

# DfR Solutions

reliability designed, reliability delivered

## DfR Solutions July/August Newsletter

[Design for Excellence \(DfX\) is coming to Austin, TX, October 11 - 15!](#)

[Solving Shock and Vibration of Pb-free](#)

[Don't miss IMAPS' Workshop on High Reliability in Military Applications](#)

### LEDs - Next Generation Lighting

Light Emitting Diodes (LEDs) are increasingly the [next generation lighting solution](#) for multiple applications. However, there are increasing concerns regarding their [reliability characteristics](#), especially in regards to [solder joints](#). To provide more guidance to designers, DfR has put together this insightful [white paper](#) on ensuring the reliability for LEDs. For more information on LEDs, please contact [Randy Kong](#).

### Environmental Legislation: The Latest News

#### EU RoHS

The latest [proposed modifications](#) to RoHS include covering ALL electronic equipment (that means military and avionics), elimination of brominated and chlorinated flame retardants (BFR / CFR), polyvinyl chloride (PVC), and [nanomaterials](#), and requiring a [CE mark](#) to demonstrate compliance. At the same time, consumer electronic companies are [actively supporting](#) the elimination of BFRs and PVCs. Why? Maybe because Greenpeace is [watching closely](#) and [aggressively weighing in](#) on each exemption.

#### US RoHS

The [American RoHS](#) is expanding through IEEE Standards [1680.2](#) and [1680.3](#). These standards [expand beyond the current RoHS](#) by banning Tetrabromobisphenol-A (TBBPA) and requiring inventorying of over 100 other substances. This will affect you because these standards drive the [Electronic Product Environmental Assessment Tool](#) (EPEAT) and all new government procurement must [be compliant to EPEAT](#).

#### China RoHS

The Chinese Ministry of Industry and Information Technology (MIIT) has released a new [general requirements document](#) for China RoHS. The biggest changes? The scope has broadened from Electronic Information Products listed in a catalog to any Electronic and Electrical Products powered below 1500 VDC or 1000 VAC. In addition to the restricted six (Hg, Pb, Cd, Hex Cr, PBB, PBDE), there is the possibility of "State regulations of other harmful substances" and inspection will be performed at both entry AND exit and items will be subject to quarantine (say goodbye to the building of SnPb electronics in China).

Oh, and don't forget [conflict metals](#) and [India RoHS](#).

Have a headache? Don't go for the aspirin. DfR helps hundreds of companies each year with the challenge of meeting environmental requirements, including [Design for Environment](#) (DfE). For more information, please contact [Randy Schueller](#).

Success of the Month: Rapid-Response Process Analysis

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How can you save \$2 million and six months? Use DfR Solutions. Through a comprehensive assessment, including construction analysis and Physics of Failure (PoF), DfR conclusively demonstrated reliability and robustness to an important end-customer, providing the OEM a shorter time-to-market and lower cost without accelerated life testing (ALT). If you would like more information on our unrivaled process analysis services, please contact [Jim McLeish](#).

### Counterfeit Components - Understanding the Risk/Reward Tradeoff

Counterfeiting is increasingly a challenge to [electronic OEMs](#). As even the military are finding themselves [vulnerable](#), the electronics industry is developing [initiatives](#) and [standards](#) to combat this issue. The most important step is [quantifying the risk/reward tradeoffs](#): What to do, when to do it, and is it worth the money? For more information on DfR's counterfeit detection and prevention services, including compliance to Honeywell's [SPOC 419](#) requirements, please contact [Ed Dodd](#).

### Touch-Screen Displays

The soaring success of iPhone and iPad relies on the successful operation of the touch-screen display. The foundation of this success is the strength of the glass panel. In this [white paper](#), DfR provides guidance on where weaknesses can occur and how to avoid them. For more information, please contact [Nathan Blattau](#).

### Manhattan Project Report - Phase 2

The DoD continues to move forward on Pb-free with the release of Phase 2 of the Lead Free Electronics Manhattan Project. This [report](#) details the projects and costs believed to be necessary to characterize and mitigate the risk of Pb-free solder in severe environments. Anyone have \$100 million lying around? For more information on successfully transitioning to Pb-free, please contact [Cheryl Tulkoff](#).

### How to Get 25 years to Life

Concentrated photovoltaic (CPV) installations must meet both reliability and long term life characteristics. DfR has worked with Indium Corporation to assess the combination of their Reactive NanoFoil and Heat Spring Solder preform technologies. The results of analysis and testing [clearly demonstrate](#) that a solder attachment approach is superior to epoxy bonding. For more information, please contact [Greg Caswell](#).

### Circuit Design Wizards

DfR is often asked to perform analysis of a circuit to identify performance and reliability improvements. Recently, we were asked to analyze this [unique configuration](#). After extensive electrical simulation, we determined that a [1.21 jiggawatt flux capacitor](#) was required. If you have one of these parts available, please contact [Joelle Arnold](#).

## DfR News

### Gregg Hobbs (1939 - 2010)

DfR Solutions would like to express our condolences on the passing of Dr. Hobbs. Gregg was a giant in his field and through his development of the HALT and HASS equipment and processes, had a revolutionary influence on the electronics industry. His presence will be sorely missed.

### Shock and Vibration of Pb-free

DfR has announced it is building upon its successful SBIR Phase I Partnership Program. Where SBIR Phase I Partnership focused on capturing the behavior of Pb-free solder under shock and vibration, the [SBIR Phase II Partnership](#) will focus on quantifying the value of various mitigation strategies, including staking, underfill, dummy ball / ball removal, and cutouts. Participants will not only have exclusive access to the largest investigation into Shock and Vibration of Pb-free solder ever performed, they will also finally be able to capture the cost / risk tradeoffs necessary for a successful product launch. For more information, please contact [Craig Hillman](#).

## IMAPS High Reliability Microelectronics for Military Applications

[Greg Caswell](#) is the General Chair for this critical [IMAPS Advanced Technology Workshop](#) (ATW) in Bethesda, MD, August 31 - September 2. Keynote speakers include Grant Schmieder of OSD discussing changes in the DoD Acquisition Process, Ed Morris of Lockheed Martin presenting the current challenges of Pb-free and how the DoD and its contractors are responding, and [Colonel Danny McKnight](#) speaking on how leading under fire relates to resolving challenges in business and management. DfR presenters will include [Ed Wyrwas](#) (Microcircuit Reliability Prediction), [Jim McLeish](#) (High Reliability Microelectronics for Military Applications), [Nathan Blattau](#) (Automated Design Analysis), and [Joelle Arnold](#) (Reliability Impact of Reballing). To register for this conference, please contact [Greg Caswell](#) or go to the [website](#).

## Upcoming Events

### Nistec Seminar (***Petach Tikva, Israel: July 6-7***)

[Craig Hillman](#) presented two (2) one-day seminars entitled "Next Generation Technologies in Electronic Packaging and Production" and "Design for Excellence" in collaboration with Nistec. For more information, please click [here](#).

### DfR Solutions in Israel (***July 5-9***)

[Craig Hillman](#) was in Israel giving presentations on cleanliness, Pb-free, design for reliability, physics of failure and giving demonstrations of DfR's new automated design analysis tools. For more information, please contact [Craig Hillman](#).

### Semicon West 2010 (***San Francisco, CA: July 13***)

Craig Hillman was invited to speak on some of the design and reliability challenges of 3D Packaging at the [3D IC Co-Design Challenges Session](#) at [Semicon West](#). For more information, please contact [Craig Hillman](#).

### MET Labs Customer Appreciation Event (***Baltimore: July 22***)

DfR Solutions presented on Reliability Prediction for Electronic Hardware. For more information on this topic, please contact [Jim McLeish](#).

### SMTA Space Coast Chapter (***Palm Bay, FL: August 4***)

Nathan Blattau will be presenting "Manufacturing and Reliability Challenges with QFN" to the [Space Coast Chapter](#). For more information on this topic, please contact [Nathan Blattau](#).

### DfR Solutions in Central Florida (***August 4-5***)

[Nathan Blattau](#) will be visiting companies in the Orlando, FL, and Melbourne, FL, areas. If you and your colleagues are interested in a visit and possibly a presentation on a range of technical topics, please contact [Tammy Smittenaar](#).

### 16th ISSAT International Conference (***Washington, DC: August 5-7***)

Jim McLeish will be presenting "Transitioning to Physics of Failure Reliability Assessments for Electronics" at the [16th ISSAT International Conference on Reliability and Quality in Design](#). For more information or to arrange a meeting during the conference, contact [Jim McLeish](#).

### DfR Solutions in Pacific Northwest (**August 10-12**)

[Randy Kong](#) and [Tom O'Connor](#) will be visiting companies in the Portland, OR, and Seattle, WA, areas. If you and your colleagues are interested in a visit and possibly a presentation on a range of technical topics, please contact [Tammy Smittenaar](#).

### DfR Solutions in Chicago (**August 11**)

[Craig Hillman](#) will be visiting companies in the Chicago, IL, area. If you and your colleagues are interested in a visit and possibly a presentation on a range of technical topics, please contact [Tammy Smittenaar](#).

### ASQ Reliability Division Webinars (**12 Noon, EDT: August 12**)

Jim McLeish will present Introduction to Physics of Failure at the inaugural session for this ongoing series. For more information, please contact [Jim McLeish](#) or [Fred Schenkelberg](#).

### Military Vehicles Exhibition and Conference (**Detroit, MI: August 10-13**)

[Jim McLeish](#) will be attending this [conference](#) to discuss how DfR's approach to Reliability Physics could shorten product development cycles and improve vehicle performance in theater. For more information or to arrange a meeting during the conference, please contact [Jim McLeish](#).

### IMAPS High Reliability Microelectronics for Military Applications (**Bethesda, MD: August 31-September 2**)

Numerous DfR personnel will be presenting on a variety of topics, including Reliability Prediction of Integrated Circuits, Newest DoD Approach to Reliability Prediction, Automated Design Analysis, and Capturing the Risks of Reballing. To register for this conference, please contact [Greg Caswell](#) or go to the [website](#).

### IEEE Solar Technology Workshop (**Austin, TX: September 16**)

[Cheryl Tulkoff](#) and Paul Parker of [SolarBridge](#) will be presenting "Reliability Challenges for Solar Microinverters" at this critical [IEEE workshop](#). For more information on DfR services for the photovoltaic (PV) inverter industry and their customers, please contact [Cheryl Tulkoff](#).

### ESTC Conference (**Berlin, Germany: September 13-16**)

[Cheryl Tulkoff](#) will be presenting "Managing Reliability Expectations and Warranty Costs in Medical Electronics" at the [Electronics System Integration Technology Conference](#). For more information on this topic or to arrange a meeting during the conference, please contact [Cheryl Tulkoff](#).

### DfR Solutions in Germany (**September 13-16**)

[Cheryl Tulkoff](#) will be visiting companies in Germany in September. If you and your colleagues are interested in a visit and possibly a presentation on a range of technical topics, please contact [Tammy Smittenaar](#).

### Pb-Free Electronics Risk Management (**Bloomington, IN: September 21-23**)

[Jim McLeish](#) will be attending the [PERM](#) meeting. For more information or to arrange a meeting during the conference, contact [Jim McLeish](#).

### DfR Solutions in Indiana (**September 22**)

[Jim McLeish](#) will be visiting companies in Indiana. If you and your colleagues are interested in a visit and possibly a presentation on a range of technical topics, please contact [Tammy Smittenaar](#).

### DfR Solutions in Connecticut (**September 23-24**)

[Craig Hillman](#) will be visiting companies in Connecticut. If you and your colleagues are interested in a visit and possibly a presentation on a range of technical topics, please contact [Tammy Smittenaar](#).

### DfR Solutions in Los Angeles (**September 27-30**)

[Cheryl Tulkoff](#) and [Craig Hillman](#) will be visiting companies in the Los Angeles area. If you and your colleagues are interested in a visit and possibly a presentation on a range of technical topics, please contact [Tammy Smittenaar](#).

### IPC Midwest (**Chicago, IL: September 28-30**)

[Craig Hillman](#) will be presenting "Design for Reliability: The Next Generation" at the [IPC Midwest Conference](#). For more information or to arrange a meeting during the conference, please contact [Craig Hillman](#).

### IMAPS Chesapeake Chapter (**Laurel, MD: October 5**)

[Nathan Blattau](#) will present "Tensile Ratcheting in Solder Bumps" at the Fall Symposium of the IMAPS Chesapeake Chapter. For more information, please contact [Nathan Blattau](#).

### Design for Excellence (DfX) (**Austin, TX: October 11-15**)

DfR Solutions, in collaboration with Ops Ala Carte, is proud to announce that the DfX training session will be held in Austin, Texas, in October. This one-of-a-kind collaborative effort will provide designers, reliability personnel, and engineering management with tools on how to meet time-to-market deadlines and reduce warranty issues. Areas to be covered include Design for Reliability, Design for Manufacturability, and Design for Testability, just to name a few. For a full schedule of courses and information on registration, please click [here](#) or contact [Tammy Smittenaar](#).

### IEC Technical Committee 107 Meeting (**Seattle, WA: October 12**)

[Ed Wyrwas](#) has been invited to present to the [IEC Technical Committee](#) regarding his work on physics-of-failure based reliability and durability modeling of current and future generations of integrated circuits. For more information on DfR's ability to eliminate the current empirical approach to reliability prediction, contact [Ed Wyrwas](#).

### DfR Solutions in Seattle (**October 12-13**)

[Craig Hillman](#) and [Randy Kong](#) will be visiting companies in the Seattle area. If you and your colleagues are interested in a visit and possibly a presentation on a range of technical topics, please contact [Tammy Smittenaar](#).

### Space Simulation Conference (**Annapolis, MD: October 20**)

[Ed Wyrwas](#) and [Nathan Blattau](#) will present "Integrated Circuit Reliability Simulation in Space Environments" at the [Space Simulation Conference](#). For more information on this topic or to arrange a meeting during the conference, please contact [Nathan Blattau](#).

### IPC (**California: October 20**)

Cheryl Tulkoff will be presenting the full-day workshop: "High Reliability: Solving Problems with Reliability, Repair and Rework in the Lead-Free Era." For more information, please contact [Tammy Smittenaar](#) or [Susan Filz](#) of IPC.

### AIMS/Harsh Environments Symposium (**Orlando, FL: October 25**)

[Jim McLeish](#) will be presenting "Overview of the New DoD Reliability Revitalization Initiatives," at the [AIMS conference](#). For more information or to arrange a meeting during the conference, please contact [Jim McLeish](#).

### SMTAI (**Orlando, FL: October 24-28**)

DfR Solutions will be presenting three workshops at the [SMTAI](#)

1. True Design for Reliability-What Is and What Is Not DfR (Sunday, October 24 at 1:30pm) Craig Hillman, Ph.D.
2. The Reality of Pb-Free Reliability (Monday, October 25 at 1:30pm) Randy Schueller, Ph.D.
3. Contamination and Cleanliness: Developing Practical Responses to a Challenging Problem (Monday, October 25 at 1:30pm) Craig Hillman, Ph.D.

### DfR Solutions in Central Florida (**October 24-28**)

[Randy Schueller](#) and [Jim McLeish](#) will be visiting companies in the Tampa, FL, Orlando, FL and Melbourne, FL areas. If you and your colleagues are interested in a visit and possibly a presentation on a range of technical topics, please contact [Tammy Smittenaar](#).

### DMSMS (**Las Vegas, NV: October 25-28**)

[Craig Hillman](#) and Walt Tomczykowski of [ARINC](#) will be presenting "Can the DoD Rent/Borrow the Design? A New Method to Mitigate the Impact of DMSMS and Improve Reliability" at the [Diminishing Manufacturing Sources and Material Shortages Conference](#). For more information or to arrange a meeting during the conference, please contact [Craig Hillman](#).

### IMAPS (**Research Triangle, NC: October 31 - November 4**)

DfR Solutions will be presenting two workshops at the IMAPS Conference:

- "Understanding Failure and Root-Cause Analysis in Pb-Free Electronics" (Sunday, October 31) Greg Caswell
- "An Electronics Expert Reliability Analysis Tool" (Monday, November 1) Nathan Blattau and Craig Hillman

Greg Caswell will also be presenting "Counterfeit Detection Strategies: When to Do It / How to Do It" in the technical program (Tuesday, November 2).

### IPC / SMTA Cleaning Conference (**Chicago: November 16-18**)

DfR Solutions will be presenting on a number of topics at this joint industry conference. [Randy Schueller](#) will provide updates on sulfur attack of silver and other board platings. [Seth Binfield](#) will present on recent work on flux chemistry and voiding, performed in collaboration with Jeannette Plante of NASA's Goddard Space Flight Center.

### Printed Circuit & Electronics Assembly (**Shenzhen, China: December 1-3**)

[Randy Kong](#) will be presenting Manufacturing and Reliability Challenges with QFN Packaging at this joint [Hong Kong Printed Circuit Association and IPC event](#). For more information or to arrange a meeting during the conference, please contact [Randy Kong](#).

### DfR Solutions in China and Taiwan (**December 1-15**)

[Randy Kong](#) will be visiting companies in China and Taiwan in December. If you and your colleagues are interested in a visit and possibly a presentation on a range of technical topics, please contact [Tammy Smittenaar](#).

### IPC Tin Whiskers Conference (**Chicago: December 6-7**)

[Craig Hillman](#) has been invited to give a half-day workshop on Tin Whisker Prediction and a half-day workshop on Tin Whisker Mitigation and Risk Assessment at this unique [industry conference](#) focused on practical methodologies. For more information or to arrange a meeting during the conference, please contact [Craig Hillman](#).

## Employment

Looking to hire? [Click here](#) to visit the "seeking employment" section of our website where we highlight engineering professionals who are currently looking for job placement.

Patrick Boulden, a well-recognized name in the electronics industry, is currently seeking work in Program Management. If you have an opening this area or know an organization that does, please [contact Patrick](#) directly.

## Advertisements

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DfR is now accepting advertisements in the DfR Solutions Newsletter. For more information, contact [Tammy Smittenaar](#).

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