AVIATION WEEK
PROGRAM EXCELLENCE AWARDS

INTELLECTUAL PROPERTY

(This section must be signed)

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Thank you for participating,

Gregory Hamilton
President
Aviation Week Network

Acknowledged, agreed, and submitted by

Colt Seman

Nominee's Signature _____ Date 6/27/2025

Nominee's Name (please print): Colt Seman

Title (please print): CEO

Company (please print): Airion Health, LLC

NOMINATION FORM

Name of Program: AIRUS

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☒ Customer Approved

- Date: 6/10/2025
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☐ Supplier Approved (if named in this nomination form)

- Date:
- Supplier Contact (name/title/organization/phone):

PLEASE REFER TO PROGRAM EXCELLENCE DIRECTIONS AS YOU COMPLETE THIS FORM.

SECTION 1: EXECUTIVE SUMMARY

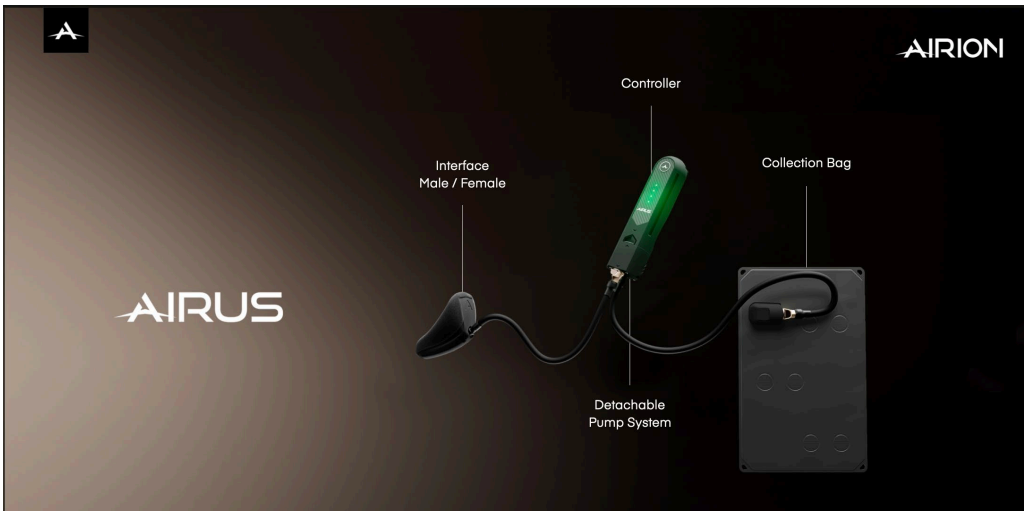
Make the Case for Excellence

Value: 10 points

Use 12 pt. Times Roman typeface.

What is the vision for this program/project? What unique characteristics and properties qualify this program for consideration?

[LIMIT YOUR NARRATIVE TO THIS PAGE.]



Airion is proud to nominate our next-generation aerospace program under the OEM/Prime Contractor System Design and Development category, showcasing our leadership as Prime and OEM in delivering innovative solutions to meet emerging defense and national security requirements. The AIRUS (Advanced Inflight Relief Universal System) program was created in direct response to a long-standing and unaddressed challenge faced by U.S. and NATO aircrew: the absence of a reliable, safe, and mission-compatible bladder relief system. For decades, pilots—both male and female—have been forced to choose between tactical dehydration or using outdated, uncomfortable, and failure-prone solutions such as piddle packs and adult diapers. Tactical dehydration remains a serious operational risk, as it reduces G-tolerance, impairs cognitive performance, and increases the likelihood of physiological failure mid-flight. The risks are even more pronounced for female aviators, who historically have had no systems designed specifically for them that do not require disconnection from flight gear or ejection seat harnesses.

AIRION's development of AIRUS was born from winning the U.S. Air Force's "Sky High Relief" Challenge through AFWERX—an initiative seeking a next-generation bladder relief system to replace legacy options. Rather than modify existing designs, AIRION started from zero, working closely with active-duty male and female fighter pilots, aerospace physiologists, and physicians to completely rethink what a bladder relief system should be. The result is AIRUS: a discreet, form-fitting, and Safe-to-Fly certified system engineered to be worn for long-duration sorties, across high-performance aircraft, with extreme comfort and reliability.

Built with flexible, medical-grade materials and powered by a proprietary micro-pump system, AIRUS prevents leaks, integrates seamlessly with survival gear, and allows pilots to remain fully mission-ready without needing to disrobe or disconnect. This is not a concept—it is a fielded, operational system currently being procured by multiple branches of the U.S. military and ready for NATO-wide deployment.

DIRECTIONS

- **Do not exceed 10 pages in responding to the following four descriptions**.
    - Allocate these 10 pages as you deem appropriate, but it is important that you respond to all four sections.

- DO NOT REMOVE THE GUIDANCE PROVIDED FOR EACH SECTION.

- Use 12 pt. Times Roman typeface throughout.

- Include graphics and photos if appropriate; do not change margins.

SECTION 2: VALUE CREATION

Value: 15 points

Please respond to the following prompt:

➢ **Clearly define the value of this program/project for the corporation; quantify appropriately**

AIRUS has positioned AIRION as a leader in rapid-deployment biomedical defense solutions. The program accelerated from TRL-1 to TRL-9 in just 24 months, resulting in over 100 SKUs fielded on GSA. The system's modular design and SLS manufacturing platform allow for scalable, cost-efficient growth across both U.S. and international defense applications.

➢ **Clearly define the value of this program/project to your customer**

AIRUS solves a critical operational risk by eliminating the need for tactical dehydration—improving pilot safety, G-tolerance, and sortie effectiveness. Feedback from the U.S. Air Force confirms that AIRUS increases hydration compliance, enhances comfort, and reduces mission disruption. It enables in-flight urination without unstrapping or removing flight gear, supporting readiness during extended and high-risk missions. Notably, countless female fighter pilots have shared that AIRUS is the first time in over 15 years of flying they've been able to relieve themselves in the cockpit—marking a historic shift in capability, inclusion, and mission readiness.

- **Clearly define the value of this program/project to members of your team; quantify if possible**

The AIRUS program has created high-impact roles for engineers, veterans, and health professionals in a fast-paced, mission-driven environment. Using a Fly-Fix-Fly development approach, team members were deeply embedded in the day-to-day realities of fighter pilots, fostering a culture of empathy, responsiveness, and shared purpose. This direct connection to end users reinforced a core belief across the company: we are here to serve the warfighter and solve real, mission-critical problems. The result was a team-wide sense of ownership and pride, with many experiencing 2x career growth opportunities within just 18 months with hiring more team members and elevating positions with ownership within AIRION the company.

- **Clearly define the contribution of this program/project to the greater good (society, security, etc.)**

AIRUS enhances warfighter safety, mission endurance, and gender equity across the armed services. Its deployment directly supports national security by ensuring pilots and aircrew can endure long-duration sorties without sacrificing hydration, comfort, or cognitive performance, factors critical to both combat effectiveness and survivability. Fighter pilots benefit from uninterrupted focus and improved G-tolerance, while bomber crews and helicopter pilots gain the ability to remain mission-ready during extended operations without the need for disruptive workarounds. For female pilots, AIRUS delivers long-overdue parity by offering a reliable, dignified solution tailored to their needs eliminating the inequities and risks posed by legacy systems.

Beyond Earth, the system has shown promise for future adaptation in space, offering a practical inflight bladder relief option for astronauts in zero-gravity environments.

Looking ahead, AIRION is translating the same advanced fluid evacuation technologies into the civilian healthcare space developing non-invasive, anti-catheter solutions that could transform care for post-op, elderly, and mobility-impaired patients. From cockpit to hospital room, AIRUS is redefining what is possible in fluid management and human-centered design.

SECTION 3: ORGANIZATIONAL BEST PRACTICES AND TEAM LEADERSHIP

Value: 35 points

Use 12 pt. Times Roman typeface

Please respond to the following prompts:

- ***15 points:*** **Describe the innovative tools and systems used by your team, how they contributed to performance and why**

AIRUS was developed using a Fly-Fix-Fly methodology that kept our engineering and medical teams deeply embedded with active-duty pilots throughout every phase of design. This iterative approach created a rapid feedback loop, allowing real-world flight performance to immediately inform lab-based refinements. Each sortie uncovered actionable insights, enabling us to evolve the system quickly to meet operational demands.

To support this agility, AIRION leveraged SLS 3D printing using the Formlabs Fuse 1+ with Nylon 12 and TPU, unlocking the ability to manufacture fully functional, end-use parts without the delay or cost of hard tooling. Over 70 design revisions were implemented and validated under real-world flight conditions—often within days of a test flight.

Additive manufacturing enabled innovations such as NVG-compliant controllers, biocompatible modular fit kits, and hydrophobic-coated components to be prototyped, tested, and fielded on accelerated timelines.

This tight cycle of flight data, engineering refinement, and rapid manufacturing created a culture of responsiveness, accountability, and relentless improvement—ensuring AIRUS wasn't just built for the warfighter, but with them.

- ***10 points:*** **Define the unique practices and process you used to develop, lead and manage people?**

At AIRION, we embraced a mission-first, agile development model rooted in collaboration and service. Small, cross-functional teams of engineers, clinical experts, and veteran USAF advisors worked side by side with frontline pilots to ensure real-world needs shaped every phase of development. Our leadership philosophy emphasized servant leadership, empowering junior engineers to take ownership and co-lead critical milestones. This approach cultivated a culture of trust, initiative, and purpose-driven innovation.

- ***10 points:*** **How did you leverage skills and technologies of your suppliers?**

AIRUS was built through deep collaboration with U.S.-based suppliers, ensuring a secure, domestic supply chain aligned with national defense priorities. From flame-resistant tubing to custom power systems, our vendors were not just providers, they were partners. We worked directly with their leadership and engineering teams to co-develop components that met stringent EMI, airworthiness, and military durability standards. This mission-aligned approach eliminated key sourcing risks, reduced lead times by 60%, and cut material costs by 32%. More importantly, it fostered a shared sense of purpose, suppliers took pride knowing their work directly supported the health and performance of U.S. warfighters.

SECTION 4: DEALING WITH PROGRAM COMPLEXITY

(VOLATILITY, UNCERTAINTY, COMPLEXITY, AMBIGUITY, or VUCA)

Value: 25 points

Use 12 pt. Times Roman typeface

Please respond to the following prompts:

- ***10 points:*** **Describe UNIQUE areas of VUCA faced by your program and why. (Please avoid the issues surrounding Covid-19 pandemic, which was faced by all programs.)**

As a fast-moving startup, AIRION brought a level of speed and innovation that often ran counter to the traditional timelines and processes typical of legacy defense contractors. Coordinating with the U.S. Air Force, an organization accustomed to multi-year development cycles, introduced complexity in aligning expectations, documentation, and certification workflows with our accelerated pace.

AIRUS itself was a uniquely complex undertaking: it's a medically critical system designed to integrate seamlessly across both 4th and 5th generation stealth fighter jets, long-range bombers, and helicopters—each with radically different cockpit geometries, pilot gear configurations, and mission profiles. Designing a single solution that worked reliably across platforms like the F-16, F-15E, F-22, F-35, A-10, and rotary-wing aircraft demanded an extraordinary level of modularity, durability, and system flexibility.

Beyond aircraft integration, AIRUS also had to address one of the most nuanced and overlooked challenges in aviation: human physiology. The system needed to be worn comfortably for hours, under high G-forces, pressure suits, and flight gear without causing distraction, discomfort, or leaks. Meeting that requirement for both male and female aircrew added another layer of complexity, demanding iterative testing with pilots of all body types and flight roles.

At the same time, achieving Safe-to-Fly certification meant navigating concurrent MIL-STD testing, EMI validation, and traceability for every system component, all while staying within aggressive timelines. The convergence of rapid innovation, complex integration, and physiological sensitivity made AIRUS one of the most ambitious and multidimensional defense aviation programs in recent years.

- *15 points:* **Explain how your team responded to these challenges. What changes did you make, what were the results?**

In response to the unique complexity of AIRUS, the AIRION team embraced a Fly-Fix-Fly development model that put engineers side by side with pilots from day one. By embedding our team directly into the operational environment, we created a constant feedback loop between the cockpit and the lab—allowing us to identify problems in real time and implement functional improvements in a matter of days, not months.

This hands-on, agile approach enabled over 189 design iterations across six aircraft platforms without pausing development or disrupting timelines. Our speed and responsiveness allowed us to maintain full momentum while meeting the demanding requirements for Safe-to-Fly certification, all within an accelerated 24-month window.

Perhaps most importantly, the AIRUS program fostered a culture of shared mission and deep accountability. Every engineer, clinician, and technician knew they were solving a real, persistent problem for active-duty warfighters. That clarity of purpose became a unifying force—driving urgency, precision, and pride across the entire team. AIRUS wasn't just built quickly; it was built with intention, empathy, and an unwavering commitment to those who serve.

SECTION 5: METRICS

Value: 15 points
Use 12 pt. Times Roman typeface

Please respond to the following prompts, where predictive metrics indicate items that provide a view of how yestrday's actions and today's actions will affect the future timeline, cost or other requirement.

Provide charts/graphs that illustrate performance to these metrics:

- **What are your predictive metrics?**
  - TRL Advancement Milestones
  - Time-to-Flight-Test Readiness
  - Pilot Usability Ratings (1–5 scale)
  - Component Failure Rate
  - Hydration Compliance Impact (% change)
- **How did you perform against these metrics?**
  - TRL-9 achieved in 24 months (goal: 30 months) **Usually Takes 5 years**
  - 97% pilot satisfaction across flight platforms
  - <1% component failure in 250+ flight hours

- 4.9/5 average rating on comfort and usability
- Notable hydration compliance increase among test pilots with all pilots saying they now drink liquids or cups of coffee in preflight meetings vs not having any liquids prior to flight.

➢ **How do your predictive metrics drive action toward program excellence? Please provide examples.**

User feedback played a central role in shaping the evolution of AIRUS far beyond traditional product validation. Throughout flight testing across the F-16, F-15E, A-10, F-35, and rotary-wing platforms, direct pilot input led to changes in nearly every subsystem:

- Cup sizing and fitment were adjusted based on body type, ejection seat harness pressure points, and feedback from both male and female pilots to ensure all-day comfort and secure performance under G-forces. Multiple anatomical sizes were developed to meet diverse needs, and modular fitting kits were introduced for fine-tuning on the flight line.
- Pump speed and flow control were recalibrated to strike the optimal balance between discretion, reliability, and usability. Pilots requested faster operation and evacuation, which led to multiple firmware and hardware tuning cycles that directly impacted the final pump motor design and pressure regulation.
- Controller ergonomics and user interface were reshaped following real-world use in gloved environments, NVG conditions, and high-stress sorties. Button placement, tactile feedback, and LED indicators were all modified based on how easily pilots could operate the system without breaking focus.

System performance and failure data were logged and analyzed immediately after each sortie. When leaks or discomfort were reported, the team launched root cause investigations and implemented design changes within days, often delivering revised hardware or software in time for the next scheduled test flight. This tight engineering-pilot feedback loop became a cornerstone of AIRION's culture.

To maintain momentum and technical discipline, TRL (Technology Readiness Level) milestones were used to structure engineering sprints. Each milestone required both lab validation and in-flight performance confirmation. Hydration compliance data—self-reported by pilots—highlighted dramatic improvements in fluid intake during sorties using AIRUS versus legacy options. This reinforced the operational urgency of full deployment and helped validate the system's impact on readiness and health. Ultimately, pilot insights didn't just influence AIRUS—they defined it. Every design decision, from mechanical seals to mounting brackets, was guided by the voice of the warfighter.

Data for all testing was done by the USAF Test squadrons to ensure quality test data capture.