MRL and USF Contribution to HiLiftPW-1

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We intend to participate in the HiLiftPW-1, to be held June 26-27, 2010 in Chicago, IL. We plan to perform the following sets of computations:

1. **Structured RANS set 1**
   - **Code: RANS-CFD-3D**
   - **Grid: Str-OnetoOne-C-v1 (supplied by HiLiftPW-1 committee)**
   - **Turbulence model: Menter SST**
   - **Optional case 3 <u>not</u> included**

2. **Unstructured ILES**
   - **Code: LES-CFD-3D**
   - **Grid: Unstructured set (created in-house using GRIDMAKE3D, containing mixed elements of prisms and tets – to be uploaded to the committee by May 15)**
   - **Turbulence model: none (implicit LES)**
   - **Optional case 3 <u>will be</u> included**

3. **Structured RANS set 2 (time permitting)**
   - **Code: RANS-CFD-3D**
   - **Grid: Str-OnetoOne-C-v1 (supplied by HiLiftPW-1 committee)**
   - **Turbulence model: Explicit algebraic stress k-ε**
   - **Optional case 3 <u>not</u> included**

We plan to submit our results electronically by the May 15 deadline to the HiLiftPW-1 committee.

RANS-CFD-3D is a Reynolds-averaged Navier-Stokes code developed by Et et al.,[1] widely used at the Multielement Research Lab. It is specifically formulated to work on three-element wing configurations. It uses point-matched grids, and is an upwind finite-volume structured code.

LES-CFD-3D is a large-eddy simulation code developed at the University of Southern Flight.[2] It employs 6th order central differencing in space and 3rd order temporal differencing, along with 9th order explicit filtering.

References

[1]Et, H., Cet, P., and Era L., "Description of RANS-CFD-3D," *Journal of Codes*, Vol. 6, No. 5, 1994, pp. 5–21.

[2]Author, A. and Author B., "Description of LES-CFD-3D," *Journal of Lengthy Papers*, Vol. 9, No. 2, 2008, pp. 22–1021.

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