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October 9, 2020

MEMORANDUM TO: Michael Franovich, Director  
Division of Risk Assessment  
Office of Nuclear Reactor Regulation

FROM: Michael Cheok, Director /RA/  
Division of Risk Analysis  
Office of Nuclear Regulatory Research

SUBJECT: RESEARCH INFORMATION LETTER RIL 2020-08, "HEAT  
RELEASE RATES OF MULTIPLE TRANSIENT COMBUSTIBLES"

Enclosed, for your information is Research Information Letter (RIL) 2020-08, *Heat Release Rates of Multiple Transient Combustibles*, which will be made publicly available in ADAMS and on the Nuclear Regulatory Commission's (NRC's) external website. This RIL documents heat release rate (HRR) measurements of various transient combustibles, items such as trash bins, pallets, cardboard boxes, etc., that might be found in areas of nuclear power plants (NPPs) on a non-permanent basis. The modeling of transient combustibles is an important aspect of a fire probabilistic risk assessment (PRA).

The method for analyzing transient fires in NUREG/CR-6850 (EPRI 1011989), *EPRI/NRC-RES Fire PRA Methodology for Nuclear Power Facilities*, made use of limited available data, and its application resulted in conservative estimates of transient fire risk. To counter the lack of available data, testing was performed based on the transient fire events observed in the Electric Power Research Institute (EPRI) fire events database. NRC and EPRI collaborated on a set of 290 experiments to measure the HRRs of transient combustibles. The experiments were documented in NUREG-2232 (EPRI 3002015997), *Heat Release Rate and Fire Characteristics of Fuels Representative of Typical Transient Fire Events in Nuclear Power Plants*. Additional analysis and guidance for use of the transient combustibles data in fire PRAs was published in NUREG-2233 (EPRI 3002018231), *Methodology for Modeling Transient Fires in Nuclear Power Plant Fire Probabilistic Risk Assessment*.

CONTACT: David Stroup, RES/DRA/FXHAB  
301-415-1649

M. Franovich

The purpose of the current report is to document additional experiments conducted to determine the relationship between the peak HRR and the number of multiple combustible items. The data in this RIL will be used to support the development and validation of a supplemental NUREG-1805 spreadsheet to calculate the combined HRR for multiple burning items. The results from this testing effort will support more realistic modeling and analysis of transient fire risk for licensing and other risk-informed applications.

Please feel free to notify the responsible RES contact if you have any questions concerning the impending publication of this report.

Enclosure: RIL 2020-08

M. Franovich

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M. Thaggard, RES/DRA  
J. Borromeo, NRR/DRA/APLB  
M. Franovich, NRR/DRA  
D. Stroup, RES/DRA/FXHAB

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**\*email**

OFFICE	RES/DRA/FXHAB	RES/DE/RGGIB	RES/DRA/FXHAB	RES/DRA
NAME	D. Stroup*	E. O'Donnell*	M. Salley*	M. Cheok*
DATE	08/18/2020	08/18/2020	10/07/2020	10/09/2020

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