**sUAS Best Practices:**

*Risk Factors and Opportunities in small Unmanned Aircraft Systems; Economic security, robust defense in depth, civilian operations and civil defense.*

**Names of parties interested in attending the meeting**

*Patrick Egan, Kirk Greninger, Melissa S. Hersh*

**Citizenship**

*All Members are US Citizens*

**Ongoing/planned research related to mitigations of impact risks for sUAS operations over people and/or structures**

*UAS community developed best practices could go a long way in mitigating risks and diminish some of the public perception issues facing today's drone operator.*

*These best practices should include a framework that would lend itself to preparing non-aviators with the tools or a starting point for checklists (beyond OEM) and an emergency procedures outline. Some may feel this is redundant or unnecessary, but experience has proven that these staples reduce mishaps and save lives!*

*Best practices should include the use and development of commercial practices that can be used to aid in civil defense when needed, that operators when requested may integrate in to disaster and emergency management plans.*

*sUAS risk is still under defined. Currently, there we don’t currently have a standard against which we can measure risk across: manufacturing integrity, flight worthiness, systems failures, property and casualty impact for stationary and moving targets, and occupational health and safety impacts for users. Furthermore, we don’t have information on how to standardize the disparate data sets produced by sUAS sensors for actionable use.*

*Furthermore, as end-users begin to explore how to integrate sUAS into their business plans and strategies, there is a need to understand how to deconflict airspace with respect to surveillance and inspection drones from counter unmanned aerial systems (regulatory permissibility TBD).*

*In order to do the necessary testing for evaluating these risks so that prevention and mitigation strategies can be designed and introduced, testing is required in both dense, polluted environments and open environments. Realistic testing will be key to understanding how to separate out noise. While there are designated centers of excellence set aside, it is likely that cooperation with universities and professional safety companies will provide the most reliable testing and evaluation capabilities.*

**Research topic**

*sUAS Best Practices: Risk Factors and Opportunities in small Unmanned Aircraft Systems; Economic security, robust defense in depth, civilian operations and civil defense.*

**Description of research (scope, analysis, simulation, flight test).**

 *At the lower end of the spectrum reducing risk of injury with lighter weight vehicles may include them being constructed primarily of wood, foam and or plastic and of frangible construction with has no sharp edges or protrusions. Use of prop guards whenever possible would also offer increased protection for none participants.*

*As the weight and respect velocity of aircraft increases, other mitigators, and best practices will need to be developed for each respective group or category. (One through four, etc.)*

*While the best practices constitute a good first step, we must establish and bolster a professional position based on the scientific method. True, there has been much debate on a starting point(s) over the years, and this is where we should abandon any preconceived speculations and start with the Registration Task Force established 250 grams (.55 pounds).*

*We could utilize these internationally adopted codes/standards to build a test matrix. Starting at 250 grams, the testing continues working upward incrementally booth in mass and velocity until research proves that the kinetic energy range has exceeded these standards. Weights and velocities outside of those ranges will need to employ other reliable mitigations or operate in sparsely populated and or built up environments.*

*A use matrix shall be developed using existing standards ASE, ASTM, IBC, ICC, et al. for the strength of building materials including but not limited to; roof sheeting, siding, structural glass, automotive glass and commercial and residential fenestration guidelines.*

*A best practices plan for regional FEMA and DHS offices to coordinate and drill with State and territorial protectorate commercial partners will be developed within the scope of this research.*

**Expected deliverable (hardware, standard, etc.).**

*Operational use matrix for threat analysis, best practices data sheet*

**Expected completion date**

*TBD*

**Expected technology readiness/maturity when complete**

*TBD*

**Representative use cases for small UAS**

*Use cases should include our matrix around existing standards ASE, ASTM, IBC, ICC, et al. for the strength of building materials including but not limited to; roof sheeting, siding, structural glass, automotive glass and commercial and residential fenestration guidelines.*

**Supporting telemetry data for manned or small UAS flights associated with the use cases**

*Telemetry data shall be developed according to the testing schedule,*

**Authors should indicate their willingness to present a 10 minute overview of their research at a break-out group**

*The Authors of this white paper are willing to give a 10min overview of this research project.*