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To: Dr. Andrew Hutton
Head, the Accelerator Division
Jefferson Lab

Subject: Appreciation Letter for Philip Adderley, Marcy Stutzman, Matt Poelker

Date: May 6, 2014

Dear Dr. Hutton:

My colleagues and I would like to express our sincere gratitude to Philip Adderley, Marcy Stutzman, and Matt Poelker for their critical contributions to the preparation of an ultrahigh vacuum chamber that will house the next generation Sr optical atomic clock. In particular, Philip Adderley did the majority of the work, including shipping and receiving of the chamber, baking, and coating of TiZrV for the inside walls of the chamber. Matt Poelker helped coordinate this effort and answered many of our questions. We are truly grateful for the service provided by your exemplary employees in the Jefferson Lab. This is a critical step for us to further improve the performance of our Sr optical clock and its applications to the study of quantum many-body systems.

To put this letter in an appropriate context, I wish to emphasize that we have demonstrated the world's most stable and accurate atomic clock to date. Our clock is based on precise laser-based interrogation of thousands of atoms trapped in optical lattices, all located inside an ultrahigh vacuum chamber. The development of an optical atomic clock with Sr atoms has been a very exciting scientific project that requires advanced technology development, painstaking precision measurement, and inquisitive understanding of a quantum many-body system. Hence, this research is of fundamental importance to quantum physics and precision measurement. Also, let me give you some background information about myself. I am a Fellow of the National Institute of Standards and Technology (NIST), a Professor Adjoint at the Department of Physics, University of Colorado (CU), and a Fellow of JILA, one of the nation's leading institutes of physical sciences operated by NIST and CU. My main research interests include ultrasensitive laser spectroscopy, optical frequency metrology, and quantum optics using cold atoms and molecules. I have advised research of more than 35 post-docs and Ph. D. students. Over the last 15 years, I authored and coauthored more than 280 papers in refereed journals in those research topics and gave more than 400 invited talks. I am a member of the US National Academy of Sciences and also a Fellow of both the Optical

Society of America (OSA) and the American Physical Society (APS). I have received numerous awards and academic recognitions.

Our team, including Ben Bloom, Sara Campbell, and Travis Nicholson, has recently designed a new apparatus to achieve further improvement for our Sr clock. The work of Philip Adderley, Marcy Stutzman, and Matt Poelker have laid a solid foundation for our work by giving us the potential to obtain the best vacuum level achievable in our chamber. We are indebted to their effort.

Sincerely,

Jun Ye