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ANDERSON ENGINEERING

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MARK YOUR CALENDAR!

Anderson Engineering will be attending the following events in Spring 2008:

2008 IAAI Annual Training
Denver, Co
April 28-29, 2008
For more info, go to
www.firearson.com

Annual Arizona Insurance Claims Association's Golf Tournament
Friday, May 2, 2008
Stone Creek Golf Club
Phoenix, AZ

For more info, go to
www.aicaonline.com

Look for us at Hole 10.

OUR SERVICES INCLUDE:

- Professional Engineering & Forensic Services
- Expert Witness Testimony
- Electrical Fire and Accident Origin & Cause Investigations
- Electrical Accident Reconstruction
- Evaluations of Cause & Origin of Personal Injuries Involving Electrocutions and/or Electric Shock
- Product or Process Failure Mode Analysis
- Electrical Safety & Code Interpretation
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Visit us on the web at
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IN LOCAL NEWS . . .

CHECK OUT OUR NEW COLUMN! Each issue, this is where you will find information about our offices.

Chicago Office

Earlier this month our new laboratory and examination room was completed, along with renovations to our conference room. Stop by when you are in town and check us out.

Carelessness Lends Heartache a Helping Hand!

In December 2007, a fire occurred in a small apartment located in Rochester, MN. A woman and her teenage daughter occupied the apartment, though at the time of the fire, the daughter was home alone. The daughter had taken her dog outside to play. While doing so, she looked towards her apartment and saw smoke emanating from the rear of the apartment.

The young girl immediately rushed to her apartment door, only to find that the apartment was rapidly filling with smoke. The fire department was summoned and the fire extinguished. The city fire investigator was subsequently called in to analyze the scene. The city fire investigator determined that the cause of the fire was unintentional, with the origin of the fire being in the kitchen at the vent hood area above the stove.

Anderson Engineering was subsequently retained to examine the fire scene and determine what role, if any, the electrical system and/or appliances portrayed in the cause of the fire.

Background research revealed that the fire department report stated that upon entering the apartment, the firefighters discovered smoke banking down about three feet from the ceiling. Firefighters then proceeded to the kitchen where they found the fire smoldering, but NO visible open flames. The first firefighter to enter the apartment reported electrical arcing in the kitchen, coming from an area where electrical wiring was being subjected to fire. The electricity to the building was quickly shut off and the firefighters continued with extinguishment of the fire.

Our investigation of the fire scene revealed a V-shape burn pattern that was noticeable in the location of the electric stove and refrigerator. (See photograph 1). There was also evidence of heavy burning on the back wall, cabinets, stove, and right side of the refrigerator, all above the height of the stove, with the stove being the central location in the burn pattern.

Another possible ignition source in the area of origin of the fire was the vent hood, including its light and vent fan, all located directly above the stove. According to the daughter, she did not use the stove or vent fan on the day of the fire. She did, however, mention that the light was ON in the vent hood at the time of the fire and that it had been in use for most of the day.

The vent hood was inspected. It sustained more damage on the left side, which is consistent with the origin of the fire being below the vent hood, on the left side of the stove. There was arcing discovered on the supply conductors upstream of the switch to the light and the fan. This raises doubt on the possibility of a vent fan malfunction.

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The light bulb melted toward the rear of the vent hood and the filament inside of the light bulb remained intact. The intact filament indicates that the light was NOT energized when the glass melted. (See photograph 2)

The fact that the light was reportedly ON and yet the filament remained intact when the light bulb melted open, suggests that the arcing on the supply conductors to the fan and light stopped power to the light bulb before it melted. That sequence of events indicates that the fire attacked the supply conductors and vent fan rather than the vent fan or light being the source of the fire. This, along with the burn patterns, indicates the fire originated below the vent fan.

The stove had four burners, each with a separate control knob. The control knobs are all located on the control panel above and behind the burners. Burn patterns observed on the front of the stove control panel indicate that the fire did NOT emanate from inside of the control panel. The left side of the control panel was more severely damaged than the right side. On the backside of the control panel, however, there was evidence of arcing on the L2 line traveling to the left rear control knob, indicating that it was most likely energized when the fire attacked the insulation. (See photograph 3). This raised the suspicion that the burner was turned ON at the time of fire.

Both knobs on the left side of the control panel had completely melted away. The outside knob on the right side of the control panel, which controlled the front right burner, was partially melted. The inside knob on the right side of the control panel was more melted than the outside knob, but NOT completely melted away like the left side knobs. (See photograph 1).

The stove's control knobs are push-to-turn to activate. The front right burner control knob appeared to be in the OFF position. The front right burner control knob was tested, but would NOT turn ON, therefore, it was concluded to be in the OFF position. This provided a basis of comparison for the other control knobs, including the suspect left rear control knob.

The front right burner control knob was removed and the position of its cam noted. Next, the left side control knobs were removed and the positions of their cams noted. A comparison analysis was then performed. (See photograph 4).

From that comparison analysis, the corresponding positions of the left side control knobs were determined. The left front control cam was compared to the known OFF position of the right front burner control cam. It matched – indicating that the front left burner was NOT active at the time of incident. The left rear control knob, however, showed an approximate twenty (20) degrees deviation in a counter-clockwise direction from the known OFF position. (See photograph 4). This tells us that at the time of the fire, the left rear burner was ON, in a high temperature setting.

All of this evidence led us to conclude that the cause of the fire was the result of the left rear burner being left ON and coming into contact with combustible materials. In other words, carelessness was the real culprit of this fire.

Photograph 1

Photograph 2

Photograph 3

Photograph 4

We value your opinion and welcome your feedback. If you do not wish to receive our newsletter or have questions or comments, please call us at **1-800-893-4047** *or send us an email:* **news@andeng.net**.

www.andeng.net

CONTACT US AT ONE OF THESE LOCATIONS:

ARIZONA:
4001 E. Broadway Rd., Ste. B-19
Phoenix, AZ 85040
602.437.5455 – Phone
602.437.3272 – Fax

ILLINOIS:
312 Roma Jean Parkway
Streamwood, IL 60107
630.736.0900 – Phone
630.736.0901 – Fax

MINNESOTA:
20526 330th Street
New Prague, MN 56071
507.364.7373 – Phone
507.364.7374 – Fax