

October 26, 2021

Dr. Sue E. Nokes
Associate Dean for Faculty Affairs and Facilities
University of Kentucky
College of Engineering
379 Ralph G. Anderson Building
Lexington, KY 40506

Dear Dr. Nokes:

The General Engineering Department has conducted a review for the promotion of Dr. John Doe from Associate Professor to Professor. Dr. Doe earned his Ph.D. in 2006 in General Engineering from the University of Ottawa. He worked for two years as a post-doc at Princeton University before joining the University of Kentucky as an Assistant Professor in January 2010. He was promoted to Associate Professor with Tenure on July 1, 2015.

Since joining the University of Kentucky, Dr. Doe has developed a research program in experimental fluid mechanics with applications in fundamental studies of turbulence and notably the use of unmanned aerial vehicles (UAVs) for studies of atmospheric turbulence, transport, and weather. He has been successful in all aspects of developing a self-sustaining and active research group and in establishing an international reputation in his field. Dr. Doe has received 37 grants for his research with his share of funding of \$2.9M. Since his promotion to Associate Professor in 2015, he has received 18 grants, 11 of which were as the PI with funding of \$1.5M. Dr. Doe has received significant awards as a single PI including a recent NASA grant (\$299k) for studies of turbulence in the stratosphere, a recent FAA grant (\$85k) for studies of fog formation, and numerous NASA grants to support graduate students in his lab. He was also an NSF CAREER recipient (\$419k) in 2014. Notably though, Dr. Doe has established significant collaborations within UK and at many other universities to tackle large multidisciplinary projects. He is the UK PI (\$800k share) on a \$6M multi-university NASA project to use UAVs for weather monitoring. He is the UK PI on a \$672 NSF project to study atmospheric gravity waves during a solar eclipse. He is also involved as co-PI on several other large projects including a \$1.2M NSF project on flow-field estimation using UAVs, a \$6M NSF project using UAVs for atmospheric physics, and a \$432k NSF project on turbulence suppression. In each of these collaborative grants, Dr. Doe's experimental contributions are clear.

Dr. Doe has used his success in funding to mentor a large number of graduate students. He has graduated 13 M.S. students and 4 Ph.D. students (1 co-advised). Three of his Ph.D. students have graduated since his promotion to Associate Professor. He is currently advising 2 M.S. and 3 Ph.D. students. Dr. Doe has also been a productive scholar with 53 total peer-review journal

articles, including 29 since his promotion in 2015. 18 of these publications since 2015 have included his graduate students as co-authors. The venues for his publication are the top journals in his field, including the highly prestigious Journal of Fluid Mechanics where he has 13 publications. Dr. Doe's work has been cited over 2400 times (h-26).

In teaching, Dr. Doe has been the instructor for two required undergraduate courses (ME 330 Fluid Mechanics and ME 311 Experimentation II), one 500-level elective taken by both undergraduates and early graduate students (ME 531 Fluid Dynamics) and two graduate courses (ME 634 Turbulence and ME 599/699 Aerodynamics). Since the switch to a 5.0 TCE scale, he has taught the required lab course 4 times with an average TCE of 4.3/5, the required fluids course 2 times with an average TCE of 4.15/5 and the 500 level fluids course 4 times with an average TCE of 4.73/5. His graduate courses have an average TCE of 4.3/5. His performance based on these student evaluations are above the department average. Dr. Doe was also recognized in 2015 with a Teacher Who Made a Difference Award. The students that were solicited to write letters of recommendation for his case include students from his classes, students involved in undergraduate research, and his graduate advisees. All of these letters are highly supportive of promotion and note his skill in the classroom in explaining difficult material, his support as a research mentor and his concern for student success. Two of these students are themselves now faculty.

External letters were solicited from faculty at top ranked universities. These letters, included in the dossier, are unanimous in their support for Dr. Doe's promotion to Professor. In particular, the letters consistently show that Dr. Doe's work is recognized for his innovation in the use of UAV systems for study of atmospheric turbulence. Representative comments include:

Dr. Amalthea, UC San Diego: "He has deployed his considerable experimental skills in flow measurement to settings outside the lab with success.... The paper in Proceedings Royal Society (2019) is particularly innovative with the first comprehensive measurements of the atmospheric boundary layer (ABL) response to a solar eclipse... Without doubt, he is deserving of promotion to Professor"

Dr. Himalia, Purdue: "The depth and quality of his publications from classical fluid mechanics (for well-control experiments on wall-bounded flows) and field studies (UAVs) shows his ability to go beyond his PhD work. He published articles of high quality and are very insightful in terms of mechanisms and fluid-wall interaction."

Dr. Callisto, Johns Hopkins: "I have found his recent contributions to the use of UAV's for atmospheric turbulence research to be impressive and consider that it could lead to ground breaking results. I was particularly impressed by the idea of studying the unique atmospheric conditions during a solar eclipse"

Dr. Io, Minnesota: "the flows examined are very complex, and related experiments are extremely challenging to perform. The UAV experiments are leading edge and of great value to the community given their potential to advance understanding of concepts related to the

atmosphere and its effects on weather, flight control, climate, etc. His 2019 Royal Society article is very interesting and unique!”

Dr. Ganymede, Toronto: “His publications are published in the top journals of his field (e.g., Journal of Fluid Mechanics, Physical Review Fluids, Physics of Fluids) and are highly cited... I hold Prof. Doe’s work in the highest regard and believe that he has made significant contributions his field of research”

Dr. Europa, Cal Tech: “John has established an innovative research program to address open problems and challenges in the field of turbulence... UAV measurements of the behavior of the atmospheric surface layer during the unique heating circumstances associated with a solar eclipse (Proc. Royal Soc. A, 2019) is a truly fascinating and novel example of exploiting a unique capability to ask questions that could not be addressed before that are of importance to a range of fields”

Dr. Doe has also provided excellent service to the department and technical community. At UK he has been a key contributor to the newly developed Aerospace Engineering programs, including serving on the curricular development committees and the department’s Strategic Planning committee. He has served on four faculty search committees and has Chaired two of those. He has been a guest editor numerous times for special issues in his research and has significant contributions to conference organization and reviewing activities. The external letters also note positively his contributions to external service.

The available full professors in the department met to discuss this review on October 6, 2021 and voted 9-0 in favor of recommending his promotion. The included individual faculty letters are unanimously in support of this case. All letters are uniformly positive with no reservations and comment on Dr. Doe’s strength in all aspects of his performance and in his contributions as a colleague.

In summary, Dr. Doe has demonstrated success in all aspects of his work including developing research funding, publishing his research in quality journals, advising graduate students, teaching, and service. He has developed an internationally recognized research program with particular novelty in his approach to atmospheric studies. Thus, I agree with the unanimous support received from all internal and external letters and strongly recommend that Dr. Doe be promoted to Professor.

Sincerely,



Michael W. Renfro
Tennessee Valley Authority Professor and Chair of the General Engineering Department
University of Kentucky

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