting support for ground, air and sea forces.

NASA has delivered to Rocket Lab an advance release of its NAFTU – NASA Autonomous Flight Termination Unit software code. NAFTU is a critical milestone toward the final certification of NAFTU, which is on-track for February 2022. (All dry runs have successfully been completed.) NAFTU is a game-changing command and control system available to launch vehicle providers for use at all U.S. launch ranges in ensuring public safety during launch operations.

The first Electron launch is expected in 2022, and Rocket Lab's Neutron rocket is coming. It can launch in excess of 17,000 pounds to low earth orbit (LEO), and 3,306 pounds to Mars and Venus. NASA is working with Rocket Lab on planning for the first stage to be reusable. This rocket is designed for constellation deployment on a single rocket, cargo resupply, and interplanetary missions. They also want to be able to fly humans aboard this rocket as well.

We have purchased 28 acres adjacent to NASA Wallops Island Flight Facility, and VA Space has presented to the Major Employment and Investments (MEI) committee for funding for a manufacturing facility. Decision pending. The Launch Service Agreement (LSA) and construction agreement is complete and currently in legal review. A Project Charter agreement has been reached between NASA and Rocket Lab that is designed to address the first-stage fly back issue and clarify roles and responsibilities that have been agreed to in principle between NASA and Rocket Lab. The agreement is currently in legal review, and we do not foresee any major issues that could arise out of that review.

Legislative Update: Progress! Over 15 meetings with legislators and staff since September 2021. We are pushing the issue that space lift is recognized as a bipartisan issue. We are looking for resources to support spaceports as national assets – MARS provides limited backup capability to Cape Canaveral, launches resupply missions for the ISS, and flies national security missions for the government. This has been well received on the Hill. We have also been driving Spaceport Differentiation – that all spaceports are not created equal. There are four 'big' spaceports in Category One – Kodiak, Alaska; Vandenberg Air Force Base in California; Cape Canaveral; and MARS on the East Coast that are capable of putting huge payloads into orbit to support this nation. Category Two spaceports are those that do horizontal takeoff and landing. They can put a payload into orbit, but they can only put up a maximum of about 1,100 pounds. We put up routinely over 18,000 pounds. Category Three spaceports are not licensed to put anything into orbit. They primarily focus on space tourism, getting a few minutes of weightlessness, and then return.

The Governor's budget has recently been released, which includes $30 million for VA Space launch pad improvements pending legislator approval.

Vandenberg Space Launch Complex 8 (SLC8): We were awarded bidding on Phase 1 in a three-phase project to support Northrop Grumman NRO mission at Vandenberg Space Force Base. Our teams went there to determine what needs to be accomplished to bring that pad to an operational status; what needs to be repaired; and what needs to be updated. We are now competing for Phase Two – to go out and repair what needs to be fixed. We will also compete for Phase Three, which is the actual launch operations. If we are successful in garnering all three phases, then our team, the Commonwealth of Virginia Space team, will travel to Vandenberg whenever launches are required and actually execute the launch operations there as well as our East Coast pads – a single team from Virginia doing both. Our employees are nationally recognized for their expertise to operate launch pads for Minotaur launches, and we are very excited to be part of something that has never been done before. International companies have reached out to us, and we have had to bring on our own IT expert to make sure that we stay within the laws on international arms and trafficking regulations.

Clayton Turner – NASA Langley Research Center

Summary of 2021 Aero Accomplishments

Transonic Truss-Braced Wing: We've been working on developing this technology for a number of years, which our commercial companies are looking to implement. This innovative wing design was tested with interest in reducing drag and increasing fuel efficiency.

The X-59 eXternal Vision System: tested cockpit display on NASA aircraft and delivered to Lockheed Martin for installation into the X-59 to enable supersonic flight over land and to get you there faster.

Advanced Air Mobility: tested all-electric vertical take-off and landing (eVTOL) aircraft in Langley's Flight Simulation Facilities and with Joby Aviation in California to help incorporate new kinds of aircraft into the National Airspace System. Then we can do community response tests, and businesses can start building and flying these things over land. For airlines and manufacturers, this is a great potential and opportunity for growth. The expertise is already in place, and we need to grow more of that expertise. We have the ability to grow our infrastructure by focusing on education K to 12 to college.

Summary of 2021 Space Exploration Accomplishments

1. Mars entry, descent, landing instrumentation 2 (MEDLI 2) is able to collect data and demonstrate landing large, human-scale payloads on the Martian surface. We need to understand that what we've done up to this point uses technology that was developed from the Viking days. Now we need to do it on a much larger scale.
2. Navigational Doppler Lidar (NDL) Commercial Lunar Payload Services (CLPS) Flight deliveries:
    a. Technology to allow companies and space craft to precisely land at their destinations and put people on Mars and on the Lunar surface using our landing technology. We go back to the lunar surface, not to visit, but live and work. The lunar surface will be our stepping stone to Mars, going deeper into the solar system and at warp speed deeper into the galaxy

3. Space Launch System (SLS) and Orion: successful testing of Orion Crew Module at Langley's Landing and Impact Research Facility, Hydro Impact Basin
4. Mass simulator for Orion built at Langley successfully integrated and tested on top of SLS (Space Launch System)
5. Launch abort system developed and delivered for Artemis I launch.

2021 Science Accomplishments

1. Air quality research – ozone hotspots mapping
2. Energy budget findings and mission development:
    a. NASA Langley and NOAA researchers have found that Earth's energy imbalance approximately doubled during the 14-year period from 2005 to 2019.
3. Lidar Contributions to ACCP – understanding the interactions of Aerosols, Clouds, and Convective Precipitation:
    a. The space-borne lidar is the flagship instrument for the Atmosphere Observing System (AOS) mission architecture. We want to understand what is going on in the atmosphere, and our air quality measurements provide a reliable source of data that is leveraged across the world. Our data center provides collected data that we provide to policymakers, scientists, and to everyone so that we can all understand how our home planet works. It also helps us gain understanding as we explore the rest of our solar system, and in time, go deeper into this galaxy.

The magic in the sparkle that you see today is because somebody put in the work 10 to 20 years ago. We're working right now for what we are going to be able to do in 10 and 20 and 30 years.

2022

1. Artemis I Launch – first flight of the agency's super heavy-lift launch vehicle and the first flight of the Orion multi-purpose crew vehicle
2. CLPS – astrobotic will carry 11 payloads to a larger crater on the moon; intuitive machines will carry six payloads to a scientifically intriguing dark spot on the moon
3. Low-earth Orbit Flight Test of an Inflatable Decelerator (LOFTID) Launch – large deployable aeroshell technology in conditions relevant to many missions
4. OFT-2 Launch – second unmanned orbital flight test of the Boeing Starliner spacecraft
5. TEMPO Tropospheric Emissions: After its scheduled launch in 2022, the TEMPO instrument will measure air pollution that can damage human health and the environment
6. Athena launch (no earlier than December 2022) is a potentially game changing approach to enabling observations via an innovative cellular/conformable capability.
7. Prediction of Worldwide Energy Resources (POWER) enables renewable energy development and efficiency technologies while contributing to sustainable energy strategies. How do we best use the technologies and resources we have? Our research has developed technologies that we can use to predict where to best put those resources for energy generation.

Note: We are authorized to go up to a higher level of capacity, but we're doing that in a very strategic way to make sure we're keeping people safe and focused on those mission critical activities and not going full up to our achievable capacity limits.

NASA is Go, and the 'U.S. is Go' to reach new heights to reveal the unknown, for the benefit of humankind.

Mark Sickles: Any inside scoop on the James Webb telescope?

Clayton Turner: the first deployment on the heat shield is furthest from the telescope, and this will take a number of weeks and months to completely deploy. It's a very careful and meticulous process. And FYI, I'm not a Twitter expert, but the Perseverance Rover on Mars tweets back to you.

Ted Mercer: What about the supersonic airplane that you guys are testing and developing? United Airlines is already advertising that they're going to be flying a supersonic airplane and doing a marketing campaign around it.

Clayton Turner: I'm familiar with their marketing campaign that says "I'm going to get you from where you are to where you want to be faster." But I'm going to get you there and be friendly to the planet and keep you comfortable going there. Right now, we're doing the work for commercial hypersonic and we're working with strategic partners – this is part of our future so there is an investment there.

David Pierce – NASA Wallops Flight Facility

"We don't make it, but we make it better at Wallops." We are a unique national asset supporting both NASA and the nation, and this is an exciting time for aviation and space and exploration in the Commonwealth. Wallops is doing its part. 2021 was a big year for the Wallops team and 2022 will be even bigger. By 2030, we may be seeing 25-30 launches each year. We are working with NASA Langley, General Mercer, other federal partners and regional partners on the Eastern Shore to make Wallops all that it can be.

We've been working within a pandemic, keeping our people safe, and what we accomplished was really historic in terms of how busy our launches were and the science missions that we support on behalf of NASA. We are managing about 30 small satellite missions right now, and doing significant institutional projects that are advancing the capability of Wallops. We have a brand new fiber optic bundle going to the island to create a communication path to support all these launches General Mercer talked about. We just completed a $25 million beach replenishment project to safeguard our $1.5 billion in assets on Wallops Island; and we're installing brand new antennas to be able to ensure a high data rate of communication with satellites.

We are also looking at the next generation by establishing new agreements with Old Dominion University, the Eastern Shore Community College, and the University of Maryland Eastern Shore. With these agreements, we're going to increase our internships and our connections in the local community to inspire and grab students at the high school level. We want to promote private, public, and academic partnerships to help provide hands-on activities and internships to attract that highly skilled and diverse local workforce that Clayton mentioned and work with our regional partners to promote space tourism.

Our Wallops Contractors Association recently awarded $15,000 in scholarships to Eastern Shore Community College and the University of Maryland Eastern Shore. Our plans for Wallops is to enable aerospace on the shore and beyond, and, along with General Mercer, enable Wallops as the launch range of the future for land, sea, and air space capabilities leveraging our infrastructure at NASA and the Commonwealth to integrate our launch range and airfields with UAS. We have a number of small launch companies that want to come to Wallops' launch site working with Virginia Space.

Both suborbital and orbital launches will continue to increase over the next eight years – amazing expansion of our capability of supporting launch. We are a unique national asset that is fulfilling the nation's promise of supporting science, advancing technology and exploration, and developing that next generation of scientists and engineers that will lead the nation's space program for years to come.

David Bowles: Virginia Institute for Spaceflight & Autonomy (VISA)

Our tagline is "Igniting Growth, Talent and Innovation on the Eastern Shore and Hampton Roads." We are chartered to grow the spaceflight and autonomy sectors in the region and across the Commonwealth as part of Old Dominion University. We have been in existence now for a couple of years thanks to funding from the General Assembly that put this into the 2020 budget. Our focus is to build partnerships, develop a talent pipeline, sponsor research and technology, and leverage expanding space facilities and growing capabilities to support advances in satellites and autonomous systems, the sensors they carry, and the data they produce.

A memo of understanding (MOU) has been signed with the Unmanned Systems Center at VIPC to provide regional leadership in southeast Virginia for UxS business initiatives across multimodal domains.

1. We co-sponsored the UxS Industry Summit in Norfolk in July 2021 -- attended by more than 100 companies -- that focused on port safety and security in emergency response, and we obtained $100,000 from VIPC to competitively select/conduct demonstration projects in 2022.
2. We have also been awarded a $100,000 grant from Region 5 GO Virginia (Growth and Opportunity) for a UxS route/corridor network study
3. VISA has partnered with the City of Norfolk to develop Maritime Autonomous System Test sites that have received a $394,000 grant as part of Virginia Port Host Communities Revitalization Fund. Norfolk is providing commercial boat ramps to be used for commercial unmanned systems access point – the first one being at the Willoughby Spit boat ramp.
4. We are developing an Autonomous Systems Regional "Strategic Playbook." The first draft has been completed.

Virginia Space has requested us to lead the mission formulation/execution of a 6U Cube-Sat with a targeted launch date of summer 2022 and the NEW Virginia Space "Cube-Sat" program. Plans for a sustainable business model are currently under development. We are helping to guide payload developers to manifest/develop their payloads to ensure mission success and taking data not just from small satellites, but from all sources of data drones and ground-based sensors and putting all of that in what we call the Virginia Open Data Cube. We are partnering with NASA, universities, and private companies to put together this cloud-based platform that will provide easily accessible and useable data from multiple sources (satellites, drones, ground-based sensors, etc.) and applicable to a wide spectrum of issues for more informed decisions/solutions.

We are also requesting $10 million in the Governor's budget for the next biennium (includes ODU's base funding of $10.1 million each biennium) to be budgeted for VISA to establish a Translational Research and Business Innovation Center that provides technical assistance, business and entrepreneurial support, and workforce training. VISA will ensure that all types of missions will be solicited and planned for education – K-12, community colleges, and undergrad/grad universities.

Mary Sandy – Virginia Space Grant Consortium

The FAA has awarded us $474,000 for Aviation Workforce Development that is an 18-month project aimed at pre-college students and teachers. Partners include: Virginia Department of Education; Blue Ridge Community College; Averett University; Thomas Nelson Community College; Virginia Tech; Virginia Department of Aviation; Part 171 private flight schools – Aviation Adventures, Rick Aviation, Heart of VA Aviation, Star Flight Training and Blue Ridge Aviation; and higher education faculty consultants, high school master teachers, and business/industry personnel representing Virginia's aviation and UAS employment sectors.

The goal is to prepare high school students for the workforce as commercial aircraft pilots and unmanned aircraft systems (UAS) pilots and operators. Project components:

1. Pathways Flight Academies – flight training with 20 additional students for summer 2022
2. Online private pilot ground school for 100 students, awarded four college credits
3. Eleven flight training scholarships for 40 hours of flight training.

Continuous support of the VA Department of Education to develop the high school CTE UAS course, "Introduction to Unmanned Aircraft Systems;" develop 12 modules; train and support 20 teachers across the Commonwealth to obtain FAA Remote Pilot Certificates. Teachers receive $2,500 in drone and support materials.

In response to the national shortage of airline pilots, VSGC is coordinating flight academies for high school students statewide to allow students to explore the career field of aviation while learning to fly. Forty-five students to be accepted due to our recent FAA grant. This is a residential, 12-day program for summer 2022.

Virginia Aerospace Day is February 2, 2022 to include an evening reception, exhibits and a UMS Forum prior to the reception and led by Tracy Tynan, Virginia Unmanned Systems Center of the Virginia Innovation Partnership Corporation (VIPC).

UxS stakeholders meeting is February 2, 2022 with presentations from Sen. Jen Kiggans, Del. Subramanyam, Chris Sadler, John Eberhardt, and Andy Alden.

Review of the BLAST program – Building Leaders for Advancing Science and Technology

1. Governor's budget increases funding of $182,000 in each year of the biennium
2. Current budget is $218,000 with no increase in the state budget since 2013 inception of BLAST
3. Additional funding would allow us to offer up to five sessions, serving 400 students each year versus 240, with the potential to add another university site.

Virginia's aerospace sector is asking policymakers to:

1. Support the Governor's budget funding of $182,000 per year of the biennium for the VSGC to expand BLAST
2. Support the Governor's introduced budget for the next biennium that includes an increase in ODU's base funding of $10.1 million, a portion of which will be used to expand VISA with a Translational Research and Business Innovation Center at Wallops to provide technical and entrepreneurial support to grow an ecosystem of commercial enterprises and serve as an innovation catalyst for the cube-sat, advanced air mobility, smart infrastructure, and maritime and offshore wind energy ecosystems.
3. Support removing the sunset provision to the Aviation Parts and Supplies Tax Credit. Business opportunities and revenue have expanded since the tax credit was created, enabling new jobs and capital investment. Real industry growth will not be generated until industry knows the tax credit is a permanent part of the Virginia Code. Allowing the credit to expire will immediately weaken Virginia's competitiveness causing a loss in jobs and planned expansion or investment.

Bud Oakey: There are 36 states now in the U.S. that have the aviation parts and supplies tax credit. Every state around Virginia has this credit, which the legislature passed into law in 2017 (it was enacted in 2018 and has a sunset provision for 2022). If this tax credit goes away, we will have no hope of

landing any type of major maintenance repair and overhaul facilities in the Commonwealth. We have asked for legislation to repeal the sunset provision and to make this a permanent piece of Virginia's toolbox.

Regarding MRO issue: Reliever airports (Manassas and Leesburg) provide the strongest support to Dulles and Reagan. Companies such as Northrop Grumman and other large UAS design companies that develop, research and test want more rural areas and that benefits smaller rural Virginia airports. Virginia is also unique because it is centrally located on the Atlantic seaboard, and its airports have some unique capability to expand that no one else does. That provides us with a competitive environment, which are the tax incentives and having a ready, able, and proactive workforce that can go into these facilities that meets the demand.

Del. Mark Sickles: The good part is that we're doing better than all the other states, but the bad part is that we are in a competition for the long run, and we cannot let up or we will fall behind.

Bud Oakey: And whether it's operating a foot off a blade of grass or it is 'Mars Go' and beyond, these are our long-term, higher paying jobs and it does not matter whether these jobs are skilled labor or professional PhD graduates, these are the long term. They are not going away, and our job is to collect them here in Virginia.

Del. Mark Sickles: Thank you for everyone's time today. Let's work together as we go forward in 2022 and make these things happen – it will be a great year for aerospace.