

4.5.2 Case Study: Fire Example #2 (continued)

- A closet door adjacent to the south wall suffered severe charring and fire damage. The top of the door was compromised, allowing embers to enter the closet and ignite combustibles within the closet.

Investigation findings:

- The Christmas lights on the tree had been plugged in and turned on when the fire occurred. The lights were LED type. There was no evidence of defects on the lights.
- The occupants of the house were out at the time of the fire.
- It was more than six hours between when the last person left the house and the fire was discovered by a passing motorist.
- The point of origin of the fire was determined to be the duplex receptacle along the short south wall in the recreation room – the receptacle that the Christmas lights were plugged into.
- No other viable or credible ignition sources were found.
- The cause was determined to be a loose or poor connection between the permanent wiring and one of the receptacle terminals, causing high resistance fault, charring the plastic components of the receptacle, resulting in parallel arcing.
- The arcing caused the projection of incandescent material from the receptacles, igniting the nearby natural Christmas tree and eventually igniting nearby furniture such as the sofas. The fire also spread to the closet just south of the area of origin.

