Transportation Research Board (TRB) Annual Meeting

Workshop HFE
Staying Focused: Tackling the Epidemic of Operator Distraction

Sunday, January 11, 2015 9am – 4:30pm

Marriott Marquis, Marquis Ballroom Salon 7 (M2)

Sponsored by the Committee on Railroad Operational Safety (AR070)

http://www.trb.org/AnnualMeeting2015/AnnualMeeting2015.aspx

Workshop Abstract

Operator distraction has always threatened transportation safety, but the problem is growing exponentially as more people seem unable to live without constantly checking their cell phone, texting, etc. Distraction impacts every mode and results in slower reaction to conditions or events, failure to recognize hazards, decreased safety margins and increased accident risk. This workshop provides a forum to discuss emerging research, including how to detect, measure, predict and prevent distraction.

Workshop Agenda

Time	Presenter	Topic
09:00	Chris Monk, *NHTSA* Maura Lohrenz, *Volpe*	Welcome and Introductions Workshop Overview / Objectives
09:15	Chris Monk, *NHTSA*	Distraction in Driving
09:45	Bill Bramble, *NTSB*	Distraction in Aviation
10:15	**Break**	
10:30	Starr Kidda, *FRA*	Distraction in Rail
11:00	Kevin Kohlmann, *MARAD*	Distraction in Maritime
11:30	Max Kieba, *PHMSA*	Distraction in Pipeline
12:00	**Luncheon***	
13:30	Nicole Boyko, *Volpe*	Distraction Metrics
14:00	Chris Monk, *NHTSA* Maura Lohrenz, *Volpe*	Cross-modal Definition Discussion
15:15	**Break**	
15:30	All	Other Modal Examples
16:30	All	Wrap-up Discussions
17:00	**Adjourn**	

* Lunch (with keynote speaker) provided with registration in the Marquis Ballroom Salon 6 (M2).

Presentation Abstracts and Panelist Biographies

Disclaimer: The views presented in the following abstracts are those of the authors and do not reflect the official position of the U.S. Government or the authors' employers.

Workshop Overview – Chris Monk (NHTSA) and Maura Lohrenz (Volpe)

ABSTRACT: Operator distraction has always threatened transportation safety, but the problem is growing exponentially as more people seem unable to live without constantly checking their cell phone, texting, etc. Distraction impacts every mode and results in slower reaction to conditions or events, failure to recognize hazards, decreased safety margins and increased accident risk. This workshop provides a forum to discuss emerging research, including how to detect, measure, predict and prevent distraction. A multi-modal definition of distraction is proposed for discussion and clarification.

PANELIST: Chris Monk, Human Factors Division Chief, National Highway Traffic Safety Administration (NHTSA); Workshop co-chair (Chris.Monk@dot.gov; 202-366-5195)

Chris Monk is the Chief of the National Highway Traffic Safety Administration's Human Factors/Engineering Integration Division. He is responsible for developing, planning, conducting, and coordinating NHTSA's research program pertaining to the human factors of advanced safety and driver information systems, driver distraction and impairment, and the safe application of advanced technologies. He was previously the Human Factors Team Leader at the Federal Highway Administration. Before that, he was an Assistant Professor of Human Factors Psychology at George Mason University in Fairfax, VA. He began his career as a human factors engineer for Toyota where he led the development of the driver-vehicle interface for the first Lexus in-vehicle navigation system.

PANELIST: Maura Lohrenz, Aviation Human Factors Division Chief, OST-R/Volpe Center; Workshop co-chair (Maura.lohrenz@dot.gov; 617-494-3459)

Maura is a supervisory Operations Research Analyst and Chief of the Aviation Human Factors Division (within the Safety Management and Human Factors Technical Center) at Volpe, primarily supporting the Federal Aviation Administration (FAA). She also serves as an Executive Agent for the Department of Transportation (DOT) Human Factors Coordinating Committee (HFCC). Prior to joining Volpe in September 2011, Maura was head of the Geospatial Human-Computer Interaction section at the Naval Research Laboratory, where she directed and conducted human factors research related to military aircraft mission planning, cockpit moving-map display design, and automated methods of target detection, change detection, and image analysis/classification. Her most recent research has included investigating human strategies for visual search and target detection in visually complex (cluttered) scenes. Maura earned a B.A. from Middlebury College and a Masters' degree in Aeronautics and Astronautics (emphasis on Humans and Automation) from MIT.

Distraction in Driving – Chris Monk (NHTSA)

ABSTRACT: Dr. Monk will discuss NHTSA's latest data on the driver distraction problem, the definition of distraction used by the agency, as well as a quick review of the challenges associated with the measurement of distraction. He will conclude with an overview of the multi-threaded approach NHTSA has implemented to combat distraction, from improving the data we collect, to helping to improve the design of driver-vehicle interfaces so they are less distracting, to enforcement, legislative, and public awareness campaign approaches.

PANELIST: Chris Monk, Human Factors Division Chief, NHTSA
(See Dr. Monk's biography on previous page.)

Distraction in Aviation – William Bramble (NTSB)

ABSTRACT: Dr. Bramble will address the topic of distraction in aviation accidents and incidents. He will provide an overview of several cases involving a variety of aircraft types investigated by the NTSB, describe methods used to investigate and identify distraction in such events, and discuss distraction in the context of a broader theoretical area of psychology involving selective attention.

PANELIST: William Bramble, Senior Human Performance Investigator, National Transportation Safety Board

William Bramble is a senior human performance investigator at the National Transportation Safety Board. Since 2002, he has supported the investigation of many domestic and foreign aircraft accidents and incidents, including those involving Air Midwest Flight 5481 (2003), Flash Airlines Flight 604 (2004), Comair Flight 5191 (2007), Kenya Airways Flight 507 (2007), Aeroflot Nord Flight 821 (2008), Continental Airlines Flight 1404 (2008), FedEx Flight 80 (2009), Aires Flight 8250 (2010), and Asiana Flight 214 (2013). Previously, Dr. Bramble was an NTSB transportation research analyst. Before that, he worked as a human factors consultant for FlightSafety International, where he assisted with the development of instructional courseware and facilities and researched airline pilot pre-employment screening and job performance measures. He holds B.S. and Ph.D. degrees in psychology from the University of Central Florida and a U.S. private pilot certificate.

Distraction in Rail – Starr Kidda (FRA)

ABSTRACT: Recent accidents in rail operations and analysis of rule violations have highlighted the need for better understanding of the contributory role of operator distraction in such violations. Distracted driving has been thoroughly studied in recent years but distraction during rail operations has been less extensively examined. This presentation will describe the Federal response to railroad accidents in which distraction was cited as a causal factor and research and development efforts sponsored by the Federal Railroad Administration aimed at understanding distraction. The presentation will describe studies on safety-critical employees' use of personal electronic devices and the use of a locomotive simulator in distraction research. The implications of these studies and potential countermeasures for distraction in railroad operations will be discussed.

PANELIST: Starr Kidda, Engineering Psychologist, Federal Railroad Administration

Starr Kidda is an Engineering Psychologist in FRA's Office of Research and Development, Human Factors division. Starr earned a B.S. in psychology from Davidson College and a Ph.D. in Industrial/Organizational Psychology from the University of Georgia. She previously worked for the Department of Health and Human Services (HHS) Office of Inspector General conducting studies focused on preventing fraud, waste and abuse in HHS programs. She is currently working on research projects related to safety compliance and safety culture, and is interested in issues related to personnel selection and assessment as automation is introduced in railroading.

Distraction in Maritime – Kevin Kohlmann (MARAD)

ABSTRACT: The maritime industry, like other modes, has problems with distracted operators. Conversations, radios, alarms, and calls from other crew members can cause distractions; however, it seems the cell phone is the biggest distraction. Most companies who operate vessels on the waterways have policies regarding cell phones, but the incidents continue to occur.

PANELIST: Kevin Kohlmann, Director of Safety, Maritime Administration

Kevin Kohlmann is a 1988 graduate of Massachusetts Maritime Academy. He sailed for Exxon/SeaRiver Maritime aboard tankers for 12 years and earned the license of Master Mariner, Unlimited Tonnage. Kevin then worked for Military Sealift Command in the operations division and as Safety Manager. As Safety Manager, he was responsible for the safety of approximately 5,800 mariners. Kevin is currently the Director of Safety at the Maritime Administration in which he identifies safety issues for the maritime industry and recommends changes.

Distraction in Pipeline – Max Kieba (PHMSA)

ABSTRACT: Distraction in pipeline typically has a more indirect or delayed effect, since oil and gas products are the "passengers" of the pipeline or, in the case of the incident, there is usually some time to react before people or property are impacted. However, distraction can still impact the people involved with operating the pipeline, potentially be a contributing factor if certain events leading up to an incident are missed, and result in increased impact and consequence to public if an incident does occur. This presentation will be coming mainly from the angle of Control Rooms for pipelines and how operator distraction can affect controllers' ability to safely monitor and control pipelines during normal, abnormal and emergency situations. The presentation will give an overview of PHMSA's Control Room Management regulations, guidance and other measures typically implemented by the pipeline industry to help manage distraction. Other examples in pipeline design, construction, operation, maintenance and emergency response will also be discussed.

PANELIST: Max Kieba, General Engineer, Pipeline and Hazardous Materials Safety Administration

Max Kieba is an Engineer for the Engineering and Research Division of the US Department of Transportation (DOT) Pipeline and Hazardous Materials Safety Administration's (PHMSA) Office of Pipeline Safety. In the area of Operator Distraction, Max is on the team involved in the development of inspection criteria and guidance for PHMSA's Control Room Management regulations in 49 CFR Parts 192 and 195, which deal with a number of aspects in system design and human factors including operator distraction. Max also serves as PHMSA's representative on the DOT Human Factor's Coordinating Committee, established in the early 1990's and whose goals include coordinating cross-modal human factors activities and providing technical support on human factors issues to DOT senior level policy makers. Max has a B.S. in Electrical Engineering from the University of Pennsylvania.

Distraction Metrics – Nicole Boyko (Volpe)

ABSTRACT: Do you get distracted? What does that mean? What is distraction? Many existing distraction theories fail to discern between 1) a distracting source (e.g. noise, family problems, etc.), 2) the resulting experience of being distracted, and 3) the subsequent consequence(s) that this experience may have on outcomes (e.g., safety and job performance). In fact, most distraction measures are simply dependent on – or worded to reflect – the source(s) of the distraction. The current study addresses this major gap in the research by developing a new survey measure, the "Distraction in General Scale" (DIGS). Specifically, this measure separates the antecedents or causes (i.e., sources) of distraction from the actual psychological experience of distraction, providing researchers with the ability to measure overall levels of distraction while working. This allows the measure to be more generalizable compared to other distraction measures, which traditionally identified specific

sources of distraction among their terms. Additionally, based on theories of cognitive interference, emotional distraction, and mood/affect, this study suggests that the domain of the distraction experience should be multi-dimensional, including both cognition-based and emotion-based (positive and negative) responses to distractors. This study provides a rationale for the multi-dimensionality of the domain of the distraction experience, and will build these explicit cognition- and emotion-based components into the measure. Reliability and validity results are discussed, and implications for future research are reviewed.

PANELIST: Nicole Boyko, Engineering Psychologist, OST-R/Volpe Center

Nicole has worked for the Surface Transportation Human Factors Division at the Volpe Center for four years. Her work primarily focuses on the evaluation of proactive safety culture programs within the US Railroad industry. Nicole is also a Doctoral candidate in the University of Connecticut's Industrial/Organizational Psychology program, where she received her Master's in 2010. Nicole's interests relate to work-family issues, safety culture, and distraction. This presentation is part of her dissertation project, which she plans to defend this winter.