SAFE News

Dedicated to Ensuring Personal Safety and Protection in Land, Sea, Air, and Space Environments

SAFE Association – Our 64th Year | Volume 24 | Number 1 | Winter 2021

President's Message, *By Ebby D. Bryce, 2021 President*

Where do I begin?...I don't want this to sound like most other addresses that follow the boondoggle that we all know as 2020, but there is no getting around it. That being said, I will try not to bore you.

A year ago, the SAFE Board was planning site visits to Mobile, Alabama and Albuquerque, New Mexico as potential sites for upcoming SAFE symposia. Around the same time, there was news about a new deadly virus spreading throughout a section of China. Not much was known about the virus, but it was reported to have killed thousands. Not long after the report hit the US news networks, flights from China and Europe were being banned from entering the United States. Well lucky for SAFE, in Early February 2020...before the big shutdown...we made it to Mobile, held a board meeting, visited with the chamber of commerce, other local representatives, and enjoyed some local restaurants and pubs. The meetings with city and local representatives turned out to be beneficial. The City of Mobile is very excited to have the SAFE Association hold our annual symposium in their city, so they made us an amazing offer. Thus, conversations about signing a contract were started.

Soon after the SAFE Board meeting in Mobile, the nation was starting to shut down and a trip to Albuquerque was canceled. And this is when the fun started (sarcasm). The rest of the year, the board of directors and most of the nation started to do much of its work virtually. Meanwhile, the 2020 Symposium was still being planned for October in Virginia Beach. As time continued to move along, the shutdowns were not relaxing and the probability of folks traveling to a symposium were dwindling. The board held on as long as we could and did everything possible to host an "in person" symposium; however, as deadlines were approaching and with many states still on lockdown...we were forced to cancel the symposium in Virginia Beach and investigate alternatives. It didn't take long for our amazing symposium committee to present their concept for a virtual symposium. The board was skeptical, but Nicole Stefanoni and Ted Poe were confident they had a plan and convinced the board that they would plan one hell of an experience for any who attended

So there we were, many of us had participated in some of the virtual events that followed the lockdown and we were on the edge of our seats as Nicole and Ted described the event that they were planning. They talked about sponsorships, a virtual exhibit hall with virtual booths, pre-recorded technical presentations, live presentations, television like productions, etc. Was this all too good to be true or could they pull it off? Well here we are, and as I look back on the event they planned and executed in two and a half months...what an awesome event! The symposium committee, in conjunction with our Science and Technology Committee Chairman (Casey Pirnstill), prerecorded approximately 50 presentations prior to the event. With the production studio located in Perkasie, PA, Nicole and I were lucky that we were close enough that we could drive to the location and participate in producing the event. What an amazing experience to witnesses the work and coordination that goes into the digital production of prerecorded and live events that were to be broadcasted over a secure connection. It is almost impossible to put into words how impressed I am that Nicole's and Ted's vision for a virtual event came to reality even with all of the complications and roadblocks in their way. We have received so many positive comments it is almost impossible to stay humble. The fact that the vision of two individuals could be executed by this board in such a short period of time will be something that I remember and try to emulate in future challenges.

(Continued on page 2)

(Continued from cover)

One quick lesson learned…for as positive and successful as the event was…areas for improvement were highlighted and some shortcoming were exposed. Specifically, our corporate members and sponsors are the life line of the Association and constant focus should be put on not only what they do for SAFE, but what SAFE does for them. This Association is comprised of companies that, by nature, are allies in the goal of preserving human life; however, many are competitors in the corporate world. How do we balance the flow of information that will enhance the preservation of human life while understanding that some of our partners are also in competition for creating the next best thing? My belief…trust, respect, understanding, and camaraderie. Is this easy? Hell no, but this is why I belief this association was created. Society may have changed in the last 60 years; and yes, even the Association has changed, but the goal has not. The benefits of SAFE are for everyone…Industry, Government, Academia, Science, etc. We all look forward to the symposium every year. Whether it is to be educated by attending the presentations, having dinner or a drink with a buddy you haven't seen in years, checking out the new shiny object that a vendor may have, or showing off your new shiny object that you are hoping will garner you or your company that multimillion dollar contract…we should not lose sight in that SAFE was created to bring us all together to make us all better in the goal of preserving human life. As the president, I will do everything I can to keep the board of directors focused on everyone in the Association. One of my main goals this year is to put focus on how SAFE can improve what we do for our corporate members and sponsors.

Okay, looking forward to the upcoming year…It is now the beginning of 2021 and I am optimistic that this will be a fun and prosperous year for all of us… in our personal ventures and for the Association. As I mentioned earlier…conversations about signing a contract with the City of Mobile were started. Well, if you haven't heard by now, the contracts have been signed, and we are planning on hosting this year's 59th Annual SAFE Symposium in Mobile, Alabama November 1st – 4th. A site visit has been scheduled in February. Our Symposium committee will be meeting with City Leaders, Convention Center Personnel, Lodging Representatives, Audio/Visual Experts, etc. to ensure that this year's symposium is safe and enjoyable for all. With the pandemic still looming over our heads, there are still many questions that need to be answered and this will be our first glimpse into the future to see what we can expect for 2021. I can't promise much for what this year will bring, but I can promise that the SAFE Association Board of Directors will do everything we can to make this year safe and enjoyable for all. All plans are to host an in-person symposium in Mobile. That being said, just in case travel restrictions will still be in place…conversations have been held and will continue to include provisions for a hybrid event (in person/virtual) or go completely virtual. I can tell you that everyone on the board in hoping and planning to see everyone in Mobile; however, we remain flexible with what this year will bring.

Thanks to everyone for supporting this great association! The SAFE Association strives to provide valuable information to our members and we count on every member to gather and help disseminate the information. We stand together to make everyone better and we are always looking for volunteers to help make this association even greater. Please don't hesitate to contact me if you would like to get involved as an active member or want to volunteer as a board or committee member.

Thanks again and I look forward to seeing everyone in Mobile. Have a SAFE day!

Ebby D. Bryce

Attention Corporate Members

Please Send Us Your Advertisements!

The SAFE membership is eager to hear about what is going on with your organization! Members want to hear about anything new….like job openings, internal promotions, new products, recent contract awards, accomplishments, plans, and patents. It is up to you! SAFE members are interested in what is going on with your organization and your product lines. Please consider sending articles for future SAFE News editions. They should be sent to:

- Stacy Stuber admin@safeassociation.com
- Steve Merriman scmerriman@tx.rr.com

SAFE ASSOCIATION SYMPOSIUM SUMMARY:

WOW! We did it. We had 550 registered individuals that were able to attend five (5) days of content that provided our 250-person average per hour audience with 51 events to be part of. Our virtual exhibit hall featured 24 industry partners that showcased their products and services, and our attendees made sure to browse - 18,000 plus events took place (user clicks) with 500 plus downloads of information that was shared via the custom interactive virtual booths. We had two incredible speakers that started off the symposium; our science & technology program presentations throughout the week were educational and informative; and the symposium wrapped up with briefings and discussions from both the USAF and Navy Acquisitions managers.

First of all, it goes without saying that the 2020 SAFE symposium was unlike any we have done before. Our SAFE Board Members worked extremely hard in the months leading up to the event to bring you a symposium that had familiar components, while also being innovative in nature. Of course it was a 100% virtual experience, but it was also interactive and delivered many of the features of an in-person experience. What was different? Well, because there was no in-person physical gathering, there was no opportunity to touch and feel new products, no in-person catered lunches and no other such social events. On the other hand, the organization delivered two dynamic keynote speakers, 23 industry exhibits showcasing some amazing products and capabilities, 11 paper or panel sessions covering over 50 topics, as well as special presentations covering safety, acquisitions, and sustainment concerns.

This symposium ran throughout the week with both live and recorded segments. Presentations were pre-recorded, while question and answer sessions were organized as live events. We chose this process for several reasons. First, pre-recorded speeches and presentations added a level of security to our program, in the sense that we knew we had content to stream at pre-ordained times. Pre-recordings also reduced the level of anxiety and uncertainty that often go hand-in-hand with live events. To put it another way, ensuring that our presenters would be seen and heard at exactly the right time without dealing with the stress that comes with relying on live connections, that may or may not perform as expected, was critical. Then add geographical, time zone, and varied connectivity differences, the layer of complexity was needing to be tamed. Overall, the technical hitches we did experience were minor in comparison to what could have happened if something went wrong during a life only broadcast.

Our attendees joined us from all over the world – literally! To name a few locations, we had individuals attending from the United Kingdom, Germany, Australia, Belgium, The Netherlands, The United Arab Emirates, Singapore, and Taiwan. In the United States, people attended from virtually every state.

This year's success was made possible by just not the 550 individuals that registered and attended the event, but our fantastic sponsors. This year we owe a great, big Thank You to Collins Aerospace, East/West Industries, Survitec, Massif, and Cobham. We also would like to thank TEDGAR Consulting for providing the web-hosting support and donating the use of the platform that hosted all of the digital content. Without all of our sponsor's efforts, the symposium would not have been a true global/World class event. To our exhibitors that offered us the opportunities of seeing their products, we thank you for taking the risk in this new virtual adventure. This year, our exhibitors were:

- Air Force Research Laboratory
- Capewell Aerial Systems
- Cobham Mission Systems
- Collins Aerospace
- DTS-Diversified Technical Systems
- EAST/WEST Industries
- Elemance, LLC
- Essex Industries
- First-Light USA
- General Dynamics Mission Systems
- Insta ILS OY
- Life Support International
- Martin-Baker Aircraft Company
- MASSIF

(Continued on page 4)

- Mobile
- Mustang Survival/The Patten Companies – Part of the Wing Group of Companies
- Omni Medical Systems
- SAFE Association
- SEE RESCUE Corporation
- Stratus Systems
- Survitec
- Switlik Survival Products
- TIAX
- Virginia Beach Convention and Visitors Bureau

This year featured two very dynamic speakers. Our first guest was Rear Admiral Meier, Commander of Naval Air Force Atlantic. His presentation started with sharing his survival story and the details of a successful ejection with a Martin Baker A-6 ejection seat. It then led to a live question and answer time with our moderator, Mr. Greg Yerkes, President of Life Support International. Our second speaker was Dr. Dave Prakash. As a qualified physician, Dr. Prakash left his medical career to join the United States Air Force. One interesting fact is that, to ensure he went straight to pilot training;, Dr Prakash omitted the fact that he was a qualified doctor in his application. He went on to fly as an operational test pilot in the B-52 where he tested new weapons, tactics, and system upgrades. Over time, Dr Prakash convinced the Air Force to let him work as a flight surgeon, becoming one of only ten pilot-physicians in the entire service.

The title of Dr. Prakash's lecture was "Organizational Resistance to Upgrading Legacy Systems". This presentation was on how the B-52H operates the oldest ejection system in the Air Force. The good news is that the seat still works just as well as it did when it was new 60 years ago. The bad news is that it only works as well as it did when it was new. He provided us the suggestion of replacing or improving legacy systems is often met with great institutional resistance. Dave shared his experience leading an effort to improve the B-52 ejection system and the lessons he learned on driving change and influencing large institutions. Following his presentation, Greg Yerkes helped moderate another great live Q&A session.

After these presentations, the recorded 2020 Annual Awards announcement was made so that we could celebrate individuals and teams that have contributed to the organization and our industry. Mr. Mark Jones has an article to share more on the subject later in this edition.

Over the next three days, individuals from academy, military organizations, test organization, and industry delivered fantastic papers and content. We were once again thankful that Mr. Mark Ruddell represented the USAF Safety Center and presented the 2020 Accident Summary. On Friday of the week, we were fortunate to have live discussion events and briefings from various Aircrew Flight Equipment Functionals, Air Force Acquisitions and Sustainment Leadership, and the Leadership team from PMA-202.

This year the event could be seen after its scheduled airtime via our On-Demand features. While we presumed this feature would be helpful, considering our attendees still had their normal day to day tasks to keep up with during the symposium week, we were thrilled to find that the content of the five days had been viewed over 500 times during the rest of the month in December.

This symposium was not only made possible, but hugely successful because of a small, dedicated team of volunteers. A lot of work has taken place over the last six months to achieve an event that everyone should be proud of. Yes, we made mistakes. Yes, we had a few technical issues. But we were able to bring the community together to share information, review new work and products, and continue to offer content and value to industry, our military partners, and more importantly to you, our members. In closing we would like to say Thank You and acknowledge the whole team who made this possible:

<u>The 2020 Virtual Symposium Committee</u>

Nicole Stefanoni
Edgar Poe
Dr. Casey Pirnstill
Chris Dyer
Stacy Stuber

<u>PBR Productions</u>

Corey Armideo
Nate Hall
Corey Herman
Jenae Connelly
Heather Miller
Christian Prasol

<u>Volunteers</u>

Greg Yerkes
John Plaga
Dr. Demelza Poe
Ebby Bryce
Glenn Paskoff
Chris Dooley

Hello SAFE Members, and Welcome to a Great 2021!

By Mark Jones, Awards Committee Chairman

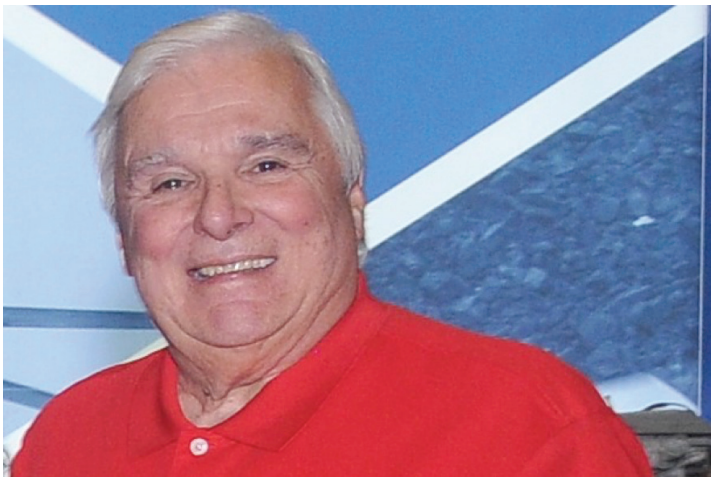
Each year, we take great pride in recognizing members of our community whose efforts and dedication have contributed to the preservation of human life.

Last year we had the great honor to recognize these outstanding individuals and team:

Mr. David N. DeSimone, Michael R. Grost Career Achievement Award

Mr. Anthony P. Taylor, Murray P. Koch Industry Award

The Negative Pressure Connex Program Team, SAFE Team Achievement Award



David DeSimone began his career in the SAFE business in 1959 as a student trainee at the Crew Systems Department of the Naval Air Engineering Center in Philadelphia. His initial tasks were in liquid oxygen supply systems and full pressure suits, and he continued to design and develop pressure suits and invented a mechanical advantage helmet tie-down system in use to this day in high altitude and space suits. He later introduced Nomex fire resistant material to the military, working with researchers and Dupont, resulting in today's widely used aircrew flight gloves for which he wrote the specifications.

Dave's projects included such diverse items as form-fit helmets working closely with Gentex, Anti-G suits with David Clark, and heat-sealed inflatables with Switlik, as well as novel anti-exposure systems such as modified wet suits, an encapsulating life raft, and a ship escape system developed for the U.S. Coast Guard.

As Deputy Program manager for NAVAIR for Research & Development (Air 03, Air 05), all of the current Navy safety and survival gear were introduced: water-activated inflation devices, heat sealing, form fit helmets, OBOGS, NACES, and crash worthy seating. He oversaw numerous novel R&D programs such as the revolutionary Maximum Performance Escape System (MPES) which stabilized parachute operation, and exotic material canopies and lines. During his tenure, the centrifuge at the Naval Air Development Center was reinvented as a Dynamic Flight Simulator which simulated F-14 flat spin recovery and provided cockpit solutions for other aircraft problems. David was later promoted to Block Program Manager for Air Vehicle Technology, Aircraft Materials Technology, and Human Factors engineering for the Office of Naval Research.

David's Naval career spanned 30 years, followed by 30 years as a technical and management consultant for numerous aerospace safety companies. He has served as President of the SAFE Association three times and a dozen years as a Board member. David founded and was President of the East Coast Chapter of SAFE. David is a proud family man with 5 children, 12 grandchildren, 5 great-grandchildren, and one great great-grandchild.

Anthony (Tony) Taylor has over 24 years of hands-on experience in Project Leadership, Design, Analysis, Test, and Systems Engineering, involving the integration and testing of vehicle and crew recovery parachute systems for fixed wing aircraft and spacecraft. Over his career he has worked for Northrop-Grumman, Boeing, Irvin/Airborne Systems and Cimarron in roles including: Chief Engineer, Technical Director, Project Manager and Senior Systems Engineer.

Mr. Taylor has been recognized as an Associate Fellow with the American Institute of Aeronautics and Astronautics (AIAA). He has authored and co-authored over 30 technical publications relating to decelerator technologies, airbag landing systems and flight testing. Also, he has received NASA recognition for his recovery system work on the Starliner Ascent Abort Design Team and Boeing Commercial Crew Program team for planning and executing the Crew Space Transport System (CST-100) structural test campaign.

(Continued on page 6)

Major crew systems programs for which Tony Taylor has made significant contributions include:

- Boeing Commercial Crew Program as Parachute System Lead, Principal Investigator & Subject Matter Expert
- NASA's Orion Capsule Parachute Assembly System (CPAS) Development Program, Flight & Ground Tests
- NASA's Orion Pad Abort Flight Test
- The Orion Max Launch Abort System Flight Test as Chief Engineer
- Space X Dragon spacecraft
- Boeing Crew Space Transport (CST-100) Starliner, as Engineer on Landing and Recovery System
- NASA's Space Launch Initiative Crew Escape Technology Study as Lead Investigator
- F-22, F-35 and commercial aircraft spin/stall recovery systems while at Airborne Systems

Over the course of these types of programs, he developed many advanced analytical tools and became expert in Fluid Structure Interaction simulations for parachute flight, water, and soil impacts. He generated company IRAD programs and led several unique test programs including laboratory, ground, field and flight tests. Additionally, Mr. Taylor designed and defined interfaces for Aircraft & Spacecraft Recovery Systems, including the control system, mechanical/electrical/pyrotechnic systems, loads and dynamics. Through these efforts he became expert in use of Explicit Finite Element tools for analysis of landing and impact dynamics, airbags, and other energy attenuating applications.

In service to industry, Tony Taylor has contributed to AIAA Technical Committees and has been a frequent guest presenter at Chapter One Southern California SAFE chapter meetings and led tours of parachute design, test, and manufacturing facilities. Either as team leader or individual contributor in roles spanning Chief Engineer, Project Systems Engineer, Performance Simulation and Analysis, Recovery Parachute Systems Subject Matter Expert, and industry supporter, his career has been filled with numerous significant accomplishments.

The Negative Pressure Connex Program (NPC) Team distinguished themselves by providing outstanding support in response to the United States Transportation Command Joint Urgent Operational Need (JUON) for High Capacity Airlift of COVID-19 Infected Passengers. Their actions led to the rapid fielding of a modified commercial solution in just eighty-eight days, followed by a robust production capability to produce 30 additional units in record time.

The NPC team began this endeavor by defining

178 requirements incorporating the direct input of tactical aeromedical clinicians, aircraft functional engineers, and research groups focused on human performance. A request for proposals was released through a consortium for an OTA (Other Transaction Authority) contract and within a record eight days, the team received white papers, formed and executed a source selection, negotiated, and awarded a contract. Additionally, the NPC team expertly leveraged the knowledge of academia, industry and defense research organizations, health centers, and lead acquisition organizations to rapidly engineer the negative pressure design and overcome inherent safety risks associated with incorporated components. The engineering team managed 216 drawings and technical specifications for 23 components, a finite element analysis in order to meet the crash loads required on a military aircraft, and finally the requirements to ensure the safety and effectiveness of our aircrew and aeromedical clinicians. Due to the diligence and fortitude of the team, the first NPC prototype was delivered to Joint Base Charleston within 14 days of contract award and began a series of rigorous tests and evaluation.

Finally, the NPC instituted a test-fix-test strategy which allowed the team to quickly identify areas requiring modifications and continue the assessment for operational suitability. With close collaboration with Air Force engineers, testing effort was reduced by 66%. The test team further coordinated efforts with an independent test agency to execute analysis of three lines of efforts to meet the primary objective for bio-containment and isolation. This synchronization between our test agencies and our mobility platforms resulted in swift flight releases that allowed flight testing to begin on time and secured this capability to our warfighters across the globe.

We sincerely thank the 2020 SAFE Award winners for their tremendous efforts to further human safety and

(Continued on page 15)

COBHAM

Cobham Mission Systems' VigilOX™ pilot breathing sensors selected by US Air Force for evaluation on T-6 test fights

VigilOX™ sensors data is analyzed post-flight to help inform conditions around unexplained physiological events

ORCHARD PARK, N.Y., Nov. 17, 2020 — Cobham Mission Systems' VigilOX™ pilot breathing sensors have been selected by the U.S. Air Force to be evaluated on T-6 test flights as a first phase of the service's Life Cycle Management Center (AFLCMC) Try-Decide-Buy (TDB) contract. VigilOX™ pilot-worn sensors capture comprehensive, real-time respiratory and cabin environmental data during flight to provide insight into the performance of both the aircraft system and pilot breathing. Data includes the oxygen concentration, flow rate, mask pressure, and cabin temperature, pressure and acceleration. If the evaluation of VigilOX™ is successful in the Try-Decide-Buy phase of the contract, the Air Force will procure a larger quantity of VigilOX™ sensors for use on T-6 training flights. The contract award is in support of the Sensors for T-6 Oxygen and Physiological Systems (STOPS) program.

"Being selected for evaluation by the Air Force is a reflection of the quality and trust in our comprehensive VigilOX™ sensor technology, as well as our team's total commitment to protecting the warfighter," said Rob Schaeffer, product director for Environmental Systems at Cobham Mission Systems. "VigilOX™ data will be analyzed post-flight to help understand the root cause of unexplained physiological events (UPEs) that have occurred on T-6 aircraft. This understanding will lead to better protection of the pilot."

VigilOX™ has successfully completed evaluation by NAVAIR on F-18 and T-45 aircraft and has aided NAVAIR in closing out root cause and corrective action fault tree branches. The pilot sensors are also being flown by an international user group and have been used in a NASA pilot breathing study to better understand how flight conditions can impact a pilot's breathing during high-performance aircraft flights.

Sera Star Systems (S3), a federal procurement solutions company approved to bid on the Air Force contract, is supplying VigilOX™ for this application. Should VigilOX™ be selected for future procurement, Sera Star will solicit a proposal from Cobham Mission Systems to supply follow up sensor hardware for the T-6 training flights.

For more information on Cobham Mission Systems VigilOX™ sensors and oxygen life support products, visit www.cobhammissionsystems.com or contact Rob Schaeffer, product director for Environmental Systems at rob.schaeffer@cobham.com or (716) 667-6568.

About Cobham Mission Systems
As the world's leading supplier of critical control solutions, Cobham Mission Systems helps customers increase the safety and mission capabilities of personnel and equipment in extreme environments. Proven and trusted solutions include air-to-air refueling, fuel tank inerting, life support, space propulsion, weapons carriage and missile actuation that enable customers to achieve mission success. www.cobhammissionsystems.com

About Sera Star Systems (S3)
For over a decade, S3 has been a strategic technology partner and a key supplier to the U.S. Armed Forces and government agencies, providing value-added services and solutions to large and small businesses seeking government contracts. S3 is a qualified Woman-Owned Small Business (WOSB) reseller and distributor who partners with manufacturers to facilitate sales to federal agencies. www.SeraStarSystems.com

Media Contact: On behalf of Cobham
Joyce Bosc
(301) 717-9529
JBosc@Boscobel.com

Insta Helps U.S. Air Force Keep Their Aircrew Safe

The U.S. Air Force Air Education and Training Command and the T-6 System Program office has selected Insta Pilot's Breath Monitor (IPBAM) as one of the methods for monitoring the T-6 oxygen system and physiological performance of aircrew in flight.

The IPBAM will provide insight into the performance of both the aircraft system and aircrew to identify potential issues in flight and build historical data trends. This effort will help keep aircrew safe while in a flight environment and will work to minimize the number of unexplained physiological episodes (UPEs) that have occurred on board the T-6 aircraft.

Insta Pilot's Breath Air Monitor has been developed together with the Finnish Defence Forces and it has been in use since 2018 with good results. During 2019, IPBAM was successfully flight tested by U.S. Navy with the F-18 platform and by U.S. Air Force with the F-16 platform. This effort with T-6 is another testimonial on the ability of IPBAM to support multiple aircraft platforms.

Insta was one of the first companies to address the rise of physiological episodes across aircrafts and Insta Pilot's Breath Air Monitor has helped aircrew already on three continents.

INSTA
Insta is a secure digitalization partner for future-oriented companies and public organizations in intelligent industry, defence, safe society and cyber solutions. We believe that people and digital technology together are the key to building a safe and competitive society. Our team of more than 1000 experts are worth your trust.

More information:

Ville Somppi
Director, Product Business
puh. +358 50 323 8747
ville.somppi@insta.fi

Pekka Lehtonen
Product Manager, Insta ILS
puh. +358 50 598 0606
pekka.lehtonen@insta.fi

Reminder to All SAFE Members:

It is important that the SAFE Association has your current contact information so we can contact you and distribute SAFE products, such as the Newsletter. Periodically, please go to the "Member Login" at the top, right corner of the SAFE Association web page. When the SAFE Directory appears, click on **"Update Your Profile"** at the top, left. Please review your personal information and, update anything needs to be changed, and click on **"Save Profile"** at the bottom of the page. Your efforts are much appreciated!!

UNDERWATER EMERGENCY EGRESS SYSTEMS

Helicopters and other types of aircraft are built for the successful mission, with a backup plan if it isn't successful. Multiple scenarios are considered, especially for the unexpected. Because we offer unique solutions for unique situations, we want to let you know about one of our newest systems for the Apache AH-64.

If you've been our customer for some time, you know about the different pyrotechnic egress solutions we offer for both military and commercial aircraft customers. What you may not know is that we've designed and built one just for a difficult escape: the PacSci EMC Underwater Emergency Egress System (UEES). Qualification and test result acceptance were completed in 2015. Implementation of the new UEES into the Apache AH-64's began in 2019.

The Difference

Because underwater emergencies have just seconds to be successful, we have designed a more effective emergency egress system. The current Canopy Fracturing System (CFS) carries a slightly higher risk of injury to aircrew well as damage to safety and rescue equipment due to window fracturing. The acrylic panels break apart in pieces, leaving sharper edges and shards during the fracturing event. If the cockpit is full of water, it amplifies the detonation shockwave produced by the fracturing explosive cord to potentially dangerous levels. The CFS system requires updates in order to achieve a safe implementation for the crew to allow evacuation.

Our improvement on this system makes a quicker and more careful crew egress that greatly increases the chances of a safe rescue.

How The UEES Works

On helicopters there are two methods to evacuate aircrew and passengers.

The first is to sever hatches in aircraft structure. The second is to sever / fracture the window / door acrylic or polycarbonate. In both cases, it provides an opening for people to exit.

The reason for providing these escape methods is that during a hard landing the normal mechanical opening of a door, hatch or window may compromised or jammed. The use of explosive cords provides the millisecond answer to opening a safe escape path. An extra second can be the difference between a successful crew egress and one less than ideal.

In contrast to traditional window fracturing, the PacSci EMC UEES design breaks the window along the bolts securing it to the frame line around the periphery – giving the appearance of 'popping' the windows out of their frames – where it is more likely to come out in one piece. This allows faster and safer aircrew egress. Other types of aircraft as well as missile and space applications use this same technology when immediate removal of an acrylic panel or separation between two sections requires explosive event by-product containment. This allows the crew to escape safely without the risk of cutting themselves from sharp pieces of acrylic.

A retainer assembly stays in place to reduce the possibility of debris in the cockpit affecting the aircrew. Our system uses Expanding Tube Assemblies (XTA). Our design uses the flattened oval tube installed in a retainer with other materials effectively reducing the effects of the explosive event during an emergency escape. XTAs are secured in the window or door frame in conjunction with the aircraft structure. These XTAs contain Mild Detonating Cord (MDC) and a rubber extrusion providing the action re-forming the tube into a round configuration. When an aircrew initiates the UEES, the MDC detonates and expands the tubing, breaking off and forcing the acrylic to separate from the aircraft. With the MDC self-contained in the stainless-steel tubing, operating even in an explosive atmosphere, there is no igniting anything flammable. The UEES initiation occurs with an Arm Fire Initiator the aircrew turns and depresses, functioning an attached Explosive Transfer Line (ETL). The output from the ETL is a detonation of high-energy installed into the XTA manifold. Once the MDC is initiated, the resulting shockwaves through the XTA enlarge the stainless steel tubes, weakening the acrylic panels, causing separation from the frame, and resulting open space to escape. The retainer holds the XTA in place during the explosive event preventing impact with the aircrew as they exit.

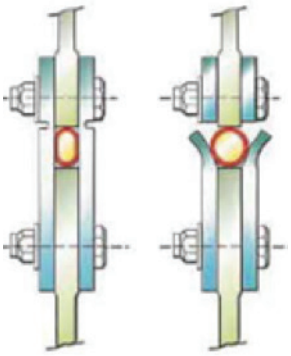
Our top priority is the safety of the crew and passengers of any aircraft. We ensure an underwater

(Continued on page 10)

(Continued from page 9)

emergency egress from an Apache works quickly, safely, and perfectly.

What Is Mild Detonating Cord?



Mild Detonating Cord (MDC) is a metal sheath extruded into a length containing an explosive core. The sheath (silver, tin, lead, aluminum or copper) and core (high / low energy or time delay powder) can be several combinations. Our engineers determine the combination best suited to perform its function based on the function, materials, space and environments to which this device is exposed. MDC is packaged in several different shapes and devices from a simple coil to a ribbon shape.

Most people think of an MDC for use in mining, drilling, and demolition projects requiring a very large energetic event where people must stand a far distance back. But this is not always the case. Our MDC is sized and placed into devices that can be functioned as close as 6 inches from an aircrew member's body and not inflict any injury. MDC can deliver a very surgical event with lower levels of collateral damage than other linear explosives. Directing a smaller core-loaded charge in the same fashion gives an accurate penetration of a target material with precision, such as the one in our UEES. Unique to our UEES for helicopter applications, the MDC is sheathed in a rubber extrusion and installed in a flattened stainless steel tube. This contains all the combustibles necessary to expand or reform the tube into a round shape, breaking off and separating the acrylic from the aircraft.

Why Our UEES Is Better

Our top priority is the safety of the aircrew and passengers of any aircraft. In the case of a helicopter, the crew's only means of escape is ground egress. They currently do not fly with ejection seats. They sometimes must make an emergency ditching in a lake or the ocean. Using the latest technology, our UEES ensures an underwater emergency egress is possible, functions quickly, safely and perfectly every time without causing undue injury to the aircrew, whether or not the cockpit is full of water.

The XTA is designed to cause the acrylic panels to pop off intact; rather than being pulverized into multiple smaller pieces and shards. The XTA reduces the risk of aircrew injury from these acrylic shards. Even more important is preventing injury to the aircrew from the detonation shockwave generated when the MDC functions. Pressure created inside the cockpit without the use of our XTA would impart a very high shock to the aircrew with the cockpit full of water. Adding the XTA and retainer assembly materials of foam and rubber reduces the pressure significantly below those considered a hazard to the aircrew. The UEES integration into the AH-64 Apache is ongoing and slated to have a service life equal to the current system. It can be adapted and integrated into other helicopter platforms, existing or planned.

www.psemc.com

Halkey-Roberts

Halkey-Roberts designs and manufactures products for the medical, aerospace, and defense industries at its facility in St. Petersburg, Florida.

The company expects to nearly double the size of its manufacturing floor and would add 116,578 square feet to its existing 156,522 square foot facility as part of the master plan and expansion with building to begin in Spring of 2021.

They have also launched a new website: https://www.halkeyroberts.com/

Omni Medical Systems

Omni Medical Systems would like to announce its newest SAFE member, Michelle Davidson. Michelle has been assigned to Omni's Business Development Team as the Female Fitment and National Guard/Reserve Component Lead. She has served in the Active Duty Air Force for 4 years, Air Force Reserve and Air National Guard for 18 years. Michelle competed for and was selected to be an Aircrew Flight Equipment (AFE) Tech and has worked her way up to Operational Support Squadron (OSS) Superintendent; providing, fitting, and inspecting flight equipment for USAF Aviators. She has been assigned to 6 USAF locations to include, Grand Forks AFB ND, Duke Field Eglin AFB FL, Joint Base Elmendorf-Richardson AK, Davis-Monthan AFB AZ, Joint Base Pearl Harbor-Hickam HI, and Lincoln Air National Guard Base NE. Michelle is currently still serving in the Air National Guard as an Aircrew Flight Equipment Technician serving our Country as a Traditional Guardsman/ Guardswomen for the Nebraska Air National Guard. Michelle is very excited to transition to Omni as her first civilian job while continuing her service to our Nation, her community and our USAF Aircrew as a Citizen Airman; a perfect fit for Team Omni! Michelle and her husband Ryan have two children, Megan and Gavin.

2021 SAFE ASSOCIATION BOARD OF DIRECTORS

ELECTED BOARD MEMBERS

PRESIDENT, & FINANCE COMMITTEE MEMBER
Ebby Bryce

VICE PRESIDENT & FINANCE COMMITTEE MEMBER
Joseph Pellettiere

IMMEDIATE PAST PRESIDENT & FINANCE COMMITTEE MEMBER
John Plaga

SECRETARY
Kevin Divers

PRESIDENT-ELECT & FINANCE COMMITTEE MEMBER
Jerry Reid

TREASURER & FINANCE COMMITTEE MEMBER
Steve Bromley

APPOINTED BOARD MEMBERS

EXECUTIVE ADVISOR
Edgar "Ted" Poe

NOMINATIONS COMMITTEE CHAIR
Allen "Al" Loving

SYMPOSIUM COMMITTEE CHAIR
Nicole Stefanoni

AWARDS COMMITTEE CHAIR
Mark Jones

INFORMATION MANAGEMENT COMMITTEE CHAIR
Stephen C. Merriman

ASSOCIATION DEVELOPMENT COMMITTEE CHAIR
Matt Miller

INFORMATION MANAGEMENT COMMITTEE CO-CHAIR
Harrison Smith

MEMBERSHIP COMMITTEE CHAIR
Steve Roberts

SCIENCE & TECHNOLOGY COMMITTEE CHAIR
Casey Pirnstill

JOURNAL AND EDITORIAL COMMITTEE
Camille Bilger

CHAPTERS COMMITTEE CHAIR
Rachael Ryan

FINANCE COMMITTEE CHAIR
Joe Spinosa

CHAPTER PRESIDENTS

CHAPTER ONE - SOUTHERN CALIFORNIA
Kirsten Larsen

SAFE EUROPE - CHAIR
Sarah Day

EAST COAST CHAPTER
Dave DeSimone

WRIGHT BROTHERS CHAPTER
Mark Gruber

ROCKET CITY CHAPTER
Dan Meadows

DFW METRO CHAPTER
Lizanne Luchetti

GRAND CANYON CHAPTER
Bob LaFrance

DOWN UNDER CHAPTER
Steve Madaras

PACIFIC RIM CHAPTER
Dr. Robert Yonover

MIDDLE EAST CHAPTER
Mohanad Alakal

https://twitter.com/SAFEAssociatio2

Reminder: SAFE Association Benefits!

INDIVIDUALS

- Quarterly SAFE Newsletter
- Proceedings from the SAFE Annual Symposium
- All Symposium-related Mailings
- Reduced Symposium registration cost.
- Access to members only area of the SAFE Association website
- Voting privileges for your SAFE Board of Directors
- Submission information for our Annual Awards Program

CORPORATE MEMBERS

- Quarterly SAFE Newsletter
- Proceedings from the SAFE Annual Symposium
- All Symposium-related mailings
- Reduced Symposium registration cost.
- Access to members only area of the SAFE Association website
- Voting privileges for the SAFE Board of Directors
- Submission information for our Annual Awards Program
- Corporate listing and description of products and services on SAFE Association website with link to company website.
- Reduced registration and exhibit space fees for the SAFE Annual Symposium
- Free use of the SAFE Newsletter to deliver news releases- such as personnel changes, new products, new office locations, and contact information
- Corporate Membership includes a Primary and Secondary Corporate Representative

MARTIN-BAKER KF-X PROGRAM UPDATE:

FIRST TEST OF THE 5TH GENERATION KOREAN FIGHTER CANOPY JETTISON SYSTEM

The start of November was a key time for the Martin-Baker KF-X program. As the program development phase nears completion and we start to move into the qualification phase.

Korean Aerospace Industries (KAI), the aircraft manufacturer, has supplied an aircraft Forebody to support the qualification programme. A novel canopy jettison system has been designed and produced aimed at un-locking and removing the aircraft canopy as quickly as possible prior to ejection.

Martin-Baker Aircraft Co Ltd (MBA) has supplied key components for this system including the Canopy Jettison Rocket Motors and a Canopy Unlock Thruster designed to unlock the canopy prior to its removal by the rocket motors. MBA also supplies the KR18A Ejection Seats for this aircraft.

KAI recently came to Chalgrove and worked very closely (in a COVID secure manner) with the Seat Test Team to install the KAI and MBA components to the Forebody and witness a successful full system Canopy Jettison Test.

The test was spectacular with the largest Canopy Jettison Rocket Motors MBA have ever made removing the canopy in the blink of an eye and sending it 150ft into the field behind.

KAI was particularly impressed by the quality of the test footage taken by the Martin-Baker Photography department which allowed in depth analysis of the jettison process and confirmed the jettison system

worked as planned. The footage was quickly sent to KAI team members and senior management in Korea to show that one of the highest risk areas of the KF-X programme has been successfully demonstrated to work as designed.

Work never stops for the Seat Test team; are now preparing for the last zero/zero test of the development phase. This will again use the KAI Forebody to best represent Mk18 ejections from the KF-X aircraft.

For further information, please contact Harrison Smith at: HSmith@martin-baker.co.uk.

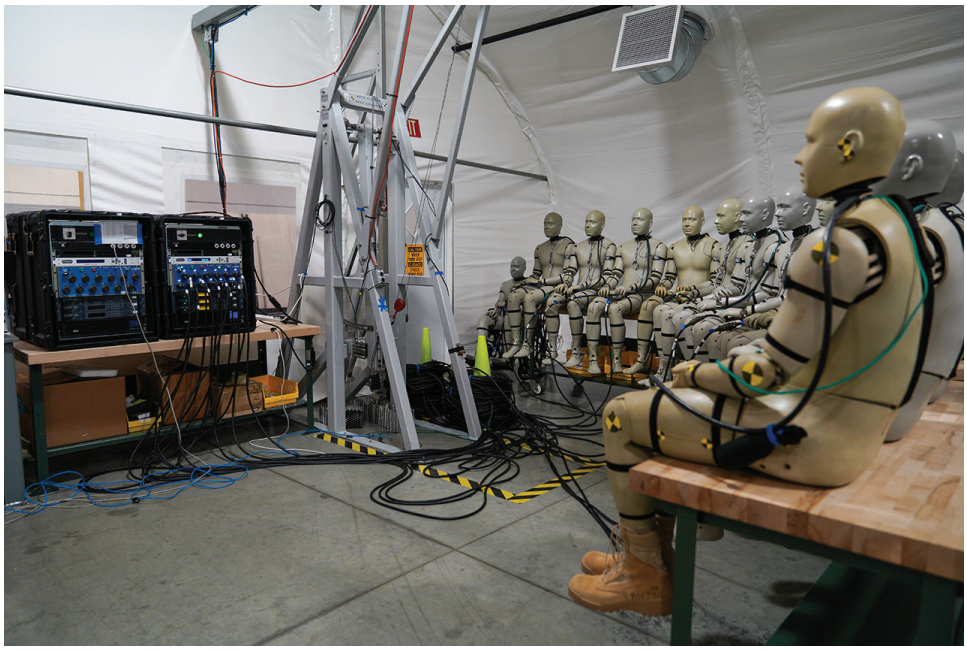
SEE/RESCUE Corporation is honored to announce that the Guatemalan Air Force used the military-approved/ adopted *#SeeRescueStreamer* to vector in a tight landing during the Hurricane Relief Effort following the devastation left in the wake of deadly Hurricane Eta in November of 2020.

VIDEO LINK:

https://drive.google.com/file/d/1mqJHhhIJpldezvuankmJJPBFIvsiKBfz/view?usp=drive_web

WIAMan Gathered for Milestone Test

Seal Beach, California (December 2020) — The latest shipment of five additional WIAMan Blast Test Manikins was delivered to the U.S. Army in December. Just prior to that shipment marked the first time that twelve WIAMan were gathered and operated together as a full-capacity test system. The new WIAMan, plus 2 development and 5 production manikins, were all gathered in DTS's ATD Lab located in Seal Beach, CA for system validation testing and some 'family' photos.



"This was our first chance to test the External Distributor at full capacity. There literally have never been 12 WIAMan in existence, let alone all in one place," said Tamer Abubakr, ATD Systems Manager at DTS. The test involved connecting all 12 WIAMan to a single Distributor, which manages test communication commands. As anticipated, the test was a success.

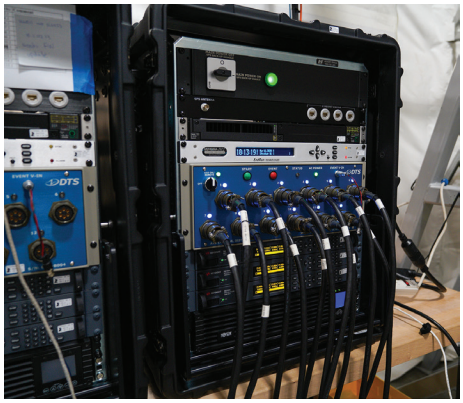
DTS's involvement with the WIAMan project includes building the actual ATD (anthropomorphic test device), as well as the SLICE6 data acquisition system embedded inside and ancillary equipment like the External Distributor. Each WIAMan supports up to 156 sensor (data) channels. "A single exit cable from each ATD gets plugged into the External Distributor to manage communication, status, trigger, IEEE 1588 synchronization, and backup power if needed," explained Abubakr.

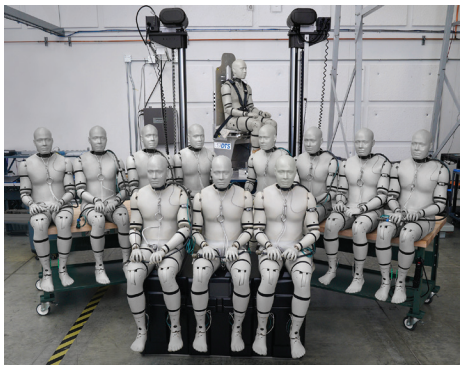
Tamer then went on to explain in general terms how a blast test is set-up. First the miniature data recorders and sensors are embedded inside each WIAMan. The manikins are then positioned in the test vehicle and an exit cable from each ATD is run to the External Distributor. The Distributor sends commands to and from each ATD, and it's secured in a blast bunker many meters away from the actual blast site. While one External Distributor can 'talk' to up to 12 WIAMan at a time, the official Command Center is miles away and manages the complete test set-up and trigger which is transmitted via fiber optic cables to the Distributor and then to each WIAMan.

DTS is prepared to deliver additional WIAMan to the U.S. Army as part of the contract, which includes up to 40 WIAMan in total. An official 700-page WIAMan accreditation report is currently under review by the U.S. Army, which will make WIAMan the first ever accredited ATD for use in under body blast testing.

DTS has been part of the WIAMan development team from the initial concept phase, including being chosen as the prime contractor to the U.S. Army. The Warrior Injury Assessment Manikin represents one of the most advanced collaborations of injury biomechanics research, engineering, manufacturing and testing. "WIAMan is the most hi-tech, biofidelic soldier surrogate in existence. It's all about the data and each underbody blast (UBB) test provides more data to help keep our warfighters safer," added Abubakr.

For further information, please contact Randy Boss, Director of Program Management art (562) 493-0158, or randy.boss@dtsweb.com.





The newly revamped SAFE Journal is out!

By Dr. Camille Bilger, 2021 Journal and Editorial Committee Chair

Dear SAFE Members,

The new and revamped SAFE Journal (October 2020 edition) is out and available for download for FREE to our paid members on the SAFE Association website.

(Follow: https://www.safeassociation.com/index.cfm/members/login)

Over the past year, your Journal committee has been working hard to identify the strengths and weaknesses of the SAFE Association Journal; going through a process of questioning, challenging, and defining what it means to elevate the SAFE Journal. A big thank you to the Associate Editors working alongside me, for their support, expertise, input, and guidance: Dr. Casey Pirnstill, Mr. Glenn Paskoff, Dr. Joseph Pellettiere and Mr B. Joe McEntire. One important goal of the committee is to broaden the exposure of our authors' works to researchers in similar fields.

In this year's issue, you will read from Newby et al. about NASA's analysis and characterization of the Soyuz Landing Capsule that is currently being used to transport our astronauts to and from the International Space Station. Hung et al. present a paper on using automatic speech recognition to determine if an aircrew is experiencing hypoxia. Smith and Chervak provide the reader with a characterization and assessment of aircrew vibration during rotary-wing aircraft operations. You will read about the effects of gender differences on model input parameters for the Dynamic Response Index from Somers et al. Todd and Croft present the results of the qualification program of a urination pass-through device for immersion suit wearers. Finally, Perry et al. wrote a technical report on the assessment of three different types of ATD necks.

I would like to take this opportunity to welcome any feedback (positive or constructive criticism) from our members when you get your copy of the new, revamped SAFE Journal!

We would like to welcome manuscript submissions for the next issue of the journal. The process for manuscript submission and publication is comparable to any other international peer-reviewed journals. Our Guide to Authors will take you through the submission and publication process. We accept several types of publications: research articles, review articles, technical reports. If you are interested in publishing your work with us, please contact Editor@safeassociation.com for more information.

Stay Safe!

Welcome

NEW INDIVIDUAL MEMBERS

Carol Alameddine
Birkenhead, United Kingdom

Martin Beagan
Belfast, United Kingdom

Shaun McInerney
Birdenhead, United Kingdom

David Stelling
Birkenhead, United Kingdom

John Graham
Irvine, CA

Kevin Peters
Birkenhead, United Kingdom

Warren Ingram
Hoover, AL

Paul Sedgman
Sydney, Australia

Richard Mears
Birdenhead, United Kingdom

Fethi Bouak
Newmarket, Canada

Kelley Bevers
Round Rock, TX

Michelle Davidson
Papillion, NE

James Olofsson
Apache Junction

Kat Quinn
Dallas, TX

Michael Calcara
Ronkonkoma, NY

Paul Oliver
Birkenhead, United Kingdom

Jacqueline Paver
Santa Barbara, CA

Anthony Taylor
Huntington Beach, CA

Brad Bloomquist
Charlotte, NC

Levin Benedict
Jakarta, Indonesia

Steven Holstine
Colorado Springs, CO

Lee Aaron
Sharon City, OH

Larry Farmer
Upper Marlbora, MD

Anita Kapelewski
Copley, OH

Kathryn Loftis
Oxford, PA

Hironori Sasaki
Rochester, NY

Trevor Somers
Davenport, IA

Tiffany Swarmer
Houston, TX

Gray Wu
Davenport, IA

NEW CORPORATE MEMBERS

Orolia Government Systems, Inc.
Rochester, NY

SAE International G-45 Human Systems Integration (HSI) Committee

Recent Accomplishments and Activities:

Human Systems Integration (HSI) Best Practice Standard:
SAE International released an HSI Best Practice Standard (SAE6906) in February 2019. This standard provides contractor guidance and requirements for applying Human Systems Integration (HSI) on systems acquisition projects. According to the DoD definition, HSI is the management and technical discipline of planning, enabling, coordinating, and optimizing all human-related considerations during system design, development, test, production, use, and disposal of systems, subsystems, equipment, and facilities.

Manpower & Personnel (M&P) Best Practice Standard:
SAE International released SAE1010 Best Practice Standard for Manpower and Personnel on September 18th 2020. This standard provides guidance on the activities that contractors should perform to ensure that the system under development complies with the latest customer manpower estimates (numbers and mix of personnel, plus availability) and personnel estimates (capabilities and limitations).

Habitability Best Practice Standard:
SAE completed its Committee balloting on the Habitability Best Practice Standard (SAE1007) in mid January 2021; it is up to the Systems Management Council now to review and release it for use. Habitability factors are living and working conditions that affect the morale, safety, health, quality of life, performance, quality of work, well-being and comfort of the target population.

Force Protection and Survivability Best Practice Standard:
This standard (SAE1007) is still under development; it is currently going through final review by the development committee. Next, it will go into a 28-day balloting process in which all voting members of the G-45 committee will review and vote to either accept or reject. It is anticipated that this standard should be released for use in the first quarter of calander 2021.

Other G-45 Committee Developments:
In 2007, the committee completed drafting data requirments for a Human Systems Integration Program Plan (HSIPP). The data requirement was accepted by the DoD and a new Data Item Description (DID) was release for contract use by DoD procurement agencies. The DID, DI-HFAC-81743, provides format and content requirements for HSI Program Plans for contractor use in system acquisition contracts.

In 2011, the committee completed drafing data requirments for a Human Systems Integration Report (HSIR). The data requirement was accepted by the DoD and a new DID was release for contract use by DoD procurement agencies. The DID, Di-HFAC-81833, provides format and content requirements for contractor HSI Reports that are for submitted at Critical Design Reviews (CDR) or Milestone 3 (Production Decision) reviews.

If anyone would like additional information on the SAE G-45 Committee or any of its standards, please contact Steve Merriman at 214-533-9052 or scmerriman@tx.rr.com .

(Continued from page 6)

survival in challenging environments on land, in the air, at sea, and in space.

And now, I ask that SAFE members start looking for deserving individuals to nominate for the 2021 SAFE Awards. Details will be posted in March on the SAFE Association website, https://safeassociation.com. I encourage you to take the time to show your support and appreciation for the countless hours someone you know has dedicated to our community.

Those selected as recipients will be recognized during the 59th Annual SAFE Symposium, 31 Oct – 3 Nov 2021, being held at the Mobile Convention Center, Mobile, AL. We hope to see you there as we announce and recognize the 2021 award recipients.

UP-COMING MEETING

MEETING
SAFE Association 59th Annual Symposium

DATE
October 31 - Nov. 4, 2021

LOCATION
Mobile, AL