HALLIWELL

JAY CREMEANS, PE, CFEI

ASSISTANT DIRECTOR, ELECTRICAL ENGINEERING SERVICES
PROVIDENCE, RI
jay.cremeans@halliwellglobal.com
+1 757 570 4085 | Mobile
+1 877 411 2177 | Office
halliwellglobal.com

SPECIALTIES

- Solar Photovoltaic Inverters, Combiners, Rapid Shutdown Devices, Optimizers, and Connectors
- Damage/Failure Analysis
- Electrical Fires, Explosions and Failures
- Emergency/Standby Power Generation Systems Code Analysis
- Power Distribution Systems and Lighting
- Commercial and Industrial Controls
- Busways
- Building IT/Telephony Systems
- Fire Alarm Systems
- Load Flow Studies
- Arc Flash Analysis
- Solar Installations

BIOGRAPHY

Jay joined Halliwell in 2020, bringing more than 20 years of design, analysis, and troubleshooting in components commonly used in Power Generation and Distribution, as well as extensive experience in Damage and Failure Analysis of Electrical Fires and Explosions. He has conducted numerous Root Cause Analysis (RCA) investigations associated with failures of Solar Photovoltaic (PV) Inverters, Rapid Shutdown Devices (RSDs), micro and string optimizers, and associated Solar Connectors for both ground-based and rooftop mounted installations. He has the knowledge and background required to provide an expert opinion on the root cause of a failure based on the scientific method.

Jay is well versed in Solar PV system design, installation protocols, and maintenance actions necessary for Solar PV installations. He has independently conducted intensive laboratory testing on Module Level Power Electronics (MLPE) to determine operational capacity and limitations and has extensive experience in investigating the root cause of failures to electrical and fire alarm systems after impact from lightning strikes, utility voltage surges, installation deficiency, fire loss, wind-driven rain events, partial building collapse, floods, and hurricanes. He has experience in cases involving litigation and has been deposed as an expert witness.

Over his 20-year tenure as a Department of the Navy civilian, Jay received numerous awards for outstanding engineering in the areas of design, analysis, system grooming, and fault diagnosis. He possesses an in-depth knowledge in power electronics, PLCs, Variable Speed Drives, HMI, and associated data acquisition components. Jay is also well versed in low voltage branch circuit and medium voltage distribution systems and components including Steam Turbine Generators, Diesel Generators, Low Voltage Busways, Motor Generator Sets, power and lighting branch and feeder circuits, auxiliary safety and support systems, induction motors and control centers, transformers, inverters, switchboards, and load centers.

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QUALIFICATIONS

Master of Business Administration (MBA), Averett University, Danville, VA

Bachelor of Science in Electrical Engineering (BSEE), Ohio University, Athens, OH

INDUSTRY CERTIFICATIONS, LICENSES, TRAINING, AND MEMBERSHIPS

- Electrical Engineer PE License: CT, DC, MA, MD, MI, NH, NJ, NY, OH, RI, VA, VT, WV
- National Council of Examiners for Engineering and Surveying (NCEES) Certified
- National Association of Fire Investigators (NAFI) – Certified Fire and Explosion Investigator
- NFPA 70 – National Electrical Code
- NFPA 70E – National Electrical Safety Code
- NFPA 72 – National Fire Alarm and Signaling Code
- NFPA 99 – Health Care Facilities Code
- NFPA 101 – Life Safety Code
- NFPA 110 – Emergency and Standby Power Systems
- NFPA 111 – Stored Electrical Energy Emergency and Standby Power Systems ANSI/ASNT CP-105 AND CP-189 – Level I Infrared Thermography
- NFPA 921 – Fire and Explosion Investigations
- GWO Climb Certification

PUBLICATIONS

“Evaluating Electrical Power Distribution Components following a Loss Event”, co-authored with Jorge Berrios, PE, published October 2023

PROFESSIONAL EXPERIENCE

- Halliwell, Assistant Director, Electrical Engineering Services
- Naval Air Systems Command, Senior Electrical Integration Engineer, PE
- Naval Sea Systems Command, Senior Electrical Engineer, PE
- Northrop Grumman Newport News, Senior Electrical Engineer

REPRESENTATIVE ASSIGNMENTS

Solar Photovoltaic Systems

IKEA Distribution Center | Staten Island, NY
May 2024. Attended a Joint Evidence Examination to lead an investigation into the role of connectors as a potential root cause for thermal breakdown resulting in fire events. Jay led the expert group utilizing high accuracy measurement devices to gather electrical resistance and physical characteristics of the

exemplar Solar PV String connector pairs. These measurements were critical in evaluating the hypothesis that interconnection of connectors from different manufacturers can create conditions for series arc faults and thermal breakdown.

Shore Holding | Mount Laurel, NJ
June 2024. Attended a Joint Fire Scene Investigation to assess and gather data regarding hypotheses of Rapid Shutdown Device (RSD) and connector failure. While hypotheses involving these two failure modes are commonly discussed in the forensic community, Mr. Cremeans is spearheading the effort to gather physical and electrical data to test specific root causes.

Altus Power | Cumberland, RI
August 2024. Attended an initial on-site inspection and Joint Fire Scene Investigation to determine the potential role of connectors as the failure mode in the Event. In this effort, Mr. Cremeans gathered data regarding material condition of the exemplar connectors, as well as environmental factors, in development of root causation hypotheses.

Blair Academy | Blairstown, NJ
November 2023. Attended a Joint Fire Scene Investigation to make field observations and gather data to test hypothesis of inverter failure, DC combiner failure, or external factors. In early 2024, Jay attended the Joint Evidence Examination to gather further data to test these hypotheses. As a result of Jay's observations and utilization of the scientific method, Mr. Cremeans opined that the most probable cause of the Event was rodent infiltration into the DC Combiner box resulting in damage to conductor insulation.

Aquamarine Westside Solar Project | Stratford, CA
June 2023. Conducted an on-site inspection as the Electrical Engineer and Fire Investigator in a dual role in determining Origin and Cause of an electrical fault Event that occurred in a 4.5 MWDC Inverter. The resulting analysis concluded that the most probable cause of the Event was uninstructed operation of a DC Recombiner Isolation Switch under load.

Signature Fitness | Belleville, NJ
January 2024. Attended a Joint Fire Scene Investigation to gather data and make observations regarding the Origin and Cause of the Event. While attending, Jay gathered critical data relating to the intermating of connectors from different manufacturers, as well as potential impacts to RSDs connected thereto.

University Area Joint Authority | State College, PA
June 2021. Conducted on-site inspection in deficient installation by the electrical contractor. This resulting analysis assisted the subrogation team in negotiating settlement with the installing contractor.

Aquamarine Westside Solar Project | Stratford, CA
February 2022. Conducted on-site inspection and resulting data analysis in determining Origin and Cause of 3.3MW Solar Inverter Skids due to an internal failure. Jay's expertise in electronic components and SCADA data analysis confirmed his initial hypotheses regarding the most likely causation originated within the IGBT of the Inverter, vice other hypotheses proposed by opposing Experts. The resulting analysis assisted the adjustment team in requiring all cost of remediation be covered by the manufacturer.

Rreef America, LLC | Queens, NY

HALLIWELL

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April 2022. Conducted on-site inspection and resulting analysis of collected data to determine the Cause and origin of the failure. Worked with the Subrogation Team to affect remediation cost on the original installing contractor due to failure to install in accordance with Codes. Upon further inspection during the Joint Evidence Examination, Jay determined that an installation error in the AC Combiner Panel was the most likely causation of the Event.

Halifax Solar, LLC | Halifax, MA

June 2023. Jay conducted an on-site investigation of an electrical Event impacting seven (7) Chint Power Systems 125 kW Inverters and DC Combiner boxes. After a detailed analysis of the evidence during a Joint Evidence Examination, Jay determined that the cause of the Event was most likely due to deficiencies in the quality of components installed during the manufacturing process.

ShopRite | Brooklyn, NY

August 2022. Conducted an on-site investigation as the Electrical Engineer and Fire Investigator to determine the Origin and Cause of the Event. Upon analysis of the evidence and corresponding lab-performed causation determination, Jay was able to rule out hypotheses regarding potentials for Manufacturing Defect as the data collected by the experiment performed by HEA in our Providence Office pointed to a most likely scenario involving improper installation sequence of the Rapid Shutdown Devices in causation.

Fire Loss

The Macerich | Tysons Corner, VA

May 2022. Conducted an analysis of failure to a disconnect switch which initiated sprinkler action and damaged three vertical busways with an approximate replacement cost of $2.5M. Coordinated test activities to determine the material condition of the busway segments in returning approximately 80% to service without the need for replacement.

Purecoat North | Belmont, MA

May 2020. Conducted a thorough electrical inspection, determined the suspected cause of loss as a high resistance electrical connection, and provided engineering oversight in claim resolution while recommending noted Code upgrades necessary for the installed environment.

Synergy Investments | Boston, MA

June 2023. Jay's expertise in electrical busway installation was called upon in attendance of the Joint Evidence Examination. Based on the evidence presented during the Examination, Jay was able to determine that an improperly terminated Equipment Ground Conductor created a high resistance connection that ultimately contributed to the Event.

Brown University | Providence, RI

August 2022. A reported failure of the standby emergency generator that was employed at the Property to provide additional supply to the Utility Grid failed during supplemental operation and resulted in an electrical arcing Event on the generator stator's end turns. Jay worked with the University facility engineering personnel to remediate the generator through repair action performed by an outside contractor.

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Lightning

Lehigh Valley Hospital | Allentown, PA
February 2020. Analyzed photographic evidence of LED circuit board failure and conducted a thorough review of the data, submitted claim documentation, remediation estimates, and manufacturer's instruction to ensure the remediation was conducted in a capacity that met the established Codes.

Fred Martin Ford | Youngstown, OH
August 2020. Evaluated the existing telephone system, amplifiers, server, and broadcast system to determine the full impact of the overvoltage event due to a lightning event that affected the property.

Argent Court Assisted Living | Bastrop, TX
May 2020. Conducted an analysis of submitted invoices pertaining to Fire Alarm, HVAC, and Nurse Call, IT and Telephony systems due to a direct lighting strike.

Water Intrusion

Dock Street Tower Project | Philadelphia, PA
September 2023. Jay conducted a Forensic examination of the site as a result of a water Event resulting in the loss of the electrical busway in the newly constructed high rise apartment building. Jay worked closely with the Prime Electrical Contractor to determine temporary electrical power options and remediation of the busway in returning the Property to pre-Event condition.

Equus Capital | Princeton, NJ

September 2021. Conducted an inspection of impact to large electrical infrastructure due to the remnants of Hurricane Ida. Jay's expertise in large electrical infrastructure components was called upon to manage the complex remediation of the electrical feeders, 15 kV High Voltage Switches, Standby Generators, Life Safety Systems, and Switchgear in restoring the multi-building Property to pre-Event condition with like kind and quality components and capability in remediation.

Centerview Towers | Irvine, CA
December 2019. Conducted an inspection of the Property's busways and electrical infrastructure as part of a cross functional team and analyzed subsequent test data after a water main break outside of the facility created water infiltration into the electrical service rooms.

Willis Tower | Chicago, IL
May 2020. Conducted inspections of the subsurface levels of the structure as part of a cross-functional team to take a detailed accounting of the impact after a rain event caused the sewer system to back up into the structure's subsurface areas.

89 Pleasant Street Condominiums | Brookline, MA
January 2021. Conducted an on-site examination of the boiler's electrical and mechanical sensor suite after a main water line break flooded the basement of the property with water impacting the water heater, boiler, and associated controls by water intrusion.

Harvard University | Cambridge, MA

HALLIWELL

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October 2023. Conducted a detailed inspection of power and optical devices to determine the impacts to a High-Power Femtosecond Laser unit that was impacted by an unsecured steam header that was left uncapped during a previous building renovation. Jay's experience assisted in determining the proper ISO protocols and technical resources available to restore the chemistry research lab to like kind and quality so that research grants would not be compromised.

Massachusetts Institute of Technology (MIT) | Cambridge, MA
June 2022. Conducted an inspection of the 13.8 kV main switchgear components to determine impact from a water pipe burst in the building. As a result of Jay's effort, the Property was able to determine proper test requirements and remediation protocols in restoring the switchgear to like kind and quality.

LITIGATION

- NYC Langone v. Turner Construction. Deposed as an expert witness for analysis conducted in response to Superstorm Sandy and its effects on the NYC Langone Hospital Complex.
- All State New Jersey Insurance v. D&D Universal. Retained by Counsel to analyze the data pertaining to a Fire which occurred due to a residential dryer.