**Better-designed GH missions are key to achieving more accurate hurricane-intensity forecasts: milestones for 2015 innovation activities**

1 Explore patentability of NGAS technology related to UAVs and natural hazards with Eric Boyd (manager of Product Licensing at Redondo Beach, CA), in light of Boeing’s patent EP 2689809 A 1 (“Wildfire arrest and prevention system”, published 2014)

2 Prepare briefing for Richard Crooks (director of programs in unmanned systems at San Diego, CA) and others to identify a Product Champion for technical development and marketing of innovation-initiative-sponsored work on environmental-monitoring applications of NGAS’s UAV technology, especially the HALE Global Hawk

3 Technical: Estimate, within a thermohydrostatic/cyclostrophic approximation, for both one-cell and two-cell structures, the peak sustained swirl speed (intensity) attainable in a specified, convectively unstable ambient. This step involves a statement of the unique physics underlying the NGAS model.

4 Technical: For a quasisteady axisymmetric inviscid unsaturated vortex in a noninertial (Earth-bound) frame of reference, with an open lateral boundary at specified radius from the axis of rotation, identify the stratification, from one inflow streamsurface to another, of the following four integrals of the flow: the total angular momentum per mass, the total specific energy, the specific entropy, and the moisture mass fraction. This step introduces a modular approach to addressing tropical-cyclone structure.

5 Technical: For a constant-eddy- treatment of turbulent diffusion, solve for the dynamics in an incompressible approximation, and for the associated energetics, holding in a specified-constant-thickness near-ocean-surface boundary layer over a nominally planar ocean. In particular, compute the radially resolved downdrift to the boundary layer from the overlying inviscid vortex. This step introduces the use of approximate simplistic locally-appropriate analysis, made possible by the modular formulation.

6 Technical: Delineate the radial/axial contour of the contact-surface/vortex-sheet/streamsurface interface between the bulk vortex and the core flow, for specified end sites (at boundary-layer separation, and at inflow-outflow changeover at the periphery). This step is a reminder that the modular approach to facilitate locally appropriate approximations introduces its own complications, related to delineation of the interior boundaries, owing to the subdivision into modules.

7 Technical: Find the streamsurface pattern holding within the bulk vortex (between the planar top edge of the near-ocean-surface boundary layer, and the radial/axial contour). While possibly dispensable here, this step develops skills that will be indispensable when subsequently addressing the core module.

8 Technical: Estimate the radial profiles holding for saturated flow at the altitude of the top edge of the boundary layer, after the throughput in the boundary layer completes the “turnaround” (i.e., completes the corner flow). This step seeks to bypass intricacies of flow-separation analysis as the throughput re-emerges from a diffusive module into another inviscid module.

9 Technical: For the saturated swirling updraft/outflow in the core/outflow of the vortex, compute the streamline pattern; only the total angular momentum, specific entropy, and specific total energy being constant on streamsurfaces owing to phase change in saturated flow. Finally, the preliminaries are over, and the observationally crucial core module of the tropical-cyclone structure can begin to be addressed.