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UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN
Data Center Services

TSDC (ACB) Data Center Fire Suppression Procedures

October 9, 2023

Purpose:

This document is intended for all individuals who have access to the data center at 1011 West Springfield Avenue, Advanced Computation Building. The objective is to provide education about the fire suppression components and fire safety instructions for the Advanced Computation Building. The fire safety instructions should be followed by all personnel in the event a fire breaks out or smoke is evident in the data center. If the smoke alarm is activated, it is strongly recommended that everyone leave the data center immediately and exit the building. The four stage VESDA fire suppression system does not activate the fire suppression sprinkler system until it reaches stage four.

System Details:

The fire suppression system at the Advanced Computation Building 2nd floor Data Center is a VESDA (Very Early Smoke Detection Apparatus) system. This unit protects the data center (room 200) and the staging area (room 202) from fire by sampling the quality of the air in the rooms. The sprinkler system is set up in zones so that the VESDA system will target the effected location of the fire without activating all the sprinklers within the room. The VESDA system monitors the area for chemicals in the air indicative of smoke or fire by capturing air samples through the cone shaped fixtures that are in the ceiling tiles of rooms 200 and 202 and in the sub-floor and return air in room 200. Once initiated the VESDA system begins a countdown before activating the fire extinguishing process. When the VESDA system is activated the audible fire alarm will sound, associated strobe light will flash and UIUC Public Safety and Urbana Fire Department will be notified. All personnel should evacuate the area immediately when the fire alarm sounds. To contain the fire, the sliding door will drop down from the ceiling to block the glass wall on the West side of the data center. Once the room is contained, the sprinkler system for the zone where the fire/smoke has been detected will be activated.



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The equipment in the zone where the sprinkler system is activated may sustain substantial water damage while the fire is being extinguished. All other equipment outside the zone where the sprinkler system was activated should not be affected. Personnel in the room are at risk of electrical shock if power to the room is not properly discontinued before the sprinkler system is activated to extinguish the fire. At the time of this writing, the material used for some of the power cords is not plenum grade and therefore is toxic when burned. Inhalation of toxic fumes can overwhelm the respiratory system causing unconsciousness and suffocation.

The smoke alarm system can be activated manually by pulling down the arm on any of the fire alarm units found in the area. The RED buttons found in an enclosed case throughout room 200 can be used to immediately kill all power to the room in the event a fire has started, and evacuation is in progress.

Evacuation Procedure:

At the first sign of a fire in the data center, exit the building immediately. When the audible alarms and strobe lights flash the UIUC Public Safety Office, and the Urbana Fire Department are notified. Use the following exits to escape the data center and leave the building: Northeast door will take you down the staircase to an exit door, the West door will allow you to exit to room 202 where you can exit the building using any staircase. Call UIUC Public Safety immediately at 911 once you're in a safe location. Do not re-enter the building until the fire department has given all clear.

TSDC Data Center Fire Suppression Procedures and Location of VESDA Units



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The VESDA system monitors three areas on the 2nd floor data center room 200: subfloor, ceiling and return air vent and the ceiling of room 202. The control panels for room 200 are in the basement mechanical area just off the loading dock and in the janitor closet in room 202 for room 202. These systems monitor air samples from the designated locations for particles in the air signaling smoke or fire is present. These systems will activate the fire extinguishing sprinkler system and automatically notify UIUC Public Safety and Urbana Fire Department in the event there is fire or smoke present.



There are four stages to the Vesda monitoring system: Alert, Action, Fire 1 and Fire 2. During all four stages the gauge on the VESDA system will visually reflect the escalation of fire and smoke in the area being monitored.

Stage One (Alert)

In stage one the system has detected incipient smoke that is invisible to the human eye and the Alert indicator on the VESDA system monitoring the area where smoke is indicated will be activated. No smoke alarms or notifications are activated during this stage.

Stage Two (Action)

During stage two smoke is visible in the area were detected by the VESDA system and the Action indicator is illuminated on the VESDA unit monitoring the area where smoke is detected. The audible smoke alarm and strobe lights are activated requiring immediate evacuation of the area. UIUC Public Safety and Urbana Fire Department are notified of a fire in the room.

Stage Three (Fire 1)

Fire 1 is the stage where a flaming fire is identified. If the fire is not extinguished the fire suppression system will be activated when stage four is reached.

Stage Four (Fire 2)

When this stage is reached, the fire suppression system will activate the sprinkler system for the affected zone in the area where fire and intense heat have been identified.



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In the event of a fire the smoke alarm system can be activated manually by pulling down the arm on any of the fire alarm units found in the area.



In the event fire evacuation is in progress the **RED** buttons found in the enclosed case can be used to immediately kill all power to room 200.

Cold Aisle Containment

The metal brackets on the cold aisle containment curtains will melt under high temperatures. The curtain material is connected to the frame with hooks that will melt and release the curtain at 130 degrees. The fire suppression system activates at 165 degrees so the curtain will not cause any obstruction to the fire suppression.

Routine Maintenance

All VESDA units are evaluated annually by F&S. A chemical is sprayed into the sensor to simulate a fire and the VESDA unit is monitored to verify the chemical is detected and functions appropriately. They also check the backup batteries that are housed in each VESDA unit and replace them as needed.

UIUC Facilities Management Phone Numbers for notification

Emergency dial 911

UIUC F&S (Shop 25) (217) 333-0340

UIUC Public Safety (217) 333-1216



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TSDC On-call (217) 552-8387