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3 November 2011

Dr. John Sauter
Dr. John Mandrekas
Office of Fusion Energy Sciences
Department of Energy
Germantown MD

RE: Progress Report for Award DE-SC0001204, fund 25219A, entitled "UCSD Support for Fusion Simulation Project Planning Activity"

Dear Dr. Sauter and Dr. Mandrekas,

Please find attached the close-out report for DOE Award DE-SC0001204 entitled "UCSD Support for Fusion Simulation Project Planning Activity," which was performed during the period 8/1/2009 – 7/31/2011.

Should you have any questions on this work, please contact me at your earliest convenience.

Sincerely,

A handwritten signature in black ink, reading "Christopher Holland", with a long horizontal flourish extending to the right.

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Summary of Award Goals and History

This award supported the participation of Prof. George R. Tynan, Prof. Patrick H. Diamond, and Dr. Christopher G. Holland in Fusion Simulation Project (FSP) planning activity, and their contributions to said activity. The initial principal investigator was Prof. Tynan, with Dr. Holland taking over as lead PI effective March 1, 2011 based upon relative participation levels in the planning activity efforts. Prof. Tynan and Diamond participated as official members of the FSP planning team, and all three researchers were involved in the work of the Validation (Holland, Tynan) and Science Driver (Diamond) working groups.

Contributions to FSP Planning Activity Supported by This Award

As detailed in our progress report for 8/1/2009 – 7/31/2010, this award supported the following work during that period:

- Participation in the validation (Holland, Tynan) and science driver (Diamond) working groups.
- Attendance at and/or participation in various FSP planning and PAC meetings, including the July 2009 kick-off meeting at PPPL and March 2010 workshop in Boulder, CO.
- Documented current practices for core transport validation on validation working group wiki page (http://www.psfc.mit.edu/FSP-Validation/index.php/Main_Page) (Holland and Tynan)
- Prepared best practices for validation document documenting case studies inside and out of MFE research (Holland and Tynan).
- Prepared and distributed draft guidelines on roles and responsibilities of validation analysts within the FSP (Holland, in collaboration with W. M. Nevins).
- Prepared and delivered presentation on role of validation within the FSP at a General Atomics outreach event on Feb. 19, 2010 (Holland).
- Co-authoring core transport and turbulence science driver wiki document (Diamond, in collaboration with W. M. Nevins)

During the 8/1/2010 – 7/31/2011 period, this award supported the following items in support of the FSP planning activity:

- Continued participation in FSP management activities (Tynan, Diamond).
- Continued participation in the validation (Holland, Tynan) and science driver (Diamond) working groups.
- Participation in developing research plan and milestones for core profiles integrated planning team (Holland, Diamond).
 - Building off the FY09 work, a detailed validation plan for the core profiles IPT was developed by Dr. Holland
 - Prof. Diamond provided significant contributions on underlying physics models and necessary computation components for implementing mesoscale dynamics and coupling to 3D effects in the core.
- Attendance at the February 2010 FSP definition workshop held at General Atomics. Prof. Tynan led a session on validation of pedestal and edge models. Dr. Holland gave a presentation in this session, and also worked with V. Chan in the development of the FSP-wide validation plans and presentation.
- All three supported researchers worked during spring – summer of 2011 with FSP management to help in preparation of the final report. They translated relevant work products listed above, such as validation strategies and mesoscale and 3D modeling requirements, into suitable contributions for the final report.