



THE CLIME



ManTech Partners with Semper Sky

During Ferguson "Juice" Dale's time as a uniformed military service member, he managed the Publicly Available Information (PAI) portfolio and secured funding against opposition, which laid the foundation for future contracts. The relationships he built through his professionalism, enthusiasm, and results-driven execution style led to a multi-year contract for Semper Sky,

Accordingly, we are excited to announce that ManTech has partnered with Semper Sky, LLC in support of the TITUS Program. This collaboration reflects ManTech and Semper Sky's commitment to take on complex challenges with a mission-driven approach.

As the prime contractor, ManTech, will ensure the successful execution of all contract work while maintaining compliance with small business and socioeconomic requirements. As a partner, Semper Sky will be included in ManTech's growth strategy to bring new clients and work to the contract. Semper Sky will also be actively involved in key reporting, forecasting, and ensuring that contract deliverables are met.

Semper Sky is ready to grow with ManTech to strengthen our partnership and drive meaningful progress within the TITUS Program.

Fellow Ecopreneurs,

Welcome back to The Clime! It's been a while since our last issue, but we've been working hard and have plenty of updates and good news to share. Semper Sky has reached several important milestones and made significant strides.

Recently, we led an infrastructure panel for the American Institute of Aeronautics and Astronautics (AIAA) and the Institute of Electrical and Electronics Engineers (IEEE) at AVIATION 2024 in Las Vegas, Nevada. This opportunity allowed us to influence sustainable aviation policy and help shape the future of aviation in a more environmentally conscious direction.

We also launched our Sustainable Island Challenge, which tasked college students with designing eco-friendly solutions for Ocracoke Island, NC. The winning team presented their designs at a major forum, capturing the attention of Ocracoke Commissioner Randal Mathews, who is now eager to partner with Semper Sky to enhance the island's sustainability.

Our internship program continues to thrive, with our STEMterns advancing to impressive roles. We've established connections with Hampton Roads, Cape Cod, and Pamlico Community College, all interested in conducting sustainability assessments like the one we completed for Ocracoke. We're excited for future collaborations, including one with global sustainable energy leader Søren Hermansen.

In addition to honoring our existing contracts, we've secured new opportunities and funding. With the TITUS government contract in hand, we're preparing to expand our workforce. We're also continuing our clime with plans for a sustainable aerospace laboratory and the development of technical manuals for eVTOL operations.

In this issue, we'll dive deeper into these topics and offer some eco-friendly advice for the fall. We'll also introduce some S.T.V.D.S. (pronounced studs) and the members of our newly formed Sustainable Infrastructure Subcommittee.

Thank you for sticking with us as we push the boundaries of sustainable aerospace and infrastructure innovation. Stay tuned for more.

Keep Climing,

Ferguson "Juice" Dale



Industry Underdogs:

Parallels Between Health Food and Sustainable Aviation

On the first day of the 2024 Aviation Forum, Ferguson “Juice” Dale, Semper Sky’s owner, moderated a panel called “Navigating the Future.” During his introduction, Juice made an interesting comparison between two seemingly unrelated industries: health food and sustainable aviation. He highlighted the similarities in their struggles against larger, more established industries: fast food and fossil fuel-based aviation.

Juice explained that the health food industry faces a tough competitor: fast food. Fast food chains attract customers and make unhealthy choices seem appealing by using clever marketing strategies like celebrity endorsements. Even though health experts and documentaries like *Supersize Me* have raised awareness of the risks, fast food remains popular. The industry is dominant because fast food companies spend millions on marketing and have a vast infrastructure in place. Their ubiquitous presence makes choosing fast food easy and familiar.

Similarly, sustainable aviation is up against the fossil fuel industry, which has powered energy needs for over a century. Fossil fuels have built widespread infrastructure and are supported by strong marketing. “Fossil fuel companies have

fulfilled their corporate responsibility by serving as the backbone for modern energy consumption,” said Juice. “But the time has come for this planet’s occupants to uphold our personal responsibility to meet the needs of the present without compromising the ability of future generations to meet their own needs,” he said.

Juice pointed out that transitioning to sustainable aviation is like switching from fast food to a healthier diet. He reiterated that for the health of our planet, the aviation industry needs to reduce its reliance on fossil fuels and welcome sustainable energy solutions. Similar to how people are encouraged to eat healthier, aviation needs to diversify its energy sources to be more resilient. “Breaking the fast food paradigm in aviation is no small feat. It requires a collective effort to innovate, invest, and ultimately change our habits,” Juice said, acknowledging the difficult transition. “It requires not just technological advancements, such as electric- and hydrogen-powered aircraft, but also a concerted effort to change ingrained habits and perceptions. A balanced approach is the key to transitioning smoothly while maintaining our respective lifestyles.”

Juice concluded his introduction by encouraging the audience to take inspiration from the success of fast food marketing and infrastructure. He proposed that applying those same strategies to promote sustainable aviation would create a healthier future for Earth and the aviation industry. He said, “The stakes are high, but the rewards are well worth the effort.”

You can watch the full introduction and panel discussion [here](#).

“The sustainable aviation community is akin to dietitians promoting their message that is crucial for [the] long-term health of our planet, but lacks the same level of funding and marketing prowess as the fossil fuel industry.”



SIS SHAPES THE CONCEPT OF SUSTAINABLE INFRASTRUCTURE



During AVIATION 2023, the Electric Aircraft Technology Symposium (EATS) committee chair asked Semper Sky to lead an infrastructure panel for AVIATION 2024. Semper Sky's owner, Ferguson "Juice" Dale, accepted the invitation and helped form the Sustainable Infrastructure Subcommittee (SIS) to take on the task.

SIS was established to explore and implement sustainable infrastructure, specifically in the realm of electrified aircraft. Committee members included STEMterns and stakeholders volunteering their expertise across land, air, sea, space, and cyberspace domains. Nicole Valentine, President & CEO of Genesis Aerospace Solutions, played a major role in establishing the subcommittee, leading strategic operational execution, and encouraging continuous input from the team.

The committee took on the challenge of adapting infrastructure to the unique needs of sustainable flight operations, ensuring environmental stewardship and energy resilience in the process. SIS had four objectives to guide decision-making: identifying infrastructure best practices for sustainable technologies tailored for electric aviation; evaluating the operational, environmental, and economic benefits of these technologies within real-world aviation scenarios; developing actionable strategies that can be implemented to advance domestic and international adoption of sustainable aviation; and incorporating community and educational outreach into the process.

SIS's first task was to define "sustainable infrastructure." The group agreed on a definition: "the development and maintenance of resilient, energy-efficient, and low-impact systems across land, air, sea, space, and cyberspace, integrating government regulations, industry innovations, academic research, and laboratory advancements to ensure environmental, economic, and social sustainability for present and future generations." They also focused on community engagement and worked toward standardizing sustainable aerospace practices to ensure infrastructure remains adaptable and current.

When the coordination of experts proved to be complex, as each domain brought unique priorities and constraints, SIS instituted the Design Reference Mission (DRM) for simplification. The DRM served as a standardized framework enabling stakeholders to make critical decisions, such as the dimensions of a given structure, while preserving the flexibility needed for innovation.

Moving forward, the Sustainable Infrastructure Subcommittee will continue improving its strategies, prioritizing the impact of new technologies on people and the environment. Successfully integrating sustainable practices requires listening to community feedback and ensuring public support.

DEFINITIVE COLLABORATION

The dedicated members of Semper Sky's Sustainable Infrastructure Subcommittee (SIS) bring expertise across land, air, sea, space, and cyberspace. With contributions from stakeholders and STEMterns, they are establishing clear sustainability goals for electric aircraft. Let's meet them.



Ferguson "Juice" Dale
Semper Sky
Owner

Juice's journey from U.S. Marine Ammunition Technician to Electronic Countermeasures Officer gives him a strong blend of discipline and innovation. At Semper Sky, he uses his extensive military and academic aviation experience to lead the integration of sustainable practices across various infrastructures.



Nicole Valentine
Genesis Aerospace Solutions
President and CEO

Nicole leads cutting-edge advancements in defense systems for drone detection and countermeasures. With over 24 years in aviation, she brings expertise in advanced air mobility, unmanned traffic management, and airspace operations to drive innovative aerospace solutions. Nicole's efforts were integral to the formation and success of SIS.



Rex J. Alexander
Five-Alpha
President

With a legacy in aviation spanning four decades, Rex's expertise extends from piloting to intricate vertical-flight infrastructure development worldwide. A commitment to safety, efficiency, and environmental stewardship shapes his insights into sustainable aviation infrastructure.



Hugh Curtright
ManTech International
Urban Planner

Hugh earned a degree in Urban & Regional Development and studied global cultures and infrastructures as a Marine Intelligence officer for 30 years. Now Hugh applies insights from his studies to share infrastructure hacks for developing more sustainable and efficient cities.



Amy Geschwell
Semper Sky
Info. System Security Engineer

Amy's expertise in cybersecurity and cyber policy stems from her MS in Computer Science. She has a background in both the technical and strategic aspects of cyberspace, blending a deep understanding of computer systems, network security, and cryptography with insights into the legal and ethical dimensions of cyber operations.



Christopher "Pink Sheets" Lowe
US Marine Corps
Maritime Space Officer, Major

As a U.S. Marine Major and Maritime Space Officer, "Pink Sheets" is a sustainable space infrastructure expert. His deployments as a Marine Aviation Command & Control Officer and Navy Surface Warfare Officer, brings knowledge of government processes and contribute to his knowledge of ethical and environmentally compatible advancements.

Eco-Friendly Solutions for All

UVA's S.T.V.D.S. Nail the Sustainable Island Challenge

Semper Sky's Sustainable Island Challenge invited college students to design eco-friendly solutions for Ocracoke Island, NC. The challenge focused on creating sustainable air, land, sea, space, and cyberspace infrastructure for the island. Student teams competed by presenting innovative ideas to a review board, which included public participation. Sydney Bakir, Savannah Hafer, Defne Savas, Taka Suzuki, and Aiden Winfield—a group of University of Virginia students collectively known as S.T.V.D.S.—accepted the challenge and were among the seven competing teams.

While Ocracoke Island is known for its beautiful landscapes and unique biodiversity, the island is also susceptible to the impacts of climate change and natural disasters. S.T.V.D.S. focused on making the island more self-sufficient with energy production and designed solutions to reduce greenhouse gas emissions and preserve Ocracoke's ecosystem.

One of the team's main ideas was to improve Ocracoke's solar energy system. The island currently relies on an underwater power cable from mainland North Carolina, with additional support from a small microgrid of Tesla Powerpacks. However, the island's energy use is much higher than what the microgrid can handle in emergencies like hurricanes. S.T.V.D.S. proposed increasing solar power generation and expanding energy storage capacity by adding more Tesla Powerpacks. The suggested upgrades would help Ocracoke become less dependent on the mainland, especially during power outages caused by storms.

Another proposal included using bioacoustic monitoring and satellite data systems to track marine life and assess the health of Ocracoke's coastal waters. The systems would allow researchers to detect changes in marine ecosystems and intervene to protect biodiversity. Using existing satellite technology could also improve weather forecasting to better respond to storms and extreme weather events. S.T.V.D.S. also suggested naturally preventing erosion by creating a living shoreline using oysters. They reasoned that using oysters would be ideal because doing so would stabilize the coastline and boost local oyster farming, which contributes to environmental health and the economy. S.T.V.D.S. found that hybrid ferries would reduce emissions and improve the island's ability to handle tourism while remaining eco-friendly. They addressed the need for more sustainable transportation with their proposal to upgrade the island's ferry system to hybrid-electric ferries.

Finally, to foster a sense of community and keep residents informed, S.T.V.D.S. suggested creating a digital community board that would track the island's energy usage, fish populations, and other important data. The digital board would also help residents make smarter and more sustainable decisions and serve as an emergency information hub during natural disasters. S.T.V.D.S. aimed to balance sustainability with residents' well-being, environmental protection, and compliance with local, state, and federal regulations.

S.T.V.D.S. used the Sustainable Island Challenge to envision an island that is prepared for the future while preserving its natural beauty. With their advanced and original proposals and collaborative efforts, they won the challenge. The team earned a Semper Sky internship and received a trip to Las Vegas, where they presented their designs at the 2024 AIAA AVIATION Forum. Their efforts also garnered interest from Ocracoke's Commissioner, Randal Mathews, who is interested in partnering with Semper Sky to enhance the island's sustainability.



(L to R) Taka Suzuki, Defne Savas, Sydney Bakir, and Aiden Winfield
Valued team member Savannah Hafer is not pictured as she was unavailable.

The winning team, S.T.V.D.S., received a trip to the 2024 AIAA AVIATION Forum in Las Vegas. There, they presented their designs and participated in Semper Sky's infrastructure panel discussion as STEMterns.



Juice Dale, Defne Savas, Sydney Bakir, Aiden Winfield, Savannah Hafer, & Taka Suzuki

Juice and S.T.V.D.S. listened as Savannah spoke during the infrastructure panel discussion.

S.T.V.D.S.: Semper Sky's STEMterns Proved Their Mettle

In March 2024, Semper Sky presented its Sustainable Island Challenge, which invited college students to design eco-friendly solutions for Ocracoke Island, NC. Sydney Bakir, Savannah Hafer, Defne Savas, Taka Suzuki, and Aiden Winfield, a team of University of Virginia students, accepted the challenge and won. Their prize included an internship with Semper Sky. The group is collectively known as S.T.V.D.S., which is an acronym using each member's first initial. S.T.V.D.S. is stylized with a turned A and pronounced "studs." Damon Smithson, a rising senior at Loudoun County High School in Leesburg, Virginia, joined the group in June 2024. Together, they became our newest STEMtern class.

Accompanied by the Internship Coordinator Margo Cianchetta and guided by Dr. Marty Bradley, our STEMterns participated in eight two-hour virtual class sessions. They listened to lectures, engaged in discussions, completed assignments, and offered feedback. Their eight-week journey included an immersive experience at the 2024 AIAA AVIATION Forum in Las Vegas. At the forum, the UVA students presented their sustainable island solutions. The STEMterns also participated in Semper Sky's Sustainable Infrastructure Subcommittee.

Juice lauded the STEMterns as "rock solid" and said they were an impressive team.



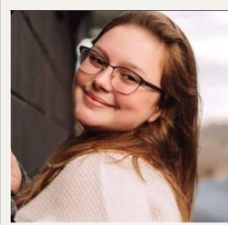
Aiden Winfield, Sydney Bakir, Taka Suzuki, Defne Savas, and Savannah Hafer attended the 2024 AIAA Aviation Forum.



Damon Smithson shared a moment with STEMtern guide Dr. Marty Bradley



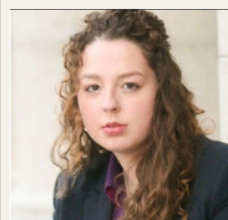
Semper Sky STEMterns and SIS members gathered for food and conversation in Las Vegas.



Sydney Bakir

University of Virginia Aerospace Engineering

Sydney is a fourth-year student at UVA, majoring in Aerospace Engineering and minoring in Engineering Business. She is originally from Colonial Beach, VA and she works at NSWCCD in the summer. In her free time, she plays volleyball and soccer, reads, and takes graphic design commissions.



Savannah Hafer

University of Virginia Aerospace Engineering & Materials Science

Savannah is a fourth-year student at UVA, studying Aerospace Engineering. She plans to attend law school to become a patent lawyer. She also interned with Dominion Energy in the Power Generation Regulatory Committee. Savannah is an Arizona native who spends most of her time going to the gym, backpacking outdoors, playing rugby, or reading in the sun.



Defne Savas

University of Virginia Aerospace Engineering & Materials Science

Defne is a fourth-year student at UVA, majoring in Aerospace Engineering. In addition to her interest in all things air and space, she's also a huge fan of painting and spending time in nature.



Damon Smithson

Loudoun County High School Senior

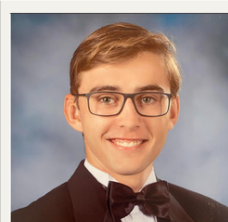
Damon attends high school in Leesburg, Virginia. He is the captain of his ROTC program and a leader on the Future Business Leaders of America team. He is also on the varsity baseball team. Damon has been involved in the aerospace industry for about three years, volunteering for Xelevate in Lucketts, Va.



Taka Suzuki

University of Virginia Aerospace Engineering & Materials Science

Taka is a senior at UVA. He is interested in the development of a radiative thermal barrier coating for high temperature environments. At UVA, Taka works in the Aerospace Research Lab. He is a member of Wadley Intelligent Processing Materials Group, Computational Thermodynamics and Kinetics Group, and UVA Rocketry.



Aiden Winfield

University of Virginia Aerospace Engineering & Materials Science

Aiden attends UVA where he is majoring in Aerospace Engineering and minoring in Computer Science. In Summer 2024, he worked with Hush Aerospace in Virginia Beach to design and build various drone models.

FALL INTO SUSTAINABLE LIVING

The autumnal equinox brings a season of balance and harvest. In autumn, the colorful leaves and ripened crops indicate a time of transformation as we adapt to longer nights, cooler temperatures, and the changing environment. Similar to autumn, sustainability requires balance, change, and reaping. You can embrace the shifting season and greener living by finding harmony between your needs and the planet's resources. Here's how you sustain yourself and the Earth this fall:



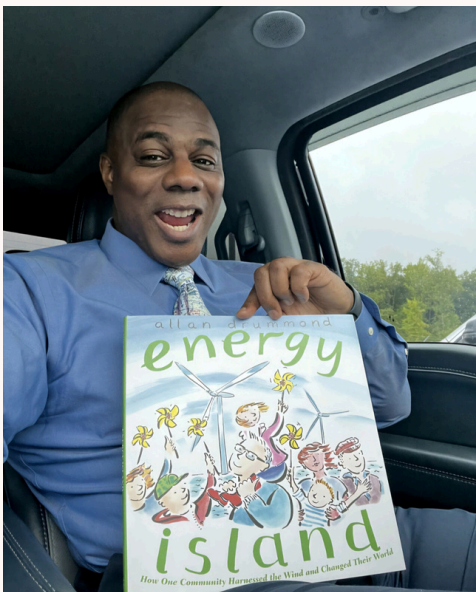
Fall brings fresh seasonal produce like apples, pumpkins, pomegranates, and squash. When you're hungry for harvest-time treats, choose locally grown goods. Opting for local and organic foods supports local farmers and small businesses, while also reducing the carbon footprint associated with food transport. Remember to save the seeds from your fruits and plant them for future harvests. Growing your own produce can help eliminate the use of harmful pesticides, introduce biodiversity, and save money on food costs.

After the equinox, fall days get shorter. Earlier darkness increases energy consumption as people rely on additional light sources for more hours each day. To reduce your impact, let sunlight in and take advantage of natural light during the day. Switch to energy-efficient lighting to illuminate your home in the evenings. Swap your CFL or incandescent bulbs for LED bulbs, which are more energy-efficient and produce fewer greenhouse gases. They also last longer. Remember to turn off any unnecessary lights—doing so will decrease both your energy bill and your emissions.



When you prepare your fall wardrobe for warmth and seasonal aesthetics, keep your beloved items from previous years. Doing so saves money and reduces overproduction emissions. Donate unwanted items to a charity or take them to a thrift shop. Try purchasing secondhand items, as thrifting recirculates clothing and reduces landfill waste. Also, consider buying locally and avoid using delivery services for fast fashion. Remember to buy items made from recycled or Earth-friendly materials when possible. They are less toxic to people and the environment.

As fall weather transitions from summer's warmth to winter's cold, balancing heating and cooling sustainably can be challenging. To maintain a comfortable temperature in your home while saving energy, invest in a smart thermostat. Program it to automatically adjust the temperature based on your schedule—lower the temp when you're away and raise it before you return. Remember to clean or replace your filters regularly to keep your HVAC system running efficiently. Well-maintained systems use less energy.



ICONIC EARTH DAY COLLABORATION

We are looking forward to our upcoming collaboration with Søren Hermansen, who is a global leader in sustainable energy from Samsø, Denmark. Søren is renowned as the driving force in the transition towards 100% renewable energy for Samsø, the Danish island where he was born and raised. He will join Semper Sky on Earth Day 2025 to speak to Stafford County students and participate in the Ocracoke assessment. Søren's involvement adds international credibility to our efforts and has sparked interest from other regions.

Juice jokingly shared that he hopes Søren will sign his copy of Allan Drummond's *Energy Island*. Inspired by Søren's leadership and efforts, the children's book tells how the citizens of Samsø reduced their carbon emissions by 140% and became almost completely energy independent.