



August 2017 Newsletter
The IEEE Reliability Society
Joint Section Chapter: Boston - New Hampshire - Providence
April Feb 2017 – May 2017
<http://www.ieee.org/bostonrel>

Back-To-School Greetings from the IEEE Reliability Joint Section Chapter (Boston - New Hampshire - Providence). Gosh did this summer fly. A quick reminder that our web page has some feedback links where you can Suggest a Meeting Topic, Get Involved in Activities, Help Us Win an Award, and Ask an Expert. Look forward to seeing you (bring a friend!) at our next Chapter Meeting on Sept. 13th at MIT Lincoln Laboratory!

Also, look out for the new reliability crossword puzzle at the end of this newsletter!

Warm Regards

A handwritten signature in black ink, appearing to be "Charles H. Recchia".

Charles H Recchia, MBA, Ph.D.
IEEE Senior Member
IEEE Reliability Society AdCom Member '16-'18
Chair, IEEE Reliability Society Boston Chapter joint with Providence, RI and New Hampshire
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Recent Activities:

May 17, 2017

“Assessment of Copper Bond Wire for Use in Long Term Military Applications” by Aaron Lecomte Raytheon Co

June , 2017

“Reliability Engineering for the Business World” – Preview of an upcoming IEEE online course presented by Kevin Granlund, Distributed Systems Analysts, LLC

Upcoming Events:

September 10-14, 2017

39th Electrical Overstress / Electrostatic Discharge Symposium,
Westin La Paloma, Tucson, AZ
Visit [here](#) to register

September 13, 2017

Creating Reliable and Manufacturable RF Designs
Chandra Gupta, Ph.D., MBA, Boston Reliability Chapter Meeting 3
Forbes Rd, Lexington, MA

September 28-30, 2017

Accelerated Stress Testing and Reliability (ASTR) Conference,
Hilton Garden Inn, Austin, TX
Visit [here](#) to register.

October 11, 2017

The Genesis of Reliability Engineering aka "Certainty of Operations
Gilmore G. Cooke, PE, Boston Reliability Chapter Meeting 3 Forbes
Rd, Lexington, MA

October 8-12, 2017

IEEE International Integrated Reliability Workshop,
Stanford Sierra Conference Center, South Lake Tahoe, CA
Visit [here](#) to register

November 8, 2017

Boston Reliability Chapter Meeting TBD
Feel free to [Suggest a Meeting Topic](#)

December 13, 2017

Boston Reliability Chapter Meeting TBD
Feel free to [Suggest a Meeting Topic](#)

January 22-25, 2017

Reliability and Maintainability Symposium (RAMS) 2018
Silver Legacy Resort and Casino, Reno, NV
Visit [here](#) to register

Recent Chapter Activities

“Assessment of Copper Bond Wire for Use in Long Term Military Applications” presented by Aaron Lecomte Raytheon Co

For years semiconductor manufacturers have used gold wire to connect the semiconductor die to the lead frames and external pins. However, rising gold prices are driving manufacturers towards less expensive alternative materials such as copper for use in high volume commercial plastic package devices. Military standards such as MIL-STD-883 do not define requirements for copper bond wire and therefore manufacturers are using qualification and process monitoring developed for gold wire to qualify the copper bond wire technology. Although copper bond wire designs are moving forward for commercial applications, there are concerns with quality and reliability for use of copper bond wire in high reliability military electronics with long mission life.

This presentation reviewed findings from the destructive physical analysis (DPA) testing performed on a number of standard commercial plastic encapsulated microcircuits (PEMs). The presentation focused on the die ball bond and lead frame crescent bond metallurgical structures, mechanical bond strength, wire composition, and manufacturing bonding process workmanship & overall quality. Based on the DPA findings, potential risks were defined along with recommendations to the qualification program of PEMs with copper bond wire for use in harsh environments and long term high reliability military programs.



Aaron Lecomte is an Electrical Engineer in the Materials Engineering group in Andover, Massachusetts. He has experience with failure analysis, reliability analysis, CCA design, and analog/digital/RF design and testing. He is responsible for the quality and process flow of Destructive Physical Analysis (DPA) for the Reliability Analysis Lab. Since coming on board with the DPA program, Aaron has improved the procedures to increase integrity of the program, streamline tasks, and reduce overall cycle time. Aaron is a certified Six-Sigma specialist, holds a BS in Electrical Engineering from the University of New Hampshire, and is currently in pursuit of an MS in Electrical Engineering from the University of Arizona.

Reliability Engineering for the Business World – Upcoming Online Course Preview presented by Kevin Granlund, Distributed Systems Analysts, LLC

This presentation previewed an online course about becoming a leader in reliability engineering, with the objective of teaching how to become the go to person in your business for objective business sensed reliability answers and requirements. While statistics are the tools of reliability engineering, it takes knowledge not only of these tools but also of the business. Developing knowledge of the business, from sales, engineering, customer service, to supply chain management can determine how effective you can be in improving reliability. Never take anything for granted, even some rules of thumb in reliability can be misleading, this course will show you how to prove what truly happens in the real world and how to effect change in any part of the business where it is needed. The course will explore the balance sheet, organizational structure, customers, service, and high volume manufacturing. It's not just about how often things fail, it is also about where the defect came from, what is the financial effect, the recovery, when should a business take field action, effect of human error, failure analysis/material science, reliability testing, and much more. The course will also discuss how you can develop executive buy in for change. The course assumes a basic knowledge in reliability statistics. There are 12 sessions that cover the following topics: Basics – Measurements, Business Model, Design Model (HW and SW), HALT/RDT/Predictions, Manufacturing Model, Early Life Failures, Wear Out and Mid Life Crisis, and Advanced Reliability.



Kevin Granlund is an innovative leader in reliability methodologies with more than 30 years' experience in the storage industry. In his latest role as Director of Engineering, he developed a top down reliability/availability management process for design organizations developing mission-critical storage systems. Kevin previously directed the most extensive HALT/HASS operation in the industry, with over 300 chambers worldwide. He has written several papers, consulted with many companies, 3 patents awarded and 2 pending related to systems reliability and test.

His most recent work has been performing system architectural analysis to optimize system availability, serviceability and costs. Providing guidance to development to maximize system reliability and reduce service costs. He has provided consultation to many large companies such as EMC, CISCO, AT+T, HP, Seagate and many others. His position and experience has enabled him to perform extensive field studies and design of

experiments. Kevin has developed many accelerated testing programs for both short term and long term reliability and developed cost models to enable more informed decisions.

He has developed Long Term Systems Reliability tests and processes for detecting early wear out design flaws. Also built models for non-traditional acceleration factors for unique design defects and managed the transfer of this technology to subcontractors.

Kevin has lead hundreds of FMEA on new designs and refined FMEA processes to maximize problem prevention in key technologies. Including power systems, logic systems, ASICs, disk drive systems, RAID, and networks.

Kevin is an active member of the Boston IEEE Reliability Society Advisory Committee Kevin received his ASEE degree from Worcester Industrial Technical Institute in 1979.

Link to past presentations <http://ewh.ieee.org/r1/boston/rl/presentations.html>

Special thanks to our corporate supporters:

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Passing of Robert (Bob) Farrell July 31, 1960 – July 28, 2017



Nashua, NH - Robert C. Farrell, 56, died unexpectedly at his home on Friday, July 28, 2017. He is the beloved husband of Nanthiya (Jankaew) Farrell.

Robert was born in Hickory, NC on July 31, 1960 and is the son of the late James and Jean (Edwards) Farrell. He was a graduate of Doherty Memorial High School in Worcester MA and continued his education and received his degree from Union College and later graduated with his Masters in Mechanical Engineering from WPI.

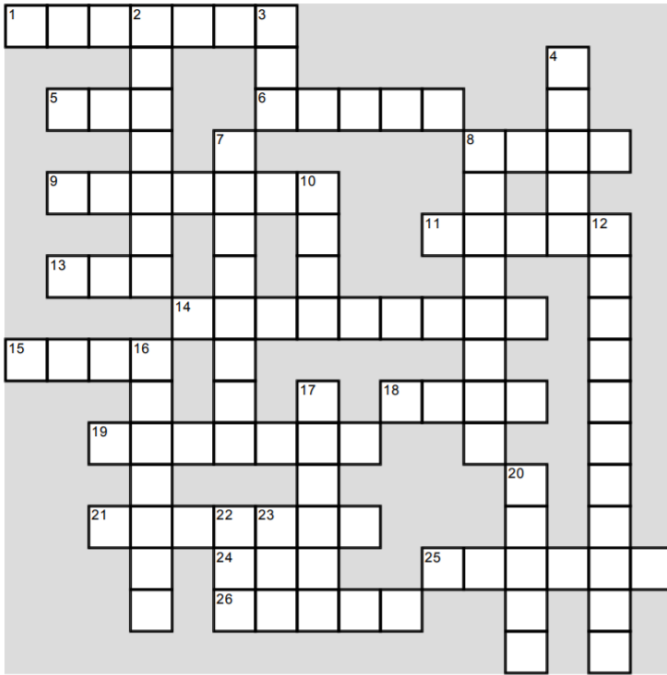
For 20 years, he was employed by Benchmark Electronics Inc. as a Production Engineer. He enjoyed his work and became an expert in the production of computer boards without the use of lead. He traveled to numerous production facilities worldwide for his work. Prior to Benchmark he was employed at Digital Equipment Corporation in Augusta, Maine.

In his spare time Bob enjoyed skiing, visiting the coast of Maine, hiking, and reading.

He particularly enjoyed long bicycle trips. Most notable was a 3800-mile cross country trip in 1994 and a 2200-mile trip throughout Europe in 1988.

Bob also enjoyed taking long walks after work with his wife. Often, they would walk 5 miles or more together. He also enjoyed frequent trips to Thailand, his wife's native country.

August 2017 Reliability Crossword Puzzle!



*Answers to appear in the
November 2017 Newsletter*

Across

1. "Reliability is ____ over time."
5. Attending Chapter Meetings is ____.
6. Sequential testing method in which test ____ are tested consecutively instead of simultaneously.
8. Characteristic of a failing link?
9. ____ FMEA
11. Current US President.
13. First name of current Chapter Treasurer.
14. Distribution used to fit parametric degradation failure times.
15. Last name of current IEEE RS President.
18. Riemann ____ function.
19. Last name of Chapter Chair from '13-'14.
21. Probability ____ function.
24. Public stock debut.
25. ASTR2017 location in Texas.
26. Monte ____

Down

2. Namesake of our regular meeting location.
3. Only ____ can prevent forest fires.
4. Purgatory ____ State Reservation
7. ____ data.
8. An effective reliability program can reduce ____ costs.
10. ____ of the times.
12. Likelihood.
16. Last name of current IEEE RS Secretary.
17. Acceleration ____
20. First name of IEEE RS representative on Government Relations Communication Policy committee.
- 22 Spelling mistake in original.
- 23 Beer variety

Chapter Participation and Outreach Efforts

Chapter Seeks Volunteers



We are interested in having you help out as a volunteer, contributing as much or as little as you would like. We need a good team of volunteers that help us keep things going. If you would like to join us, there is probably a good opportunity to choose how you would like to contribute. Email or talk to any of us at the next monthly presentation or attend one of our Advisory Committee meetings.

For updates on upcoming events: <http://ewh.ieee.org/r1/boston/rl/events.html>.

Readers can contact chapter newsletter editor Ken Rispoli (ken-rispoli@ieee.org) with any comment/suggestion or if interested in contributing to our next issue. Thanks.

**The IEEE Reliability Society Joint Section Chapter
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Newsletters available at the following link:**

[Boston - New Hampshire - Providence Joint Chapter Newsletter](http://ewh.ieee.org/r1/boston/rl/newsletters.html)

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