

Superstar Theater

Tenth Triennial International Aircraft Fire and Cabin Safety Research Conference

October 17-20, 2022

Resorts Hotel-Casino, Atlantic City, New Jersey, USA

Preliminary Conference Schedule

Opening Session:

Monday, October 17, 2022 / 1:30 PM - 5:00 PM

Welcome: Conference Organizing Committee

Welcome: Federal Aviation Administration (FAA) Technical Center

Keynote Address - Jodi Baker, Deputy Associate Administrator for Aviation Safety (FAA)

EASA Perspective – Ludovic Aron (EASA)

FAA Center for Emerging Concepts and Innovation – James Wilborn (FAA)

Regulatory Update – Bella Maranion (EPA)

Update on Aviation's Halon Footprint – Robert Wright (Boeing)

Revolutionary Vertical Lift Technology Project – Susan Gorton (NASA)

Sustainable Aircraft Interiors—Cabin Safety Working Group/International Coordinating Council of Aerospace Industries

Associations - Cesar Alberto Silva

Fire and Cabin Safety Considerations for an Hydrogen Fuel Cell-Powered Airplane – Karl Berg, Universal Hydrogen

Halon Replacement Related

Lithium Battery Related

Materials Related

Modeling Related

TUESDAY, OCTOBER 18, 2022 - MORNING

	Ocean Ballroom FIRE RESEARCH I: Testing & Characterization	Atlantic Ballroom CARGO HAZARDS/RISKS I	Superstar Theater POWERPLANT & PROPULSION FIRE PROTECTION I	Horizon Ballroom CABIN SAFETY I
	Chairs: Fernando Raffan-Montoya, Isaac Leventon	Chair: Steve Rehn	Chair: Doug Ingerson	Chair: David Weed
8:00-8:30 AM	Phosphorus Impact on Soot Formation in Flames of Condensed Phase Fuels Haiqing Guo, R. Walters, R. Lyon Diakon Solutions LLC, FAA Technical Center	Update on UN Dangerous Goods Hazard-Based Classification System for Lithium Batteries George Kerchner The Rechargeable Battery Association (PRBA)	Cardiac Sensitization Toxicity Testing and Implications for CF3I Risk Assessment as a Halon 1301 Replacement Britt Weldon Boeing	Live Virus Testing on Aircraft Bryan Moran Boeing
8:30-9:00 AM	An Application of the Fire Propagation Apparatus to the Measurement of Fire Toxicity Stanislav I. Stoliarov, S. Roy, F. Khosroshahi University of Maryland	UN Classification Test Method Development & Testing S. Rehn Federal Aviation Administration (FAA) Technical Center	Occupational Health Risks from Use of CF3I as a Halon 1301 Replacement in APU Fire Extinguishing Systems Britt Weldon Boeing	Overall Cabin Disinfection Methods Bryan Moran Boeing
9:00-9:30 AM	History of the Milligram-Scale Flame Calorimeter F. Raffan-Montoya, X. Ding, J. DeBeer, S. Stoliarov University of Maryland	A Study of the State of Charge of Lithium Ion Batteries in Transportation Dan Keslar Federal Aviation Administration (FAA) Technical Center	Dispersion Characteristics of CF3I in APU Applications Sarah Wickham Boeing	Effects of Liquid Disinfectants on Aircraft Cabin Interior Materials Akhil Bhasin National Institute for Aviation Research (NIAR)
9:30-10:00 AM	BREAK	BREAK	BREAK	BREAK
10:00-10:30 AM	Automated Characterization of Heat Capacities and Heats of Pyrolysis of Flammable Materials Morgan C. Bruns, Isaac T. Leventon St. Mary's University / NIST	Evaluation and Analysis of sub-standard lithium batteries by UN 38.3 Testing Henry Lu Transport Canada	Does the Bulk Load Fire Test Failure Mean CF3I is Inappropriate for Engine/APU Fire Extinguishing Systems, as Well? Robert S. Wright Boeing	Effects of UV-C Germicidal Irradiation on Aircraft Cabin Interior Materials Aswini Kona Ravi National Institute for Aviation Research (NIAR)
10:30-11:00 AM	Experimental Measurements of Full-scale Fire Growth for Fire Model Validation M. Heck, I. Leventon, M. Bundy, K. McGrattan, R. Davis National Institute of Standards and Technology (NIST)	Experimental Studies on Lithium-ion Pouch Cells Rosa Padilla, et al. NASA	Investigating Powerplant Halon Replacement in a Generic Nacelle Fire Simulator Doug Ingerson Federal Aviation Administration (FAA) Technical Center	Safety of 222 nm Band-Pass Filtered Irradiation: A Review and Analysis of Current Data Casey Brantner Boeing
11:00-11:30 AM	Analysis of Sensitivity of Vertical Corner Flame Spread Dynamics to Uncertainties in the Model Input Dushyant Chaudari Underwriters Laboratories (UL)	OPEN	Engine/APU Halon Replacement Industry Consortium-Halon Alternatives for Aircraft Propulsion Systems (HAAPS) Alan Macias Boeing	Computational Fluid Dynamics Modeling of Cough Transport in an Aircraft Cabin Angela Davis and Stephen Trent Boeing

TUESDAY, OCTOBER 18, 2022 - AFTERNOON

	Ocean Ballroom FIRE RESEARCH II: Advanced Materials	Atlantic Ballroom CARGO HAZARDS/RISKS II	Superstar Theater POWERPLANT & PROPULSION FIRE PROTECTION II	Horizon Ballroom CABIN SAFETY II
	Chair: Alex Morgan	Chair: Steve Rehn	Chair: Doug Ingerson	Chair: Melissa Beben
1:30-2:00 PM	<p style="text-align: center;">Reactive Flame Retardants for Aerospace Grade Epoxy + Carbon Fiber Composites</p> <p style="text-align: center;">A. Morgan, D. Klosterman, V. Benin, M. Mukhtar University of Dayton Research Institute (UDRI)</p>	<p style="text-align: center;">TRIP Database Batteries in Cargo</p> <p style="text-align: center;">David Wroth Underwriters Laboratories Inc.</p>	<p style="text-align: center;">Combustion Potential: Nature & Behavior Of Fire In A Compartment</p> <p style="text-align: center;">Aeon Brown Federal Aviation Administration (FAA) Technical Center</p>	<p style="text-align: center;">Moving Beyond the Moveable Armrest - Evaluating Design Features for Passenger Accessibility</p> <p style="text-align: center;">Erin Hochschild & Michelle Albert Boeing</p>
2:00-2:30 PM	<p style="text-align: center;">Water-Based, Environmentally-Benign, Polyelectrolyte-Based Flame Retardant Treatments for Aircraft Foam and Textiles</p> <p style="text-align: center;">Jaime Grunlan Texas A&M University</p>	<p style="text-align: center;">AIRPED – fire risk associated to the presence of PEDs/batteries in the cargo hold</p> <p style="text-align: center;">Enzo Canari European Union Aviation Safety Agency (EASA)</p>	<p style="text-align: center;">EASA Fire/Explosion Problematics and Rulemaking Activities Overview (Tentative)</p> <p style="text-align: center;">Remi Deletain European Union Aviation Safety Agency (EASA)</p>	<p style="text-align: center;">Occupant Injury Prediction Methods for Enhanced Passenger Safety for Range of Aircraft Seat Installation Layouts</p> <p style="text-align: center;">Dr. Alan Byar Boeing</p>
2:30-3:00 PM	<p style="text-align: center;">Designing Polymeric Hydrocarbons for Low Flammability Materials</p> <p style="text-align: center;">Todd Emrick, L. Stubbs, C. Chen, K. Murthy University of Massachusetts - Amherst</p>	<p style="text-align: center;">Fire and Smoke Characterization and Fire Suppression of Lithium-ion Cells, Modules and Batteries</p> <p style="text-align: center;">Judy Jeevarajan/Daniel Juarez-Robles UL Research Institutes</p>	<p style="text-align: center;">An Extended Study into the Comparison of the Carlin and Sonic Burner</p> <p style="text-align: center;">Olivia McAvoy Resonate Testing Ltd.</p>	<p style="text-align: center;">Effects of Airplane Cabin Interiors on Egress I: Assessment of Anthropometrics, Seat Pitch, and Seat Width on Egress</p> <p style="text-align: center;">David Weed Federal Aviation Administration-Civil Aerospace Medical Institute (FAA-CAMI)</p>
3:00-3:30 PM	BREAK	BREAK	BREAK	BREAK
3:30-4:00 PM	<p style="text-align: center;">Snap Cure Infusion Resin System for Fire Resistant Aircraft Structures and Interiors</p> <p style="text-align: center;">Henry Sodano Trimer Technologies, LLC</p>	<p style="text-align: center;">Detailed characterization of particle emissions from battery fires</p> <p style="text-align: center;">Vinay Premnath Southwest Research Institute (SwRI)</p>	<p style="text-align: center;">Updated Experimental Investigation of the NexGen Burner</p> <p style="text-align: center;">Prashant Khare University of Cincinnati</p>	<p style="text-align: center;">Helicopter Ditching: Rulemaking and Research</p> <p style="text-align: center;">Enzo Canari European Union Aviation Safety Agency (EASA)</p>
4:00-4:30 PM	<p style="text-align: center;">Flame Retardants from Bio-derived Materials for Aviation Textiles</p> <p style="text-align: center;">S. Kulkarni, S. Yu, J. Kumar, A. Morgan, R. Mosurkal, R. Nagarajan Univ. of Massachusetts - Lowell / UDRI / US Army</p>	<p style="text-align: center;">Beyond consumer batteries: Challenges of cell venting physics in lithium ion battery e-Aero applications</p> <p style="text-align: center;">Brian Engle Amphenol Advanced Sensors</p>	<p style="text-align: center;">A Study into Flame Ingression and Flame Arrestor Testing</p> <p style="text-align: center;">Olivia McAvoy Resonate Testing Ltd.</p>	<p style="text-align: center;">Antimicrobial Solutions in Aviation</p> <p style="text-align: center;">Marie-Laure Moulard and Joerg Lieberwirth Airbus</p>
4:30-5:00 PM	<p style="text-align: center;">Do Differences in Bench- or Small-scale Experiments Manifest in Different Fire Growth Behavior? A Case Study with PMMA</p> <p style="text-align: center;">Karen De Lannoy National Institute of Standards & Technology (NIST)/Forschungszentrum Jülich (FZJ)</p>	<p style="text-align: center;">Safety Evaluation of Next-generation Solid-State Li-ion Battery</p> <p style="text-align: center;">Jitendra Kumar University of Dayton Research Institute (UDRI)</p>	<p style="text-align: center;">High-Fidelity Modeling and Simulation of the NexGen Burner</p> <p style="text-align: center;">Prashant Khare University of Cincinnati</p>	<p style="text-align: center;">Virtual Reality Tools to Support the Certification of the Cabin</p> <p style="text-align: center;">Marie-Laure Moulard and Joerg Lieberwirth Airbus</p>

WEDNESDAY, OCTOBER 19, 2022 - MORNING

	Ocean Ballroom FIRE RESEARCH III: Fire Modeling Chair: Randy McDermott	Atlantic Ballroom CARGO FIRE MITIGATIONS I Chair: Matt Karp	Superstar Theater POWERPLANT & PROPULSION FIRE PROTECTION III Chair: Aeon Brown	Horizon Ballroom CABIN SAFETY III Chair: TBD
8:00-8:30 AM	Modeling Cup Burner Flame Extinction by Sodium Bicarbonate Powder R. McDermott, C. Cao, P. Papas, J. Floyd NIST / Collins Aerospace / UL / Raytheon Technologies Research Center	FAA Cargo Hazards/Risks/Mitigations Website Dhaval Dadia Federal Aviation Administration (FAA) Technical Center	Powerplant and Propulsion Protection-Fire Modeling Jason Damazo Boeing	Cabin Safety Interior Simulation Cesar Alberto Silva, Lucas Souza Embraer, Dassault Systems
8:30-9:00 AM	Benchmark Evaluation of Radiation Models in Simulations of Compartment Fires YJ. Kim, A. Trouvé, G. Maragkos, B. Merci University of Maryland / Ghent University	SABATAIR – safe transportation of batteries by air Enzo Canari European Union Aviation Safety Agency (EASA)	An Investigation of the Hot Surface Ignition Temperature of Polyalphaolefin-Based Dielectric Coolants Albert Moussa, William Cavage BlazeTech / Northrup Grumman	Extended Reality for Cabin Safety I: A Translational Study of Extended Reality Technology in Training and Research Levi Breeding Federal Aviation Administration-Civil Aerospace Medical Institute (FAA-CAMI)
9:00-9:30 AM	Experimental and Modeling Study of Thermal Runaway Propagation of 18650 Form Factor Lithium-ion Battery Array Dong Zeng, Lauren Gagnon, Yi Wang FM Global, Research Division	ICAO's efforts to mitigate the risks associated with transporting lithium batteries as cargo Lynn McGuigan and Virgilio Alegría International Civil Aviation Organization (ICAO)	Computational and Experimental Analysis of Hot-Surface Ignition of Fuel Sprays in Aircraft Compartment Fires Lauren Simitz Stanford University	Extended Reality for Cabin Safety II: Flight Attendant Training Levi Breeding Federal Aviation Administration-Civil Aerospace Medical Institute (FAA-CAMI)
9:30-10:00 AM	BREAK	BREAK	BREAK	BREAK
10:00-10:30 AM	Modeling Detailed Turbulence-Chemistry Interactions in Flames and Fires Using the One-Dimensional Turbulence Model David Lignell Brigham Young University	Status of SAE G27 Including External Fire Doug Ferguson Boeing	Quantifying the Hazards of Onboard Hydrogen Relative to Aviation Kerosene Jason Damazo Boeing	Evaluation of Serious Games for Passenger Education: Aircraft Safety Information Retention Across Media Types Melissa Beben Federal Aviation Administration-Civil Aerospace Medical Institute (FAA-CAMI)
10:30-11:00 AM	Transported Probability Density Function Modeling of Fire Extinction Tianfang Xie, Haifeng Wang Purdue University	Discussion on G27 Testing Group Chamber Configuration and Calibration Finding Robby Kinsala Americase, LLC	SAE-A22 Committee Activities Update John Ostic, Daniel Laborie Boeing / General Electric	Exit Operation and Location: Evaluation of Type III Exit Dimensions Melissa Beben Federal Aviation Administration-Civil Aerospace Medical Institute (FAA-CAMI)
11:00-11:30 AM	Experiments and Numerical Modeling of Fires Associated with Lithium-Ion Batteries Thermal Runaway Ya-Ting Liao, B. Wang, B. Kwon, P. Kannan/J. Jeevarajan, D. Juarez-Robles, M. Parhizi Case Western Reserve University/UL Research Institutes	Universal Packaging Bob Richards President Hazmat Safety Consulting, LLC	Holistic Battery Safety Design for Electrical Aviation Dr. Will Walker KULR Technology	Fire, Wind, and Waves: CAMI Research Infrastructure Upgrade Report David Weed Federal Aviation Administration-Civil Aerospace Medical Institute (FAA-CAMI)

Atlantic 4

10 AM- 12 PM

**AAM
Crashworthiness
Working
Meeting,**

featuring a presentation on Integrated Occupant Safety for Urban Air Mobility Applications by the National Institute for Aviation Research.

WEDNESDAY, OCTOBER 19, 2022 - AFTERNOON

	Superstar Theater CABIN/FLIGHT DECK FIRE PROTECTION I	Atlantic Ballroom CARGO FIRE MITIGATIONS II	Ocean Ballroom CARGO COMPARTMENT FIRE PROTECTION I	Horizon Ballroom CRASH DYNAMICS I: Occupant Injury
	Chair: Tim Marker	Chair: Steve Rehn	Chair: Matt Karp/Dhaval Dadia	Chair: Joseph Pellettiere, CSTA
1:30-2:00 PM	HR2 Development and Smoke Monitoring Mike Burns Federal Aviation Administration (FAA) Technical Center	UL Trusted Vendor Program Michelle Chevalier Underwriters Laboratories (UL)	Development of a Smoke Generator Handbook for Cargo Smoke Detection Matt Karp Federal Aviation Administration (FAA) Technical Center	ATD Construction Harmonization and Modernization Ian Hellstrom Federal Aviation Administration (FAA)
2:00-2:30 PM	HR2 Development - TRL6 Testing and Planning Brian Johnson Boeing	UPS Fire Mitigation Bob Brown UPS	Passive and Wireless Fire Detection for Unit Loading Devices Using Ultra High-Frequency Radio Frequency Identification Matt Karp Federal Aviation Administration (FAA) Technical Center	Comparison of Automotive and Transport Aircraft Occupant Injury Criteria H. Lankarani, R. Islam, V. Krishnamurthy NIAR, HAECO Americas
2:30-3:00 PM	HR2 Development - TRL6 Data Yaw Agyei Boeing	Agent Effectiveness vs. Lithium Battery Gases Dr. Thomas Maloney Federal Aviation Administration (FAA) Technical Center	Modeling TCCs in a Cargo Compartment Andrew Ferraro Federal Aviation Administration (FAA) Technical Center	The Head Injury Criterion JM Davies, P Brownson, CL Colton, WA Wallace, O Tomlin, AR Payne Univ of Calgary, Univ of Liverpool, Univ of Nottingham, GRM Consulting Ltd.
3:00-3:30 PM	BREAK	BREAK	BREAK	BREAK
3:30-4:00 PM	A CFD Model for the OSU Calorimeter for Rate of Heat Release Predictions Dr. Baki Farouk, Garrett Cappello Drexel University	On a Method to Mitigate Thermal Runaway and Propagation in Packages of Lithium-Ion Batteries James G. Quintiere University of Maryland	Lightweight CFRP Nitrogen Vessels Dr. Philipp Schaefer Diehl	Tension-Bending Risk Curves for the ATD Lower Lumbar Spine Subjected to Oblique Impact under FAA Emergency Landing Conditions K. Somasundaram, J. Humm, N. Yoganandan, F. Pintar Medical College of Wisconsin
4:00-4:30 PM	Insulation Burnthrough Test Method Update Tim Salter Federal Aviation Administration (FAA) Technical Center	Materials Perspective on Fire-Containment Dan Ziegler Marco Industries	Assessing the Thermal Threat of Chemical Disinfectants on Cargo Aircraft Lindsey Anaya Federal Aviation Administration (FAA) Technical Center	Compatibility of Child Restraint Systems (CRS) with Commercial Aircraft Seats Julie Mansfield, PhD Ohio State University
4:30-5:00 PM	Relationship Between 3-D Printed Materials and Flammability Daniel Keslar Federal Aviation Administration (FAA) Technical Center	Predictive Lithium Battery Thermal Runaway Analysis Using Simulation for the G27 Packaging Standard Matt Karp and Darren Nunes FAA Technical Center / Siemens	OPEN	Effective Aircraft Seat Development for Row to Row HIC Test Takuya Mori Toyota Boshoku

THURSDAY, OCTOBER 20, 2022 - MORNING

	Superstar Theater CABIN/FLIGHT DECK FIRE PROTECTION II		Ocean Ballroom CARGO COMPARTMENT FIRE PROTECTION II	Horizon Ballroom CRASH DYNAMICS II
	Chair: Tim Marker		Chair: Dhaval Dadia	Chair: Justin Littell, NASA
8:00-8:30 AM	Experimental Study of Flammability Test on Our Test Facility Hisashi Kinoshita Iida Industrial Technology Testing Laboratory/S-Bird		Status of SAE Standards and TSOs Jamie Lessard Federal Aviation Administration (FAA)	Tow Spreading Technology and Mechanical Properties of Thin Ply Laminates Kohei Yamada Industrial Technology Center of Fukui (ITCF)
8:30-9:00 AM	Microscale Criteria for Flammability of Aircraft Cabin Material Constituents Natallia Safronava Federal Aviation Administration (FAA) Technical Center		Dedicated Full Scale Testing – An OEMs On-Site Solution Dave Lee Satco, Inc.	Occupant Protection for Legacy Rotorcraft Ian Hellstrom Federal Aviation Administration (FAA)
9:00-9:30 AM	Material Oil Burner Testing Tim Salter Federal Aviation Administration (FAA) Technical Center		Skid Fire Containment Bag – Lithium Battery Fire Test Vimuth Fonseka AmSafe BP	Method Development for Full Aircraft Crash Simulation at Different Levels of Modeling Detail Paul Schatrow German Aerospace Center (DLR)
9:30-10:00 AM	BREAK	BREAK	BREAK	BREAK
10:00-10:30 AM	Vertical Flame Propagation (VFP) Test Development Tina Emami Federal Aviation Administration (FAA) Technical Center		International Coordinating Council of Aerospace Industries Associations (ICCAIA) Cargo Compartment Halon Replacement Advisory Group (CCHRAG) Update Dr. André Freiling Airbus	Battery Crashworthiness Dave Stanley Federal Aviation Administration (FAA)
10:30-11:00 AM	RTCA Development of a New Flammability Test for Electronic Equipment Steven Rehn Federal Aviation Administration (FAA) Technical Center		Status Update – Cargo Compartment Halon Replacement MPS Dhaval Dadia Federal Aviation Administration (FAA) Technical Center	Simulation Studies on eVTOL Crashworthiness in the Conceptual and the Preliminary Design Phase Mathias Waimer German Aerospace Center (DLR)
11:00-11:30 AM	Waste Compartment Fire Containment MOCs and Task Group Work Scott Campbell SAFRAN Cabin Inc.		Environmentally Friendly Fire Suppression System for Cargo Michael Stefanis Cranfield University	Demonstration of Hybrid Physics and Machine Learning enabled Composite Failure Analysis and Calibration Suite (CFACS) for Material Characterization Alexandru Stere Boeing

THURSDAY, OCTOBER 20, 2022 - AFTERNOON

	Superstar Theater CABIN/FLIGHT DECK FIRE PROTECTION III Chair: Tim Marker		Ocean Ballroom CARGO COMPARTMENT FIRE PROTECTION III Chair: George McEachen	Horizon Ballroom CRASH DYNAMICS III Large Scale Crash Data Chair: John Shelden, FAA
1:30-2:00 PM	PED/Lithium Batteries Fire Risk in the Passenger Cabin/Flight Deck Enzo Canari European Union Aviation Safety Agency (EASA)		Halon 1301 Contamination in Commercial Aviation John Demeter Wesco Hmb, Inc.	A Comparative Analysis of Airframe Results Between Sub-Scale and Full-Scale Tests of Fokker F28 Aircraft Hardware Justin Littell National Aeronautics and Space Administration (NASA)
2:00-2:30 PM	Trip Database and PED Fires in the Cabin David Wroth Underwriters Laboratories Inc.		Identification and Lab Scale Testing of New Fire Extinguishing Agent Blends as a Cargo Compartment Halon Replacement Adam Chattaway, Edda Liu Collins Aerospace	Crashworthiness by Analysis: Vertical Drop Test and Simulation of a Challenger 601 Metallic Fuselage Section Gerardo Olivares, L. Gomez, R. Huculak, V. Robinson National Institute for Aviation Research (NIAR)
2:30-3:00 PM	Toxic Hazards of Hand Extinguishants used on Lithium Battery Fires in Flight Decks Louise Speitel, Natallia Safronava, Tim Marker Federal Aviation Administration (FAA) Technical Center		Kinetic Modelling and Experimental Cupburner Results for CF₃I/CO₂ Mixtures Paul Papas Raytheon Technologies Research Center	A Comparative Analysis of Occupant Response Between Sub-Scale and Full-Scale Tests of Fokker F28 Aircraft Hardware Jacob Putnam National Aeronautics and Space Administration (NASA)
3:00-3:30 PM	BREAK	BREAK	BREAK	BREAK
3:30-4:00 PM	Cabin Battery Max Allowable Watt-Hour Matthew Karp Federal Aviation Administration (FAA) Technical Center		Validation of a Simulation Tool for an Environmentally Friendly Aircraft Cargo Fire Protection System Dr. Ing Victor Norrefeldt Fraunhofer Institute for Building Physics IBP	Photogrammetric Techniques Utilized during Sub-scale and Full-scale Testing of Fokker F28 Aircraft Hardware Nathaniel W. Gardner National Aeronautics and Space Administration (NASA)
4:00-4:30 PM	Thermal Runaway and Fire Propagation of On-board Li-ion Batteries: A Really Controlled Risk? Antoine Orth & Cristophe Montillet DGA Aeronautical Systems & DGAC/STAC - French Aviation Authority		ECOSYSTEM Project: Evaluation of Nitrogen as a Replacement for Halon 1301 in Cargo Compartments Adam Chattaway, Changmin Cao Collins Aerospace	Full-Scale Crash Testing of Cargo Containers Experimental Characterization for Transport Airplane Crash Applications Mathias Waimer German Aerospace Center (DLR)
4:30-5:00 PM	PED Cabin and Flight Deck Fire Fighting Videos Michael Givens Federal Aviation Administration (FAA)		OPEN	Air India Express Accident David Gerlach Federal Aviation Administration (FAA)