

Record of Review – BNL Fire Safety Committee

NSLS II Hutches Without Hazardous Material Usage, Equivalent to NFPA 13 Electrical Room Exemption, February 2015-01

General Information	Short Title	NSLS II Hutches Without Hazardous Material Usage, Equivalency to NFPA 13 Electrical Room Exemption
	Building Number	740
	Location within facility (Room, floor, area)	Experimental Hutches on the Experimental Floor that do not require hazardous materials usage in Building 740.
	Department/Division	Energy Science – National Synchrotron Light Source II
	Initiator of review (Name, title)	R. Lee, Manager ES&H NSLS II
	Initiator's Department/Division	ES
	Date of condition review request	2/26/2015
	Process bringing condition up for review	<input type="checkbox"/> Experimental Design/Review <input checked="" type="checkbox"/> Conventional Design/Plan Review <input type="checkbox"/> Fire Hazard Analysis <input type="checkbox"/> Fire System Acceptance Test <input type="checkbox"/> Safety Documentation <input type="checkbox"/> Tier I <input type="checkbox"/> Assessment/Audit (internal and external) <input type="checkbox"/> ORE/ERE <input type="checkbox"/> Other
Code Information	Code and version	NFPA 13 (2013 ed.) sec. 8.15.11.3 OSHA _____ Version _____ FC NYS 903.3.1.1.1 item 3. Version 2010 ANSI _____ Version _____ Other _____ Version _____
	Citation text	See Pages 4 & 5 for all code citations for NFPA, Fire Codes of New York State, and DOE Orders
	Other related citations	

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Analysis	Description of what is required by Code for the situation	Per DOE order 420.1C and the Fire Code of New York State Building 740 is required to be fully sprinklered. This includes all the experimental hutches on the experimental floor.
	Description of what is planned to be provided	<p>Declare that experimental hutches in B740 that meet all the following criteria:</p> <ul style="list-style-type: none"> • Do not utilize or store hazardous materials • No combustible storage • Unoccupied • Provided with smoke detectors meeting NFPA 72 • Maximum Probable Fire Loss is less than \$5 million • Less than 5,000 square feet in area <p>are equivalent to electrical rooms and do not require sprinklers as per NFPA 13 exempted areas, sections 8.1.1(8) and 8.15.11.3</p>
	Summary of mitigating elements for equivalence or variance	<p>Extensive fire modeling utilizing CFAST shows regardless of conservative fire loading or ventilation assumptions the effects of the fire will not affect adjacent hutches or overtake the sprinkler system above them. The modeling demonstrates that the typical hutch construction would not be penetrated by a fire within the hutch and meet the intent as equivalent to a 2-hour wall as required per NFPA 13 section 8.15.11.3 item 3 and FCNYS section 903.3.1.1.1 item 3</p> <p>Maximum Probable Fire Loss is limited because smoke detectors will be installed in each hutch that will be wired to rapidly de-energize the hutch upon activation. Combustible material storage will not be allowed as an administrative control.</p>
	Is this full compliance, equivalence, or a variance?	Equivalence
	Investigation notes (Code Research; prior reviews)	Experimental hutches are not normally sprinklered throughout the DOE complex. Examples given are NSLS I and APS
	Referenced documents	Attached NSLS-II Hutch Fire Protection Strategy Presentation dated 2-2-2015 given to DOE on 2-19-2015
	Fire Safety Committee Members Involved	MK, JL, JT, RC, CL, KS, RK
	Voting Results	7 – yea, 0 - nay

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	Final Resolution	Passed	
	Date of final ruling	26 February 2015	
Non-Conformance Evaluation	Category of Non-Conformance	<input type="checkbox"/> Worker Safety	<input type="checkbox"/> Property Protection
	Risk Level	<input type="checkbox"/> High	<input type="checkbox"/> Medium <input type="checkbox"/> Low <input type="checkbox"/> De Minimus
	Category of Non-Conformance	<input type="checkbox"/> Complaint <input type="checkbox"/> Equivalency <input type="checkbox"/> Variance	
	Date forwarded for NTS evaluation		

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<p>Expanded Code Citations</p>		<p>DOE Order 420.1C, Chapter II. Fire Protection, 3. Requirements</p> <p>c. Design.</p> <p>(1) Design Process. A process must be established to ensure that fire protection program requirements are documented and incorporated into plans and specifications for design of new facilities and modifications to existing facilities.</p> <p>(2) Protection Thresholds.</p> <p>(b) Automatic fire suppression systems must be provided throughout new facilities exceeding 5,000 sq ft of floor area or where a maximum possible fire loss exceeds \$5 million, unless the NFPA code(s) allow for specific relief within the facility.</p> <p>Fire Code of New York State</p> <p>903.3.1.1 NFPA 13 sprinkler systems. Where the provisions of this code require that a building or portion thereof be equipped throughout with an automatic sprinkler system in accordance with this section, sprinklers shall be installed throughout in accordance with NFPA 13 except as provided in Section 903.3.1.1.1.</p> <p>903.3.1.1.1 Exempt locations. Automatic sprinklers shall not be required in the following rooms or areas where such rooms or areas are protected with an approved automatic fire detection system in accordance with Section 907.2 that will respond to visible or invisible particles of combustion. Sprinklers shall not be omitted from any room merely because it is damp, of fire-resistance rated construction or contains electrical equipment.</p> <ol style="list-style-type: none">1. Any room where the application of water, or flame and water, constitutes a serious life or fire hazard.2. Any room or space where sprinklers are considered undesirable because of the nature of the contents, when approved by the code enforcement official.3. Generator and transformer rooms separated from the remainder of the building by walls and floor/ceiling or roof/ceiling assemblies having a fire-resistance rating of not less than 2 hours.4. In rooms or areas that are of noncombustible construction with wholly noncombustible contents.
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		<p>NFPA 13 Standard 13 2013</p> <p>4.1 Level of Protection A building, where protected by an automatic sprinkler system installation, shall be provided with sprinklers in all areas <i>except</i> where specific sections of this standard permit the omission of sprinklers</p> <p>8.1.1(1)* Sprinklers shall be installed throughout the premises</p> <p>8.1.1(8)* Sprinklers shall not be required to be installed within electrical equipment, mechanical equipment, or air handling units not intended for occupancy</p> <p>8.5.5.3.1* Sprinklers shall be installed under fixed obstructions over 4 ft (1.2 m) wide.</p> <p>8.15.11.3 Sprinklers shall not be required in electrical equipment rooms where all of the following conditions are met:</p> <ol style="list-style-type: none">(1) The room is dedicated to electrical equipment only.(2) Only dry-type electrical equipment is used.(3) Equipment is installed in a 2-hour fire-rated enclosure including protection for penetrations.(4) No combustible storage is permitted to be stored in the room
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