

LIGHTNING DATA CENTER MINUTES

August 11, 2017
ST. ANTHONY HOSPITAL WEST, LAKEWOOD, CO
www.lightningdatacenter.org

Monthly Quote: "I woke up. I couldn't move. It was like an elephant sitting on me, not a single muscle would work,... My eyes were working, my brain was working...I couldn't feel anything." James Church describing the aftereffects of a lightning strike in Florida. *The Denver Post*. August 18, 2017.

1. Members Present: Clark, Elder, Swanson, Langford, Yarnell, Stemple, Gift, Wachtel and Claus. We welcomed a new member, Tessa Thulien, a Licensed Professional Counselor. Meeting began at 11:50 AM and ended at 1:15 PM. Meeting began at 11:50 AM and ended at 1:15 PM.
2. During the first thirty minutes of the meeting, we spoke via phone with John Gredig, IT Director with Colorado River Fire Rescue and Steve Jones, Fire Chief. John had sent an e-mail to Carl Swanson asking if we had a recommended protocol for suspending a public event for lightning in the area and if we could recommend a site for monitoring lightning in the area.

Last year, there a concert in progress during the county fair when lightning came into the area. John wanted to suspend the concert, but the fair planners said not to, since there was not an evacuation plan in place. This year, lightning came within 10 miles of the fairground, which triggered a suspension of activities until after the storm was outside the 10-mile radius. Concert promoters use the same criteria for lightning and a 30 mph wind threshold for the stage. Lightning was initially seen within 8 miles of the venue. The concert was shut down when lightning was 4 miles away and remained shut down for 30 minutes. Evacuation of the venue did not start until the lightning was 1.5 miles away. Some concert goers were upset the concert was suspended as skies appeared to be relatively clear over the venue and questioned the validity of the data used in suspending the show, saying the data reports what happens on the plains. Additionally, smart phone users jammed the local cell phone tower, making it difficult for local officials to access the lightning data. Ken Langford recommended they set up a hard-wired internet connection to prevent data communication losses.

Carl Swanson asked about available shelters, whether or not they had modern electrical wiring and plumbing, and how many people they could hold. There are two main stables – a larger one with both wiring and plumbing and a second, smaller unit with only plumbing or electrical wiring. When asked about the grounding of the structures, John said the larger unit is fully grounded, but did not know about the grounding on the smaller unit. Ken Langford recommended the grounding should be assessed for all structures, as they should act like a Faraday cage. The approximate capacity that can be sheltered is: largest stable, 800-900; 2nd largest stable, 400-500; two older horse barns, approximately 350 people each. The concert venue holds approximately 3000 people; therefore, approximately 1250 to 1500 people would need to evacuate to their cars. Maximum evacuation time was estimated to be approximately 20 minutes from the farthest reaches of the grandstands to the parking lot, which is 150 yards away from the venue. We advised John to consider expanding the radius for lightning from 10 miles to perhaps 15 or 20 miles, given the 20-minute evacuation time.

There have been no reported strikes at the fairgrounds during previous fairs, but there have been several lightning fatalities in the surrounding area. Some people had asked why lightning safety measures are needed at the fairgrounds if no strikes have been reported during previous county fairs. Lightning has struck at large-venue events – see the Lightning Links section below for articles.

3. Our newest member, Tessa Thulien, asked if people should dress for less lightning injury. Ken said the effort would be misplaced and the message is: “No place outside is safe and keep moving to safety.”
4. Barb Stemple reported a close-by lightning strike that affected her severely enough that she described it as a PTSD episode – her first. She said the episode caused an irregularity in her heart and wanted to know what could be done.
5. Barb reported seeing a concert at Winter Park where people were dancing with no apparent concern about the lightning flashing nearby.
6. Phil Yarnell said the lady hit by lightning cited by Larry & Sheryl did not have a benign ear tumor. Instead, the tumor was malignant and was found a year after the strike.
7. Phil told us of a book titled: *Zapped: From Infrared to X-rays, the Curious History of Invisible Light*. From Publisher's Weekly:

“Bob Berman. Little, Brown, \$26 (304p) ISBN 978-0-316-31130-4

Electromagnetic radiation—light—is everywhere, but it’s not all visible to the naked eye. Astronomy writer Berman (Zoom) runs through a fascinating history of the rainbow’s invisible bands in this breezy, accessible read. Berman draws from topics as far-flung as art, gardening, relativity, and radioactivity to explain light’s intriguing nature and its influence on humans, in order “to explore the unseen energies that pervade our universe, our planet, and our bodies.” Humans only “perceive sunlight’s most abundant energies,” Berman writes; thus we regard the “universe through the sun’s eyes.” In those bounds, evolution honed our ability to distinguish green “wavelengths that differ by just one nanometer.” Berman adeptly explains the physics of light and its modern applications in studious detail. Since the discoveries of infrared radiation, microwaves, and UV rays, invisible light has made microwave ovens, cellphones, GPS, and other innovations possible. Scientists use it as a tool to examine the distant universe and search for alien life. In the style of a favorite professor, Berman injects bits of odd humor and captivating tangents into this complex but familiar topic. After the final page, readers will still be reflecting on “the unseen lights that blaze brilliantly in realms beyond what our senses can ever perceive.” Agent: Albert Zuckerman, Writers House. (Aug.)”

Link: <https://www.publishersweekly.com/978-0-316-31130-4>

8. On the issue of getting out the lightning safety message, Howard suggested linking global warming to increased flash density. Ken cautioned this is a future statistic and urges that we deal with the now threat. Carl also mentioned a study that said cloud to ground lightning is projected to increase by 10% per decade and by 2050, cloud to ground lightning will have doubled. In contrast, Tessa thought when we promote safety, we should lead with a message of love rather than one of fear. She suggested we should put forth a real human being who has been changed by lightning as a lead-in to the story. She wants the audience to relate to the symptomology rather than the threat. For example, PTSD is something people can relate to.
9. Tessa also told us about an article in the New York Times about lightning strike survivors. Link: <https://mobile.nytimes.com/2017/07/18/us/hit-by-lightning-ales-from-survivors.html>
10. Questions, comments, notification of errors, and critiques of these minutes are welcome. Please forward those to Steve Clark at: sclarktoto@gmail.com. Please keep your communications professional and respectful. Communications will be forwarded to the appropriate author(s) of the minutes and addressed accordingly.
11. LDC Disclaimer: These minutes do not represent official positions of the LDC or its members. They simply reflect the comments made at the meeting. Furthermore, the LDC does not implicitly or explicitly recommend or endorse any product or service. Any product or service presented in these minutes is done so for purposes of discussion and analysis. The merit (or lack thereof) is open for the consideration and review by the entire membership.
12. Next meeting: Friday, September 8, 2017, from 11:45 to 1:00 PM at St. Anthony Hospital West. Room: Conference Rooms E & F. Roundtable format.

Respectfully Submitted,
Steven E. Clark, Consulting Meteorologist

Lightning Links

This is a monthly listing of periodicals, websites, and videos about lightning and allied areas from a variety of sources. A headline or description is listed, followed by the link. Please note that some of the links are perishable, which means you'll need to go to the source for the information.

Large-Venue Injuries

Percival, T., 2016. Crowds Injured When Lightning Strikes Rock Festival – For the Second Year Running. *Unilad.co.uk*. June 4, 2016. Link: <https://www.unilad.co.uk/news/crowds-injured-when-lightning-strikes-rock-festival-for-the-second-year-running/>

Deardon, L., 2016. More Than 70 People Injured After Lightning Strikes at Germany's Rock am Ring Festival for Second Year in a Row. *The Independent*. June 4, 2016. Link: <http://www.independent.co.uk/news/world/europe/dozens-hospitalised-after-lightning-strikes-at-germanys-rock-am-ring-festival-for-second-year-in-a-a7065191.html>

Newstead, A., 2012: More Than 50 Injured By Lightning Strike At Music Festival. *Tone Deaf*. July 5, 2012. Link: <http://tonedeaf.com.au/50-injured-lightning-strike-music-festival/>

Malara, M. and A. Connolly., 2016: Germany Rock Music Festival Postponed After Lightning Strikes Injure at Least 51. UPI.com. June 4, 2016. Link: <https://www.upi.com/Germany-rock-music-festival-postponed-after-lightning-strikes-injure-at-least-51/3221465045876/>

Collins, D., 2012, One Dead, 9 Injured After Lightning Strike at Pocono Raceway. *Republican Herald*. August 6, 2012. Link: <http://republicanherald.com/news/one-dead-9-injured-after-lightning-strike-at-pocono-raceway-1.1355045>

Earth Networks Blog., 2016, Russian Footballer Struck by Lightning. Earth Networks. November 15, 2016. Link: <https://www.earthnetworks.com/blog/russian-footballer-struck-lightning/>

Lohr, D., 2014: Grateful Dead Fan Remains Nameless, 18 Years After Fatal Crash. Huffington Post. April 25, 2014. Link: http://www.huffingtonpost.com/2014/04/25/grateful-dead-fan-remains-nameless-18-years-after-fatal-crash_n_5208512.html

MTV News Staff., 1998: Lightning Silences Tibetan Freedom Concert as Fans Injured. MTV News. June 13, 1998. Link: <http://www.mtv.com/news/1434841/lightning-silences-tibetan-freedom-concert-as-fans-injured>

Large-Venue Lightning Safety Guidance Documents

PLEASE NOTE: The documents below are not a specific recommendation on how to implement lightning safety programs for large venues, nor are they the only documents available. They are listed to provide food for thought for those interested in establishing their own lightning safety protocols. Professional consultation is recommended, since each venue is different.

Walsh, K., et.al., 2013: National Athletic Trainers' Association Position Statement: Lightning Safety for Athletics and Recreation. Journal of Athletic Training. Link: http://lightningsafety.com/nlsi_pls/NATA_2013.pdf

National Weather Service., 2015: Lightning Safety: Large Venues. Link: http://www.lightningsafety.noaa.gov/toolkits/Lightning_Safety_Toolkit_Outdoor_Venues9-2-15.pdf

Gatz, J. and E. Noble. 2006: Lightning Safety and Large Stadiums. Bulletin of the American Meteorological Society. September 1, 2006. Link: http://www.srs.gov/Weather/Lightning_Protection_Stadiums.pdf

Environment and Climate Change Canada, 2017: Lightning Safety at Large Outdoor Venues. Date Modified: June 23, 2017. Link: <https://www.ec.gc.ca/foudre-lightning/default.asp?lang=En&n=90CC153A-1>

Other Lightning News Items

Hatfield, M., 2017: Lightning Strike at Oklahoma Church Destroys Only Word "Death" in Mural of Jesus. Thedenverchannel.com. August 11, 2017. Link: <http://www.thedenverchannel.com/news/national/a-lightning-strike-at-at-bixby-church-destroyed-only-the-word-death-in-mural-of-jesus>

Contreras, O., 2017: Home Believed to Be Struck by Lightning Late This Week in Broomfield Catches Fire Again. The denverchannel.com. August 5, 2017. Link: <http://www.thedenverchannel.com/news/front-range/broomfield/home-believed-to-be-struck-by-lightning-earlier-this-week-in-broomfield-catches-fire-again>

Tribune Media Wire., 2017: Hero Dog Leads Family to Unconscious Girls After Lightning Strike in Utah. KDVR.com. July 31, 2017. Link: <http://kdvr.com/2017/07/31/hero-dog-leads-family-to-unconscious-girls-after-lightning-strike-in-utah/>

Planet Staff., 2017: News Update: Mountain Biker Struck and Killed by Lightning. *Telluride Daily Planet*. August 14, 2017, Updated August 15, 2017. Link:

http://www.tellurideneews.com/news/article_37e43e3a-8106-11e7-8712-bb631905cf5f.html

Borenstien, S., 2017: A Striking Stat: Lightning is Zapping Fewer Americans, not More. *The Denver Post*. August 18, 2017. Link: <http://www.denverpost.com/2017/08/16/lightning-strikes-killing-fewer-people/>