

## CONTENTS

- Page
1. Chair's Note  
Upcoming ASQRRD Webinars
  2. Calling all Webinar Authors  
"Dr Bob" Obit
  3. Relyence Corp ad
  4. 68<sup>th</sup> Annual RAMS-2022
  5. 2020-2021 ASQ-RRD Leadership
  6. Sample CRE Questions(Part 15)

### Check out our website at:

<https://my.asq.org/communities/home/182>



## *Editor's NOTE*

*Trevor Cranney*  
Chair, ASQ Reliability & Risk Division

### Chair's Message

As always, I hope this message finds you and your family safe and healthy during this ongoing pandemic. Our division leadership team is still working hard with an unclear future. We're on to the delta variant and soon the mu variant, but we are still optimistic that we can resume normal activities soon. As of now, ASQ has banned in-person events again for September through December. RAMS is scheduled for January in Tucson and is still planned to occur with a full program as well as pre and post-conference training courses. We are also in early planning for our RMMR conference to return to

fruition next year in the July-August timeframe. We will let you know more details when we have them for specifics and how to contribute and participate. Both of these activities, as well as our ongoing webinars program, training, and QE best reliability paper are going into our 2022 business plan and budget, which we will be submitting to ASQ in a matter of days.

I'll let you know where we stand on our 2022 plan of activities in our 4<sup>th</sup> quarter newsletter. Covid has not diminished our ability to plan activities for RRD or to deliver content virtually. It merely forces us to re-plan and we are at least becoming very adept at this.

Trevor Cranney

## *Upcoming ASQ RRD Webinars*

10/14/2021 TRIZ - innovative problem solving Jack Hipple

<https://attendee.gotowebinar.com/register/2083270387390310416>

11/11/2021 Understanding the impact of Single Event Effects (SEE) on System Safety Manju Maheve

<https://attendee.gotowebinar.com/register/810404258821030672>

***Calling all Webinar Authors!!***  
**Dave Auda ([davidauda@yahoo.com](mailto:davidauda@yahoo.com))**

We would like to extend an invitation on behalf of the ASQ Risk and Reliability Division (ASQRRD). If you would be interested in being a presenter of an ASQRRD webinar, contact Dave Auda. Webinars run every 2nd Thursday of the month at noon EDT for 1 hour,. The content should be something that the attendees can use, Reliability-related knowledge and/or skill.

Why present? A large potential audience that we invite, an additional entry to your resume demonstrating competence, refine your skills, AND earn recertification points.

If you have need of support in developing, preparing and/or presenting at such an event, we can support. Become a recognized subject matter expert!

***Dr Bob” passes away July 26, 2021***

Robert Bruce Abernethy (called "Dr. Bob" by his friends and the statistical world) passed away at age 91 on July 26, 2021 at his home in North Palm Beach, Florida, with his loving wife Sally of 49 years by his side.

Bob earned a Master's degree in Engineering at Rensselaer Polytechnic Institute and served in the US Navy during the Korean War. He worked for United Technologies Pratt & Whitney for 35 years. During that time, Dr. Bob made substantial engineering contributions to the J58 engine that powered the SR 71 Blackbird. For those contributions, and at his request, in 1963 P&W sent him to the Royal Imperial College in London., England where he earned a second Master's degree as well as a PhD in Statistics.

This started Bob on his path of teaching Statistics and supporting Statistical Engineering at P&W. In the middle 70's Bob became aware of "Weibull Analysis" and after realizing the power of this statistical distribution P&W became a hotbed of Weibull Risk analysis. This led Bob to convince the USAF to fund P&W to write a USAF Weibull Handbook (Published in 1983). As part of that contract P&W gave courses in Weibull Risk analysis to numerous USAF and US Navy bases.

After Bob retired in 1986 he became an educator and presenter, teaching statistical concepts and their uses in Engineering, especially the use of Weibull analysis in the area of Reliability and Safety. His teaching impacted aviation, medical devices, the automotive industry, chemical plants, refineries, power companies in addition to military systems. He has made Weibull methodology use and influence known worldwide.

----- taken from Obit Published by The Palm Beach Post from Aug. 7 to Aug. 8, 2021.

## KEY HIGHLIGHTS

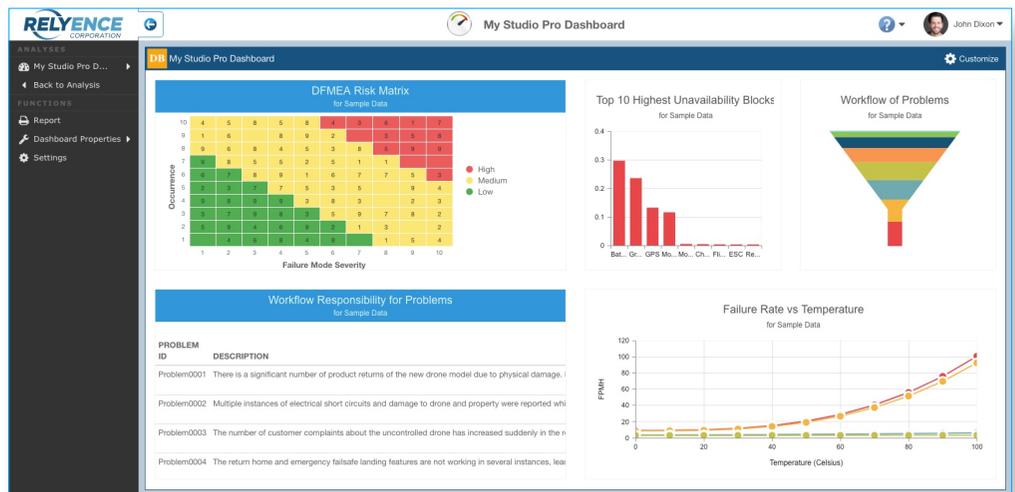
- Integrated suite
- Stand-alone tools
- FMEA, FMECA
- FRACAS, CAPA
- Fault Tree
- Reliability Prediction
- Reliability Block Diagram
- RCM, Maintainability
- Weibull
- ALT
- Browser-based
- On-premise or cloud-based
- Training and implementation
- Knowledgeable tech support
- Free, no install trial

## FMEA · FRACAS · Fault Tree · Reliability Prediction RBD · RCM · Maintainability · Weibull · ALT

**Relyence® offers a complete solution for all your reliability and quality software needs. Along with our software tools, we offer top-notch technical support, implementation services, and training.**

**The Relyence Solution.** Providing seamless integration between FMEA (including Process Flow Diagrams and Control Plans), FRACAS, Fault Tree, Reliability Prediction, RBD, RCM, Maintainability, Weibull, and ALT analyses, the Relyence tool suite empowers you to effectively manage your products throughout their lifecycle. You can use each module stand-alone, or combine the tools you need in our Relyence Studio integrated platform.

**Power & Innovation.** Relyence tools offer an impressive list of features. Just a few of the highlights include: customizable cross-module dashboards; user-interface customization; flexible report generation; data importing and exporting; API functionality; device libraries; workflow, approvals, and notifications; user and group roles and permissions; and Relyence innovations such *always-in-sync™* technology, *smart-layout*, *Knowledge Banks™* for lessons learned reusability, *FMEA-Fault Tree link-sync™*, and *Intelligent Part Mapping™* for device decoding.



**Flexibility & Collaboration.** All Relyence tools can be accessed from any computer, PC, Mac, laptop, tablet, or smartphone for ultimate flexibility and team collaboration. You can use Relyence either as an on-premise installation on individual computers or a network, or as a zero-client, browser-based platform with your data hosted in the Microsoft cloud or in your own private cloud. The choice is yours!

**Rely on Excellence.** In conjunction with our software tools, we provide world-class services to help ensure your success. Our Implementation and Training teams can get you up to speed quickly, and our Technical Support team consistently provides support that is unparalleled in the industry.

TRY FOR FREE

**Attend the 68th Annual RAMS® 2022: January 24 – 27, 2022**

*“Opportunities for Machine Learning in R&M”*

Hilton El Conquistador Resort • Tucson, Arizona, USA

*RAMS® is the premier, global forum for sharing your experience, knowledge, and roadmaps to success.*

**5 Reasons to Attend:**

1. Gain new insights into creating more efficient and effective reliability programs
2. Take actionable knowledge back to your organization
3. Make valuable contacts by networking with industry leaders and professionals
4. Gain new skills, CEUs and certifications that can advance your career including ASQ exam courses (CRE, CQE, and others) and continuing education courses offered either pre/post-symposium, or both, by ASQ Reliability & Risk Division
5. Extend your stay and enjoy a fabulous family vacation at Tucson close to dozens of attractions

RAMS® 2022 will bring together an international audience of R&M leaders and professionals, in-depth sessions and tutorials presented by top R&M experts, exhibit floor featuring leading companies, keynote session insights, networking and job-related opportunities, and more.

The evolving world of autonomous systems, artificial intelligence, new levels of complexity in human-machine teaming and automation making more and more life and death decisions intensifies the critical role of RAMS® disciplines.



**El Conquistador Tucson Awaits You!**

This spectacular venue is a AAA Four Diamond Hilton Resort with excellent meeting facilities, amazing amenities, restaurants, and rooms with amazing Sonoran Desert views.

Awarded two recent "Best of Meetings Today" awards, this venue is sure to enhance your RAMS 2022 experience!



**SPECIAL**

room rates for  
**RAMS® 2022**  
 attendees are available at the  
 Hilton  
 El Conquistador Resort  
 Tucson, AZ, USA  
**1-520-544-5000**



Register at [rams.org](http://rams.org)

SPONSORING SOCIETIES



## 2020-2021 ASQ-RRD LEADERSHIP POSITIONS

### Elected Positions

#### Chair

Trevor Craney  
[tacraney@yahoo.com](mailto:tacraney@yahoo.com)

#### Chair-Elect

Tim Gaens  
[tim@asqrrd.org](mailto:tim@asqrrd.org)

#### Secretary

Rong Pan  
[rong.pan@asu.edu](mailto:rong.pan@asu.edu)

### Appointed Positions

#### Membership Chair

Tim Gaens  
[tim@asqrrd.org](mailto:tim@asqrrd.org)

#### Nominating Chair

Jim Breneman  
[weibullman@gmail.com](mailto:weibullman@gmail.com)

#### QE Best Paper Award Chair

Rong Pan  
[rong.pan@asu.edu](mailto:rong.pan@asu.edu)

#### Newsletter Editors:

Jim Breneman  
[weibullman@gmail.com](mailto:weibullman@gmail.com)  
Mohammad Pourgol-  
Mohammad  
[mpourgol@gmail.com](mailto:mpourgol@gmail.com)

#### Social Media:

Tim Gaens  
[tim@asqrrd.org](mailto:tim@asqrrd.org)

#### Webmaster:

Tim Gaens  
[tim@asqrrd.org](mailto:tim@asqrrd.org)

#### Marketing

Angleat Shelikoff  
[adshelikoff@gmail.com](mailto:adshelikoff@gmail.com)

### Webinar Outreach

**Executive Producer & Speaker Manager:** David Auda ([davidauda@yahoo.com](mailto:davidauda@yahoo.com))

**Chinese Host:** Frank Sun ([franksun99@yahoo.com](mailto:franksun99@yahoo.com))

**English Hosts:** David Auda, Arun Gowtham Sampathkumar

**Spanish Host:** Norma Antunano ([normaantu@aol.com](mailto:normaantu@aol.com))

**Video Editor:** Tim Gaens ([tim@asqrrd.org](mailto:tim@asqrrd.org))

Contact Trevor ([tacraney@yahoo.com](mailto:tacraney@yahoo.com)) today to volunteer!

1. The Arrhenius model is used to predict part reliability. Which of the following are valid Arrhenius model statements?
- I. The rate of chemical reaction doubles for every 10°F rise. II. It is useful for all accelerated testing plans.  
 III. It is useful for significant thermal stresses. IV. It provides a relationship of failure to temperature.
- A. I and II only B. II and III only C. III and IV only D. I, III and IV only

2. A fault tree analysis (FTA) is a design analysis technique constructed from a "top event". A basic problem with this technique in comparison to a FMECA would be which of the following ?
- A. Assigning probabilities to the various events. B. Needing a different FTA for each defined top event.  
 C. Understanding logical symbols. D. Only electronic systems can be analyzed.

3. Subcontractor ABC has provided a new canister design. The canisters are rated at 1000 psi, with a standard deviation of 150 psi. The expected stress will be 750 psi with a standard deviation of 200 psi. What is the probability of failure of the canister ?
- A. 0.3085 B. 0.1587 C. 0.1056 D. 0.0228

4. Which of the following is required to establish a reliability specification ?
- A. The usage environment. B. A robust design. C. The reliability policy. D. A mathematical model.

5. Using the failure data to the right, determine what distribution fits best from an engineering standpoint:

- A. Lognormal, B Smallest Extreme value, C. Normal, D. 3-parameter Weibull
6. Who should be chairperson of a design review committee ?
- A. A senior member of management. B. The chief designer.  
 C. The person best able to make decisions on a design. D. The reliability engineer

7. The design system predicted B.1 life for a part is 1000 hours. Five parts have accumulated 1500 hours and five have 2000 hours without any failures. If most parts of this type have a failure mode with a Weibull  $\beta = 3.0$ , is this success data sufficient to increase the predicted design life?
- A. YES, B. NO

(Hint: see USAF Weibull Handbook, 1983, Chapter 4 - Weibayes)

8. Ten failures occurred in the field out of a population of 2000. The ten failure times are: 51, 79, 116, 164, 197, 230, 232, 327, 414, and 451 hours. Generate a Weibull distribution that best represents the total population (Hint: see USAF Weibull Handbook, 1983, pp 127ff)

9. Maintainability considerations are important in the design of :
- A. Unmanned satellites. B. Integrated circuits.  
 C. Modern automobiles. D. Consumer televisions.

10. A stress test was conducted for a mechanical part by subjecting a sample of 25 parts to increasing load stress. The results of the test are identified in the table. The sample was subjected to a 50% added stress each week for 5 weeks. The test terminated after 5 weeks. To determine whether failures observed in the test reflect actual use failures or are the result of high test stresses, which of the following must be known ?
- A. The geometry of the test setup. B. The precise history of cumulative stress.  
 B. The exact times of the failures. D. The mechanisms of the failures.

Failure #	Failure Time	C(ensor)/F(ailure)
1	31.7	F
2	42.1	F
3	61.9	F
4	69.1	C
5	81.2	F
6	89.1	F
7	92.1	C
8	101	F
9	103	F
10	108	F
11	125	C

Week	Number of Failed Parts
1	0/25 = 0%
2	0/25 = 0%
3	1/25 = 4%
4	4/24 = 16.7%
5	8/20 = 40.0%