

Hover Prediction Workshop (HPW) Virtual Meeting Minutes

AIAA SciTech Conference 1/13/2021 1100-1230 PM EST

Attendees

- Nathan Hariharan, HPCMP
- Robert Narducci, Boeing
- Jennifer Abras, HPCMP
- Tom Norman, NASA
- Forrest Mobley, UTK
- Bumseok Lee, UMD
- Hormoz Tadghighi, Boeing
- Jared Carnes, UTK
- Ted Meadowcroft, Boeing
- Pieter Buning, NASA
- Phuriwat Anusonti-Inthra, Army
- Jeremy Bain, Joby
- Dave O'Brien, Army
- Shreyas Narsipur, NCSU
- Justin Ellerbee, NASA
- Lakshmi Sankar, GATech
- Yong Su Jung, UMD
- Arnaud Le Pape, ONERA
- Brian Wake, LMCO
- Jurgen Rauleder, GATech
- Jim Coder, UTK
- Qiuying Zhao, Utoledo
- Patrick Gardarein, ONERA
- Jim Baeder, UMD
- Thomas Fitzgibbon, University of Glasgow
- Chip Jackson, VATech
- BY Min, Sikorsky
- TC Wong, Army
- Andy Wissink, Army
- Joseph Derlaga, NASA
- Francois Richez, ONERA
- Austin Overmeyer, NASA

Minutes

- Nathan opened the meeting, mentioned the session coming up later today
- Thanks the HPW team for the contributions
- Nathan dived in, too many people for an around the room
- Passed the meeting to Bob to present the slides. Slides available for download on the HPW website

- Introduced the committee and said to use the chat to ask questions if needed
- Went through the vision of the HPW working group
 - Hover is a challenging problem, the more we dig the more challenges uncovered
 - Need collaboration to solve this problem
- Described the hover problem, bigger than pure performance
- Described the topics covered in the last couple of years
 - Fundamental process development, V&V, applications
- Highlighted the grand challenge problem
 - Seeing contributions in this area
 - Interactional aerodynamic problems are important
- 2021 challenge is the HVAB rotor
 - Don't have a detailed dataset yet that is publically available for the entire group
 - HVAB test will provide this detailed data we need, especially blade deformation information.
 - HVAB rotor and properties are available on the webpage, group has what it needs to run this rotor
 - For now a blind investigation, will be tweaked after the data is available
- There are two HPW sessions today
 - First focuses on HVAB blind test results
 - Second is more general and has some focus on wake breakdown
 - There will be a Q&A session
- Nathan commented on the format of virtual SciTech sessions for those who were not familiar
 - Asked if there were any questions
- Passed the meeting to Tom for his presentation
 - Status update for the HVAB hover test
 - Suggested those who want more background information go to the website to see past slides
 - COVID impact on Test Schedule
 - Not allowed to work onsite March – September 2020
 - Did complete some efforts and made progress on test plans
 - Test start expected March 2021, completion expected June 2021
 - Data delivery August 2021 for performance and pressure data
 - Data delivery of other parameters expected September – November 2021
 - Other parameters take time to process properly
 - CY20 accomplishments
 - Test stand (ARTS) demonstrated to full power in a forward-flight test
 - Resolved issues in the control system is undergoing evaluation
 - Fabrication and delivery of HVAB blades was completed
 - 172 pressure transducers and 17 strain gauges still functioning
 - Properties are published in NASA TM 2020-5002153
 - NASA TM is on the HPW website
 - Next Steps
 - Complete full system rotating checkout at LaRC
 - Complete optical system setup and evaluation at AMES
 - Complete NFAC test preparations

- Begin testing
- Backup slides on test description and data products available in the slides
- Opened up discussion for questions
 - Nathan: still time for pre-test predictions
 - L. Sankar: Langley image shows fuselage
 - Tom: fuselage not included in hover test, only the test stand included
 - L. Sankar: thanks for elastic properties, how important are these?
 - Tom: Good question, you need to figure that out through the simulations
 - Bob: geometry for test stand available on the website, and the NFAC geometry, but rotor is small compared to the tunnel
 - Nathan: Is Rohit's deformed blade information on the website?
 - Bob: The deformed surfaces are not on the website, but there are predicted lag and coning angles available as Tom pointed out.
 - Austin: did we update the ARTS stand grid with the new control system?
 - Tom: the grid on the website is the non-updated version, there is a slight change, needs to be updated.
 - Austin: we have all the CAD, just needs a bit of work
 - Bob: we would prefer the CAD to allow participants to make their own grids.
 - Austin: that is even easier to provide.
 - Nathan: any other comments?
- Nathan: Please send me e-mail updates for the HPW distribution list.
- Nathan: new simulation can take time to get going, setup, funding, but there is time for pre-test predictions. It would be interesting to compare as many results as possible before the test results are available
- Bob: Rohit provided a good quality grid on the website. Use best practices for the pre-test predictions even if you don't use Rohit's grids. A range of fidelity would be interesting.
- Nathan: One year cycle typical for HPW, users sometimes skip years, likely will be more results coming in.
- Nathan: Some at the meeting are not part of the e-mail distribution list, send e-mail to Nathan if you want to be included
- Nathan: will meet again during Aviation. Closed the meeting.