Title: Fire Modeling and DOE Collaboration for Request for Exception to DOE Fire Barrier Requirement
Topic(s): Fire Modeling, Lessons Learned

Abstract:
This presentation will describe a fire and heat transfer modeling effort to support a proposed reduction in the fire barrier rating from the requirements of DOE Standard 1066-99 (July 1999), Section 5.1.2, in several locations within the National Synchrotron Light Source II (NSLS II) at Brookhaven National Laboratory (BNL). The requirement for a 3-hour barrier where the Maximum Possible Fire Loss (MPFL) exceeds $150 million would have presented an excessive burden on the operation of the NSLS II. An analysis of the fuel loads in the building was combined with modeling of fire conditions (CFAST) and heat transfer (HEATING) through the affected fire barriers in order to show that a 2-hour barrier will provide a sufficient level of protection given the available fuel loading. In doing so, DOE was consulted for feedback throughout the development of the modeling approach and the modeling itself, thus providing for a smooth approval process. The modeling process and results will be discussed, along with lessons learned from the approval process.

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Jennifer Wiley is a fire protection engineer at Hughes Associates, Inc., where she performs fire modeling analyses in the areas of smoke and heat transfer. Jennifer attended the University of Maryland, where she received a Bachelor of Science degree in Fire Protection Engineering in 2006 and a Master of Science Degree in Fire Protection Engineering in 2007.

Jason Floyd is a senior engineer with Hughes Associates. Dr. Floyd's experience includes both testing and numerical simulation. Dr. Floyd has performed both large and small scale fire testing, including testing evaluating the performance of detection systems for Navy ships. He is the lead developer of Fire and Smoke Simulator being used by multiple US Navy ship development programs. Prior to his employment with HAI, he was a National Science Foundation Post-Doctoral Fellow at the NIST Building and Fire Research Laboratory where he worked on the development of FDS v2 and v3. He is currently working with NIST to develop FDS v5. Dr. Floyd received his Ph.D. in Nuclear Engineering from the University of Maryland.

Michael Kretschmann is the Fire Protection Engineer from the BNL Laboratory Protection Division. Michael is responsible for creating the fire protection and life safety design criteria, producing the Fire Hazard Analysis documents, reviewing building and fire codes for the conventional facilities and experimental design teams, and acting as the liaison with DOE fire protection. Michael has been working at BNL for the last five years. Previously Michael worked for 10 years at Syska & Hennessy Engineers as a consulting fire protection engineer working on numerous multimillion dollar building construction and code review projects. Michael also has over 10 years experience working for Bankers Trust/Deutche Bank working as a project manager and eventually supervisor of the global group responsible for designing and managing multimillion dollar technology infrastructure installations in corporate offices and datacenters around the world.

Michael received his Bachelor of Science degree in Fire Protection & Safety Engineering from Illinois Institute of Technology and his Masters of Business Administration from Lehigh University. Michael is a licensed Professional Engineer.