SCIENTIFIC FIRE ANALYSIS, LLC

32836 Bimini Lane
Big Pine Key, FL 33043
770-815-6392
e-mail: scientific.fire@yahoo.com, website: www.firescientist.com

FIRST JUDICIAL CIRCUIT OF PENNSYLVANIA
PHILADELPHIA COURT OF COMMON PLEAS
CRIMINAL TRIAL DIVISION

Commonwealth of Pennsylvania	)	
	)	
	)	
	)	
Plaintiff	)	**Case No. CP 9907 0537**
	)	
vs.	)	
	)	
Daniel Dougherty	)	
	)	
Defendant	)	
	)	

SUPPLEMENTAL REPORT OF JOHN J. LENTINI, CFEI

ATS FILE #K104841
April 8, 2008

I. INTRODUCTION

Ballard Spahr Andrews & Ingersoll, LLP, counsel for Daniel Dougherty in Commonwealth of Pennsylvania v. Dougherty, asked me to review the transcript from the February 15, 2008, court hearing in that case, and to supplement my report dated November 3, 2006 ("First Report"). Specifically, I was asked to respond to certain questions posed and statements made by Judge Hughes as set forth in the transcript.

The opinions expressed in this supplemental report are to a reasonable degree of scientific certainty. This supplemental report refers back to my First Report where appropriate. I continue to hold all of the opinions expressed in my First Report to a reasonable degree of scientific certainty.

II. SUPPLEMENTAL OPINIONS AND RESPONSES TO THE FEB. 15 TRANSCRIPT

A. Lt. Quinn did not explain flashover to the jury.

Judge's Statement:

"Fifteen different ways from Sunday, [Lt. Quinn] explained flashover to me and this jury." (9:20-22)

"Now, this is the part I don't get . . . [Mr. Dougherty's experts] make a great deal of noise about flash point -- no, sorry, not flash points, flashover. Flashover. Fire rising up to the ceiling traveling across the ceiling and traveling back down." (24:19-25:10)

"So, the flashover is not coming from the couch, the flashover is coming -- and Quinn talks about the flashover extensively, he just doesn't use the term." (25:25-26:4)

Response:

Flashover is not fire rising up the ceiling, and then traveling across the ceiling and back down. Flashover is the simultaneous ignition process resulting from smoke and energy being trapped and radiating downward, raising internal room temperature to the point that all combustibles ignite nearly simultaneously.

Flashover is a far different and far more complex phenomenon than any explanation offered by Lt. Quinn. It is more than the flame simply being redirected by contact with the walls and ceiling. Rather, the energy produced by the fire fills the room from the top downward, and as the hot gas layer at the top of the room increases in temperature, it radiates sufficient energy to ignite all combustible surfaces nearly simultaneously, including floors and floor coverings.

Flashover can be described as the transition from "a fire in a room" to "a room on fire." This transition, and its resultant effects on post fire artifacts was not well understood by the fire investigation community in 1985. A 1984 film, produced by the National Fire Protection

Association, entitled "Countdown to Disaster," a copy of which can be made available to the Court, depicts flashover and the progress of structure fires in a way that conveys more accurately what happens in flashover than can be conveyed by diagrams. The court would gain a far deeper and more correct understanding of the actual processes that take place in structure fires by viewing this 16-minute film.

By 2000, most fire investigators had learned that the interpretation of artifacts in a fully involved room was much more problematic than they been led to believe as a result of their earlier training. Particularly, it is now well-known (and was well-known in 2000) that flashover can result in the production of artifacts that mimic the behavior of fires accelerated with flammable liquids, can cause burning on the undersides of horizontal surfaces, and can result in the production of ***apparent*** *multiple points of origin. Unfortunately, some investigators, apparently including Lt. Quinn, were either unaware of, or refused to accept the implications of this new knowledge.*

In any professional discipline, the first requirement for a practitioner is to become familiar with the terminology of the discipline. Thus, Lt. Quinn's failure to use the term "flashover" in 2000 is quite remarkable. It evidences either a lack of understanding of the phenomenon, or a denial of its existence and its effects as explained by NFPA 921, which is the generally accepted standard of care in fire investigation[1]*.*

What is even more remarkable, however, is defense counsel's failure to use the term in cross-examining Lt. Quinn, and his failure to point out the many passages in NFPA 921 that warn about possible misinterpretations of fire patterns in rooms that have experienced flashover.

Had Mr. Ciccone consulted a fire expert, he could have much more effectively cross-examined Lt. Quinn. At the very least, he would have been made aware that he had the option to do so.

B. Flash point is not flashover and is completely irrelevant to the case. Mr. Ciccone's reference to it on cross-examination demonstrates his ineffectiveness in not consulting with a fire expert.

Judge's Statements:

"And when you read [Mr. Ciccone's] cross-examination from beginning to end, Tom Ciccone knew what he was doing. He knew what he was doing . . . . [N]othing in Ciccone's affidavit, despite the way he phrases it, indicates that his strategic decision to cross-examine Quinn, based on his experiences in other cases he had been involved with, and particularly given the level of detail that Ciccone uses, forcing him to talk about flash points -- and whether he used that word or not, Quinn defined flashover . . . ." (8:21-9:18)

"And Ciccone pursued this point vigorously about where did the fire start? Did the fire rise across the ceiling? What were the flash points? When did the couch go up in flames? When did the table go up?" (43:17-22).

Response:

I have read Mr. Ciccone's cross-examination from beginning to end. Mr. Ciccone never used the term "flashover," and he used the term "flash point" once in his cross-examination, and used it in such a fashion to indicate that he did ***not*** *know what he was doing. "Flash point" is a term that describes the behavior of ignitable* ***liquids****, and cannot be applied to a solid such as a sofa. Flash point is the temperature at which the concentration of vapors above a still pool of ignitable liquid can be ignited when exposed to a competent ignition source.*

Had Mr. Ciccone consulted with even a marginally qualified fire expert, he would have known that the question he wanted to ask about the sofa was not "What is its flash point?" but, "What is its ignition point?" Had he consulted an expert, however, he would have also learned that such a question was not relevant in the context of this fire, which clearly released sufficient energy to bring all of the contents of two rooms to a temperature well in excess of their ignition points.

C. I did not state that the fire started at the couch. One cannot determine that the fire started at the couch. In fact, the point of origin cannot be determined from the information available.

Judge's Statements:

"Now, the way this fire goes -- nobody seems to dispute that the couch is where the fire started. Not the love seat, the couch.

"Now, they disagree as to whether there are three points of origin, or one point of origin. But the fire starts at the couch, and the fire goes from the couch . . . ." (25:13-21)

Response:

Unfortunately, it is not possible given the level of destruction and documentation, to determine where exactly this fire started or how it started. Certainly is it possible that Mr. Dougherty accidentally set the couch on fire with a cigarette, and was awakened in time to avoid injury, but there is insufficient evidence to make that determination to a reasonable degree of scientific certainty.

What I can state with certainty is that the evidence does not support a determination of three points of origin, which was ***the sole basis*** *for Lt. Quinn's determination that the fire was intentionally set.*

D. Lt. Quinn cannot have held his opinion that arson was the cause of the fire to a reasonable degree of scientific certainty. His testimony does not support the conclusion that there are multiple origins for the fire. Accordingly, there is no evidence of arson.

Judge's Statements:

"No, we're not, because I already had *corpus delicti*. I had an expert who testified that the fire was not an accident. Your expert wants to say 'undetermined'. Your expert won't go so far as an accident. I had an expert who told this jury this fire was not accident. What your experts want to disagree about is how many points of origin there were.

"How many points of origin there were is a different issue for me. The issue for me is was the fire deliberately set or was this fire accidental. Your expert can't deal with that because you say the evidence is gone. So, the evidence is still gone. It's always going to be gone." (48:11-49:4)

Response:

Whether there was one point of origin or three is the entire crux of this case, as it directly addresses the Court's issue of whether the fire was accidental or intentional.

*The **sole** basis for Lt. Quinn's determination of arson was his opinion that he saw evidence of three points of origin. Had there really been three points of origin, I would agree that this was an arson fire. But there is no evidence to support three points of origin, and had Mr. Ciccone consulted a fire expert, he would have known that and would have been able to refute Lt. Quinn's unsupported determination. At the very least, he would have been made aware that he had the option to use the scientific literature to challenge Lt. Quinn's determination.*

The number of points of origin is not a minor detail, nor is it a different issue than what was the cause of the fire. If there was only one point of origin, Lt. Quinn cannot rule out an accidental cause, and therefore there is no corpus delicti.

Just as a citizen should be presumed innocent until proven guilty, a fire should be presumed accidental until proven intentional. Because of the magnitude of the destruction, I am unable to prove what caused this fire. Therefore the correct determination is undetermined. Without resorting to invalid methodology, Lt. Quinn would have been likewise compelled to rule the fire undetermined. Lt. Quinn's conclusion that the fire was intentionally set has no scientific basis, then or now.

E. Lt. Quinn did not rule out the possibility of an accidental cause.

Judge's Statements:

"[Mr. Dougherty's experts] don't say that the fire was accidental. They say he should have called it 'undetermined.' But he went through all the accidental causes of fire, gas in the house, electrical problems, stuff in the house, in not a very scientific term, but that's the real deal. 'He' being Quinn, Quinn went through and examined all the possible ways an accidental fire could have occurred in this home, and ruled them out. So, he made a conscious, reasoned,

scientifically grounded decision that it wasn't accidental, that it was in fact incendiary." (26:20-27:10)

"But since I don't know the answer to this other question, okay, about your expert saying 'undetermined,' okay, undetermined does not rule out incendiary -- and I acknowledge it does not rule out accidental either. Quinn, who has very similar training to your experts, walks me through every step of why this could not have been accidental." (28:10-18)

"You want [Mr. Dougherty] to have a new trial. It wouldn't change my record. Quinn is the only person who examined that room to eliminate accidental as the cause of fire. Quinn is the only person who did those things. Now, they say 'undetermined,' okay? Quinn says 'incendiary,' all right." (46:11-46:18)

"But, again, forget that nobody said the curtains were the point of origin. And they don't say that Quinn was wrong about his analysis and his testimony about the electricity in the property, and whether that was the cause of it." (47:19-47:24)

"[Lt. Quinn is] the only person who can testify about that undisputed part, what makes it not accidental." (49:9-12)

Response:

Lt. Quinn's methodology does not allow for a credible elimination of accidental causes. First, he believes there are three points of origin, which "eliminates" an accidental cause from his mind. His examination of potential ignition sources, once he reached the finding of three points of origin, cannot be characterized as objective.

Even if he examined "all potential accidental causes" before concluding there were three points of origin, "eliminating" those causes would not be credible, due to the extent of the damage. NFPA 921 (which is the generally accepted standard of care in fire investigation but not, apparently, accepted by Lt. Quinn) describes the "Process of Elimination" at great length. It states that the finding that a fire was intentionally set based on the elimination of all accidental causes is one that can be justified only rarely based on physical evidence, and only when the origin of the fire is "clearly defined." The origin is not "clearly defined" in this case.

Further, NFPA 921 goes on to state that as the fire damage becomes greater, the elimination of potential causes becomes more difficult and is impossible in many cases. It then states that any time an investigator proposes to eliminate a particular ignition scenario, he should be able to explain how the evidence would be different if the eliminated scenario were in fact correct. Mr. Quinn clearly cannot do that in this case, nor was he challenged to do so.

Had Mr. Ciccone consulted a fire expert in this case, he would have been able to challenge the alleged eliminations made by Lt. Quinn. At the very least, he would have been made aware that he had the option to raise such a challenge.

F. Daniel Dougherty's testimony is not inconsistent with my opinions.

Judge's Statements:

"Dougherty says: I go to sleep on the couch, drunk, okay, I wake up, curtains are ablaze. Well, nobody, none of these three experts have told me that the curtains were the point of origin of this fire. And both -- all three of the experts say the couch is the origin of the fire. Well, if the couch is the origin of the fire, Dougherty should be toast, because he's sleep on the couch. By his own testimony, he's sleep on the couch.

"I'm done. He's sleep on the couch. He should have been burnt. Even if he didn't have a shirt on, he should have had redness, he should have smoke in his nostrils, he should have had black stuff on the face." (29:6-23)

"I don't think [Mr. Dougherty's experts'] reports match up with the evidence. Even as they tell me, when you listen to Dougherty's testimony -- and I have no reason to believe that Dougherty was not sleep on that couch. Sleep is a different issue. But if Dougherty says he was on that couch, based on what your expert tells me, Dougherty should be dead too, period. There's just no getting around it.

"Your expert talks about the speed of the fire, Quinn talks about the speed of the fire. Your experts talk about how fire would have raced around the room, Quinn talks about how the fire would have raced around the room. I can't get past the fact that Dougherty, based on where he tells me he was, when he learned of the fire, should be burned up, or at least burned some way." (34:9-35:5)

"The issue is, based on what [Mr. Dougherty] tells me and based on what all three experts tell me, Dougherty should have been burned, period. He should have been burned. He wasn't. He wasn't, by his own testimony and by the objective evidence, he wasn't burned." (36:9-15).

"No matter what they -- they say it's all mushed together, okay, that it's not three separate points of origin. But going back to what their big head trip is, and their big head trip is the flash over. There is no way that Daniel Dougherty is not burned. There is no way. There is-- and I'm not talking about smoke in the nose, I'm not talking about blackening on the T-shirt, I'm talking about burned. Because they agree this is a very rapid fire. This is a house that is instantly combustible, according to the three of them.

"So, how is Daniel Dougherty not burnt? How does Daniel Dougherty wake up and see the curtains -- and nobody tells me the fire starts with the curtains. . . . Nobody is identifying the curtains as the point of point of origin, because Dougherty by his own testimony, because he was the only person that there was, wakes up and sees the curtains ablaze and doesn't run up the steps to get his children, runs out the house, according to his own testimony.

"So, the curtains are ablaze. None of these experts believe that this fire started with the curtains. It's illogical. It doesn't fly. It doesn't work. It doesn't work." (41:25-43:16)

"All of this stuff was before the jury. So, yeah, it would have been nice if he had put up his own expert who would have said the cause of the fire is undetermined -- okay? It would have been

nice. Would it have altered the outcome of the trial? No. Because if you get to the heart of it, I wake up, curtains are aflame. Curtains are not the initial point of fire. He should have been burned. He should have been injured. And he should have had time to get up the steps." (43:23-44:11)

"Nobody tells me the curtains are the point of origin. So by everybody's analysis of this fire that couch was already burning. [Mr. Dougherty] should have been burned. He wasn't burned. By his own testimony he's not injured. We can't get past it." (45:4-10)

"Three points of origin or one point of origin, accidental versus purposeful. And Dougherty's testimony is what resolved purposeful. He resolves it himself. Remember, we're at trial now. I'm not at arrest, I'm not at preliminary hearing, I'm so past *corpus* it is crazy. I'm way past corpus. I'm at trial. I'm at proof beyond reasonable doubt. And your client, your client helped this jury reach its conclusion, because your client gave them what they needed to decide whether they believed he was in that house at the time he said he was in that house." (49:18-50:7)

Response:

The fire that Mr. Dougherty described is not one that would necessarily have burned him. Had he been in the fire ***after*** *flashover, there would be no need for these proceedings, because he would, in fact, be dead. But the description of events provided by Mr. Dougherty is consistent with a fire* ***before*** *it reached flashover. Mr. Dougherty could have been on the couch at the time that the fire began and have escaped the house without suffering burns. Flashover does not occur immediately after a fire starts. Rather, for some period of time after a fire begins in a room, smoke and energy from the fire begin to fill the room, and radiate back downward from the ceiling. At a certain point, the energy radiated is sufficient for flashover to occur -- that is, for all combustibles in room to ignite nearly simultaneously. This is the transition point from "a fire in a room" to "a room on fire." During the period in between the start of the fire and flashover occurring, Mr. Dougherty was able to leave the house.*

Because Mr. Dougherty survived a fatal fire, he has become a suspect in setting it. This is not an uncommon scenario.

I have reviewed numerous fatal fires for both prosecutors and defense attorneys. In most of these cases, the only factual determination that needed to be made is whether the fire was an accident or arson. If the investigator makes an erroneous determination of arson, and the surviving witness tells a story different from the investigator's interpretation, the investigator typically assumes that the witness is lying.

Well-meaning fire investigators, unfortunately, have made numerous incorrect determinations of arson based on exactly the kind of unscientific and invalid methodology that was used by Lt. Quinn. (See for example, Commonwealth v. Paul Camiolo or Commonwealth v. Louis DiNicola). [2] [3]

Lt. Quinn believes there were three points of origin for this fire despite the lack of evidence to support that belief. Nothing in Mr. Dougherty's testimony is inconsistent with an accidental fire having a single point of origin.

G. Heavier burning on the underside of the table than on the top of the table is not inconsistent with flashover conditions. Lt. Quinn has not ruled out to a reasonable degree of scientific certainty the reasonable explanations for the condition of the table.

Judge's Statement:

"Your experts say the fire didn't start under the table. Your experts say -- because see the table really is a big deal, because the table is really, really burned from the bottom and the table crashes down. And Quinn flips it over looking for the burn patterns, and looking for the origin of the fire. And your experts say: Oh, no that's not what happened. The fire's flashing over across the ceiling, goes down and gets trapped under the table and that's how it gets burned under the bottom. And I'm thinking okay that makes no sense, it should burn the top of the table first, and it didn't, according to them. So, it's not flying. It's just not flying." (32:24-33:16)

Response:

Heavier burning on the underside of furnishings was once thought to be meaningful, but research has shown that it is not meaningful in the context of a fully involved compartment. Like many of the numerous misconceptions held by some fire investigators, the idea that burning on the underside of the table indicates a point of origin is an appealing notion. Unfortunately it is incorrect.[4]

Before flashover occurs, the interface between the upper hot layer and the lower cool layer, which is where the combustion of unburned smoke particles and gases takes place, moves downward, and easily can exist under the table. Once flashover occurs, and the carpet or flooring ignites, there is a burning fuel under the table, but there is no corresponding fuel above the table.

Additionally, the top surfaces of horizontal target fuels such as tables and shelves frequently are protected by items resting on them, whereas the bottom surfaces are exposed. Indeed, Mr. Quinn testified that something was sitting on top of the dining table.

NFPA 921 describes burning on the underside of horizontal surfaces as a common effect found in fully involved compartments.

Flashover is a phenomenon that is foreign to the experience of most people, who have only witnessed unconfined fires (e.g., camp fires, trash fires and brush fires). It is understandable that the Court should find burning on the underside of the table persuasive as to the origin of the fire. It is an appealing notion, but it is nonetheless a misguided understanding. Viewing "Countdown to Disaster" would, in my view, help the Court to understand some of the concepts covered in this supplemental report, including burning under the table.

Had Mr. Ciccone consulted a fire expert, the alternative explanation for the burning under the table could have been a part of his cross-examination of Lt. Quinn, and would have been included in the defense case. Both the Court and the jury would have been made aware of the significance (or lack thereof) of this artifact. At the very least, counsel would have been made aware of his option to present such evidence.

H. My opinion did not challenge Lt. Quinn's qualification to testify. Instead, my opinion is that Lt. Quinn did not employ the proper methodology when conducting his investigation of the fire.

Judge's Statements:

"So, I find it a little disingenuous that they would talk about how [Lt. Quinn] couldn't testify as an expert under *Frye* when they had the same training. Now, clearly Mr. Quinn had some different training than they had; but, some of the core stuff is identical, and the time periods are identical. So, I find that kind of incredulous and funny that they would say that he didn't meet the *Frye* standard, or . . . the [*Daubert]* . . . . But he met that standard, and there is no challenge to John Quinn's credentials and his ability to testify in this proceeding." (23:20-24:11)

"Your experts say some stuff that I can't also agree with. They say [Lt. Quinn is] ridiculous and barbaric -- they don't use those terms, but that's the bottom line what they are saying when they have the same training.

"So, I'm a little uncomfortable with how far your experts went. I'm really uncomfortable given that they all have the same training. They all have the same training. So, I'm a little uncomfortable with that. I'm having a hard time with that." (47:6-47:18)

Response:

I certainly did not mean to imply that Lt. Quinn was not a fine upstanding public servant, nor did I mean to imply that he should not have been allowed to testify on the basis of his ***credentials.***

It is Lt. Quinn's ***methodology*** *with which I take issue, because it is far outside the mainstream of* ***generally accepted*** *methodology for the year 2000. I would choose the words "outdated" and "invalid" (not ridiculous and barbaric) to describe Lt. Quinn's interpretation of the artifacts he observed. Lt. Quinn's methodology was not in keeping with NFPA 921, the generally accepted methodology, which was well known by the time Lt. Quinn testified in this case. Using either a Daubert or a Frye standard, Lt. Quinn's* ***methodology*** *should have been challenged in 2000. Had Mr. Ciccone consulted any fire expert, he would have known that, and would have proceeded differently at the time of trial. At the very least, he would have known that challenging Lt. Quinn's methodology was an option available to him.*

As to the issue of training and experience, there is no comparison between what Mr. Dougherty's defense experts ***learned*** *from their training and experience versus what Lt. Quinn learned. He apparently did not learn, or has refused to accept, that flashover changes the rules of fire pattern interpretation. He apparently did not learn that NFPA 921, the standard of care for fire investigation (recommended in 2000 as a "benchmark" by the US Department of Justice)*[5] *issued strong cautions against making* ***exactly*** *the kind of interpretations he made in this case. Most fire investigators, the author included, made significant changes in their methodology as a result of training in the new knowledge that came about in the 1980s and 1990s. Sadly, Lt. Quinn held on to outdated and invalid beliefs.*

III. QUALIFICATIONS AND PRIOR TESTIMONY

An updated copy of the author's resume is attached hereto as Appendix 1. An updated schedule of prior testimony by the author either at trial or deposition is attached hereto as Appendix 2.

IV. SCHEDULE OF FEES

Scientific Fire Analysis charges $175.00 per hour for the author's time.

V. RESERVATION

I reserve the right to further supplement or modify these opinions should additional evidence come to light.

---

[1] The following is a list of cases in which courts have determined that NFPA 921 represents the standard of care in fire investigation

TRAVELERS PROPERTY & CASUALTY CORP. VS. GE District of Connecticut 150 F. Supp. 2d 360; 57 Fed. R. Evid. Serv. (Callaghan) 695; CCH Prod. Liab. Rep. P16,181; 2001 U.S. Dist. LEXIS 14395.

CHESTER VALLEY COACH WORKS VS. FISHER-PRICE, INC., Eastern District of Pennsylvania 2001 U.S. Dist. LEXIS 15902.

SNODGRASS VS. FORD MOTOR COMPANY DISTRICT OF NEW JERSEY 2002 U.S. Dist. LEXIS 13421.

ROYAL INSURANCE CO. OF AMERICA VS. JOSEPH DANIEL CONSTRUCTION Southern District of New York, 208 F. Supp. 2d 423; 2002 U.S. Dist. LEXIS 12397

UTAH VS. TROY LYNN SCHULTZ 2002 UT App 366; 58 P.3d 879; 460 Utah Adv. Rep. 21; 2002 Utah App. LEXIS 112.

MCCOY VS. WHIRLPOOL CORP., District of Kansas2003 U.S. Dist. LEXIS 6901.

TUNNELL VS. FORD MOTOR CO. Western District of Virginia 330 F. Supp. 2d 707; 2004 U.S. Dist. LEXIS 24594.

IND. INS. CO. VS. GE, Northern District of Ohio 2004 U.S. Dist. LEXIS 13400.

TNT RD. CO. VS. STERLING TRUCK CORP. District of Maine 2004 U.S. Dist. LEXIS 13463.

ABON, LTD. VS. TRANSCONTINENTAL INS. CO., Ohio Court of Appeals 2005 Ohio 3052; 2005 Ohio App. LEXIS 2847.

WORKMAN VS. AB ELECTROLUX CORP. District of Kansas 2005 U.S. Dist. LEXIS 16306.

[2] *Commonwealth of Pennsylvania v. Louis P. DiNicola*. Court of Common Pleas of Erie County Pennsylvania, Criminal Division No. 631-634 of 1980. Mr. DiNicola was convicted of two counts of murder and one count of arson, but his case was overturned on appeal. (*Commonwealth v. DiNicola*, 503 Pa. 90, 468 A.2d 1078 (1983).) On retrial in 1994, Mr. Dinicola was acquitted. Further litigation ensued, including City of Erie V. Guaranty Nat. Insurance Co., 109 F.3d 156.

[3] *Commonwealth of Pennsylvania v. Paul S. Camiolo*, Court of Common Pleas of Montgomery County, Pennsylvania, Criminal Division, No. 1233-99. Murder charges against Mr. Camiolo were dismissed when the Commonwealth Attorney accepted the fact that the arson determination had been made in error.

[4] Other misconceptions since discredited by research into fully involved room fires include:

1. Accelerated fires burn at higher temperatures than unaccelerated fires. (Actually, accelerated fires burn at the same temperature, but with a high rate of energy release.)
2. Large, shiny blisters indicate "faster than normal" fire growth. (Actually, char blister appearance can vary for many reasons other than the rate of fire growth.)
3. Crazed glass indicates rapid heating of glass. (Crazed glass is actually a result of rapid cooling, not rapid heating.)
4. Spalling of concrete is the result of exposure to flammable liquids. (Actually, concrete is more likely to spall when no liquids are present.)
5. The lowest and heaviest damage is always the point of origin. (Actually, the most damage is usually a function of ventilation, not the duration of the fire.)

[5] *Fire and Arson Scene Evidence: A Guide for Public Safety Personnel*, National Institute of Justice, USDOJ, 2000.