Wright State University - Conferences & Events

International Symposium on Aviation Psychology 2007

April 23-26, 2007 Dayton, Ohio

Printed from e-media with permission by:

Curran Associates, Inc. 57 Morehouse Lane Red Hook, NY 12571 www.proceedings.com

ISBN: 978-1-60423-304-9

Some format issues inherent in the e-media version may also appear in this print version.

TABLE OF CONTENTS

Practice Effects on Test-Takers' Performance and Quality of Cognitive Ability Tests in Pilot Selection: A Spatial Ability Test as an Example — Albers, Hoeft
Developing Observer-Based Measures for Assessing the Effects of Advanced Technologies on Crew Resource Management – Alexander, Estock, Beaubien, Holbrook
Operating An Unmanned Aerial System From A Moving Platform – Antonov, Domogala, Olson
Network Airline Production Problem – Baiada
Position Transfers in En Route Air Traffic Control: Assessing Flawed Mental Representations of the Representations of the Traffic Situation - Bailey, Scarborough
The Incidence of Psychological Aspect in Brazilian Aircraft Accidents from 1997 to 2002 - Barreto, Fonseca
Flight-Control-Force-Exertion Limits and Comparisons with Pilot and Nonpilot Populations – Beringer, Ball, Haworth
Decision Support for Airport Surface Management and Control – Billings, Smith, Spencer
Learner Centered Debriefing in General Aviation Training: Questions from the Field and Answers from Research – Blickensderfer
Examining the Content Validity of the FAA Private Pilot and Commercial Pilot Practical Test Standards – Blickensderfer, Schumacher, Summers
Modeling the Human Operator, Part II: Emulating Controller Intervention – Bolland, Neal, Fothergill, Humphreys, Lindsay
Spatial Awareness Biases in Synthetic Vision Systems Displays – Bolton, Bass
An Ecological Approach to Pilot Terrain Awareness – Borst, Mulder, vanPaassen
Linguistic Factors in the Overall Aviation Safety Framework – Bourgeois-Bourgrine, Normier, Mollard, Ferrante, Pouliquen
Memory for Form and Color in Virtual and Real Environments – Brown, Herdman, Wade
Pilot Self-Reports as a Reliable Means of Collecting Safety Related Operational Data — Burdekin

Very Light Jets in The National Airspace System – Burian	94
Using Likelihood Alert Technology in Cockpit Displays of Traffic Information to Support Free Flight – Bustamante	100
A Latent Growth Model of Pilots' Decision Making While Facing Potential Weather Threats – Bustamante, Newlin, Bliss	103
Ergonomics Aeromedical Transport Analysis – Cabral, Novo, Guimarães, Vidal, Mafra	109
The Effects of GPS and Moving Map Displays on Pilot Navigational Awareness While Flying Under VFR – Casner	116
Retention of Aeronautical Knowledge - Casner, Heraldez, Jones	122
A Human Factors Analysis of Miscommunication Between Pilots and Air Traffic Controllers in Taiwan - Chang, Wang, Tsai, Hsu, Yen, Ho	128
Simulating UAS: How Much Fidelity and Why? – Chubb	133
Age-Related Changes in Detecting Unexpected Air Traffic and Instrument Malfunctions – Coffey, Herdman, Brown, Wade	139
Towards Information Requirements for Airport Traffic Control Towers - Crutchfield	143
Filling in the Gaps: An Investigation of the Knowledge Needed for Effective Human-Automation Interaction – Curtis, Harper-Sciarini, Jentsch, Schuster, Swanson	148
Educational Minimums and Standardized Intelligence Testing in Pilot Screening and Selection – Damos	154
Developing Job Specific and General Training Content and Assessments – DeVoge, Bass	158
The Impact of Human Factors Related Innovations on Aviation Safety – Diehl	164
Pert Networks as a Method for Analyzing the Visual Scanning Strategies of Aircraft Pilots – Di Nocera, Bolia	165
A Comparison of Technological Systems to Enhance Night Flight Landings – Doherty, French	170
Refinement of a Flight Training Device Virtual Environment For Ab-Initio Pilot Training – Doherty, Macchiarella	174

The Implementation of the FAA Industry Training Program in Technically Advanced Aircraft (TAA): Lessons Learned	
– Dornan, Beckman, Gossett, Craig, Mosey	177
Airline Command dnd Control: An Ethnographic Study	
– Feigh, Pritchett	183
The Effects of Multimodal Collaboration Technology on Subjective Workload Profiles of Tactical Air Battle Management Teams	
– Finomore, Knott, Nelson, Galster, Bolia	190
An Investigation of Certified Flight Instructor Competencies - Fitzgerald, Andrews, Crow, Diedrichs, Karp, Stewart	197
Advancing Safety Performance: Using Change Management Principles to Implement Safety Management Systems in Air Carrier Operations	
– Flouris	198
HEMETS – Human Error Modeling for Error Tolerant Systems – Fotta, Nicholson, Byrne	204
A Comparison of Scenario Based with Maneuvers Based TAA Instrument Flight Training – French, Summers, Ayers, Blickensderfer	210
Collaboration Technologies and the Supervisory Control of UCAVs in Tactical C2: Effects on Performance and Workload – Funke, Bennett, Nelson, Galster	216
Aviation Psychology Research – Extending Scientific Method to Incorporate Value and Application – Gallaway	224
FAA Maintenance (MX) Human Factors Research Program and MX HF Information Resource Website – Gallaway	231
Assessing Large-Scale Training Events: Developing Common Tools and Protocols – Gehr, Schurig, Rowe, Smith, Bennett	232
Proactive Safety Requires Proactive Measurement - Gibbons, Thaden	238
The Performance Costs of Digital Head-Up Displays – Hagen, Herdman, Brown	244
The Effects of International Flight Schedules on Pilot Fatigue – Hannah	247
Generating Procedures and Recovery Sequences: A Formal Approach – Heymann, Degani, Barshi	252
Prediction Differs from Description: General Versus Specific Intelligence Testing for the Selection of Ab Initio Air Traffic Controllers	250
– Hoeft Damitz Beauducel	259

— Hoermann, Radke, Hoeft	263
Cooperative Perception in Multisensor Environment: The Case of the Tigre Helicopter – Hourlier, Roumes	268
Aviation Weather Encounter Study: Some Preliminary Findings – Hunter, Martinussen, Wiggins, O'Hare	275
Measuring Change in Pilots' Conceptual Understandings of Autoflight – Hutchins	281
Task Analysis for Team of Air Traffic Controllers in Enroute ATC – Inoue, Kanno, Aoyama, Furuta	287
Aviation Technologies and Human Error: A Research Literature Database and Analysis – Johnson, Rantanen, Moment	294
An Analysis of ATC Communication-Line Occupancy from Real-Time Simulation – Kageyama, Yamamoto	300
Trade-Offs Between Safety-Buffers, Efficiency, and Task-Load – Kallus, Hoffman, Winkler, Kohlberger, Prenn	306
Anticipatory Processes in Critical Flight Situations – Kallus, Tropper	309
Optimizing EFB Use Through Training, Standards, and Best Practices – Kanki, Seamster	315
Human-Machine System Simulation for Evaluating Flight Deck Display Based on Knowledge Representations of Expert Pilots – Karikawa, Takahashi, Ishibashi, Kitaramura	321
A Worldwide Review of Selection for Air Traffic Control Personnel - King, Manning, Schroeder, Carretta, Rathje, Myhr	
How General Aviation Pilots Use Weather Information Providers and Products – Knecht	
Testing a Maneuver Space-Based Collision Avoidance System: Experiment 1 — Knecht	
Panel: Advancing the Human Factors Business Case - Krois, Farrow, Johnson, Bair	
Research Portfolio for the Next Generation Air Transportation System - Krois, McCloy, Piccione	
The Causes of Failure of Olympic Airways's Restructuring Efforts Applied by the Greek State — Lainos	352

Safety Culture Factors Affecting Taiwan National Airlines Cabin Safety Performance	
- Lee, Stewart, Kao	364
Ethical and Cultural Factors Relating to the Behavior and Reactions of Pilots in the Time of Battle – Lekea	370
Supporting Pilots in Close Encounters With Terrain – Lenaerts, Borst, Mulder, van Paassen	381
Enhancing the Collection and Analysis of General Aviation Insurance Data in Australasia Through the Use of HFACs	
– Lenné, Ashby, Regan	387
Effectiveness of Weather Coding Schemes on Air Traffic Displays - Ling, Dong, Harvey, Brantmeier, Rojas	392
What Is a Cognitive System? – Lintern	398
Organizational and Inter-Organizational Factors Affecting Aircraft Maintenance Safety in China: A Preliminary Study	
- Li, Wang, Li, Yu	403
Modelling the Human Air Traffic Controller, Part 1: Expert-Trainee Differences in Conflict Detection – Loft, Bolland, Humphreys, Neal	409
Integrating Unmanned Aircraft Systems into the National Airspace System – Lyall, Harron, Acuña, Eis, Johnson	415
Assessing Readiness for Collaboration in MILITARY C2 CENTERS – Lyons, Wolf, Vincent	420
Effective Computer Based Training in Aviation: An Evaluation of the NASA In-Flight Icing Program – Mauro, Barshi	426
Supplemental Analysis of the Effectiveness of the Personal Computer-Based Aircraft Training Device with that of an FAA-Approved Flight Training Device - McDermott	432
A Comparison of Risk Evaluation in Emergency Medical Services Helicopter Operation Regulations – McLaine, vonThaden	438
An Overview of the Tanker Airlift Control Center – Militello, Vincent, Gaydon, Swindler	443
Changes in Cognitive and Sensory Abilities of Older Pilots Parallel Those Observed in the General Population – Miller, Chaparro	447
Effectiveness of Ground-Based Direct Pilot Warnings in Mitigating Runway Safety- Critical Human Errors – Moertl, McGarry	452

External Aids for General Aviation Pilot Communication – Morrow, Chang, Wickens, Rantanen, Carbonari	458
Myths of 'Naturalistic' Decision Making in Aviation — Mosier	462
Using Multi-Level Analysis to Model the Sources of Variability in Workload Within and Between Sectors – Neal, Mooij, Bolland, Xiao, Lindsay	463
Addressing Cognitive Learning Styles in Job Performance Aids - Nemeth, Quill, Adams	469
The Multimodal Production of Common Ground Understandings in Intercultural Flight Training - Nomura, Hutchins	475
Comparison of Three Subjective Workload Metrics for a Free Flight Environment - O'Connell, Doherty, Wilson	481
Learn to Fly: Instructor and Student Communications in Instrument Flight Instruction – Okdeh, Bradshaw, Brou, Doane	486
The Use of Physiological and Subjective Measurements on the Evaluation of Cockpit Workload: A Comparison Between Simulated and Real Flight — Oliveira, Ribeiro	492
Analysis of Learning Curves: Evaluation of Assessment in ATC Training – Oprins, Burggraaff, van Weerdenburg	498
Procedural Controli ATC Selection Tests to Predict Situational Awareness – Oprins, Geven, Veldhuijzen, Roe	505
Transformation Practical Lessons - Padula	512
Human Factors Issues in UAS Training – Pedersen, Cooke, Gesell, Hartman, Pack, Skinner	518
Relationship of Complexity Factor Ratings with Operational Errors - Pfleiderer, Manning	524
Extrapolation of the Intersection of Two Trajectories on a 2D Display: Evidence of Biases - Pompanon, Raufaste	530
Designing, Evaluating, and Training Flight Decks of the Future – Prada, Boehm-Davis, Riley, Smith	537
The Effects of Sleep Deprivation on Flight Performance, Instrument Scanning, and Physiological Arousal in United States Air Force Pilots	
– Previc, Lopez, Ercoline	

Cockpit Technology for the Prevention of General Aviation Runway Incursions - Prinzel, Jones	546
Going Below Minimums: The Efficacy of Display Enhanced/Synthetic Vision Fusion for Go-Around Decisions During Non-Normal Operations	
– Prinzel, Kramer, Bailey	552
Effects of Message Complexity and Message Length on the Production of Pilot Readback Errors	
- Prinzo	558
Coherent Design of Uninhabited Aerial Vehicle Operations and Control Stations	
- Pritchett, Castor, Bruneau	564
Temporal Awareness in ATC: Literature Review and a Proposed Model - Rantanen	570
Dualiminant, Studies in Compley Military Isonia Symbology	
Preliminary Studies in Complex Military Iconic Symbology – Repperger, Thomas, Miller, Aleva, Fullenkamp	577
Crew Resource Management and Shared Mental Models	
Reynolds, Blickensderfer	583
Distributed Cognition at Cockpit: A Preliminary Study	
- Ribeiro	588
Advanced Airport Surface Operations in ATM - Implications for Training of End-Users	
– Roessingh, van der Vliet-Perreijn, Eißeldt, Hilburn	593
The Use of Cream in the Investigation of Human Error in Aviation Events: A Case Study	
- Rome, Fabre, Cabon, Laporte-Wullens, Figarol	599
Designing Decision Support for Mission Resource Retasking	
- Roth, Scott, Whitaker, Kazmierczak, Forsythe, Thomas, Stilson, Wampler	605
Effects of Imperfect Automation Support on Air Traffic Controller (ATCo) Performance, Mental Workload, and Attention Allocation: Miss vs. False Alarm Prone Automation	
- Rovira, Parasuraman	611
Investigating Sources of Mental Workload Using a High-Fidelity ATC Simulator	
– Sanderson, Mooij, Neal	618
Vehicle Operator Deviations: Predicting Authorized Versus Unauthorized Access on Airport Movement Area	
- Scarborough, Pounds, Bailey	624
Evaluation of the SEEV Model of Visual Attention Allocation in ATC Applications	
– Schriver, Rantanen	625
Beyond Electronic Flight Bag (EFB) Approval: Improving Crew Performance	
– Seamster, Kanki	632

- Shalvi, Holland, Wolff, Biton, Harel, Harpaz, Dishi, Ritov	638
Alternative UAV Sensor CONTROL: Leveraging Gaming Skill - Shively, Brasil, Flaherty	644
Effects of a Standard Landing Lights Message on Runway Safety	651
 Sierra, Buondonno, Racine, Bender An Ecological Approach to Support Pilot Terrain Awareness After Total Engine Failure 	651
- Sjer, Borst, Mulder, van Paassen	657
An Airline Evaluation of the Facilitation Skills Assessment Tool [FSAT] as a Device for Training and Assessing Facilitators	
– M. Smith, G. Smith, Budenberg, Willats, Griffiths	664
The Use of Airspace Flow Programs to Manage Large-Scale Weather Events - Smith, Spencer	670
Tactical Airport Departure Flow Management - Spencer, Carniol, Sud, Smith, Pepper, Feldman, Huynh	676
Barriers to Safety Innovation: Experiences Applying the "Safety Model Based Analysis" Approach in European Aviation – Steele, Pariès	682
Skill Decay on Rejected Takeoffs as a Result of Varying Degrees of Expectancy – Stevens, Goldsmith, Johnson, Moulton	687
Improving the Effectiveness of the Pilot-Controller Partnership: An Application of CRM Tools and Methods – Teller, Brenlove	691
Emotional Intelligence: Does It Fit Into Recruitment Process in the Airlines Industry? - Thingujam	697
Initial Usability Test of New Concepts for Electronic Flight Data Handling in Airport Traffic Control Towers - Truitt, Muldoon	701
Collocation and Pattern Recognition Effects on System Failure Remediation – Trujillo, Press	707
Visualization of Maneuver Constraints for Airborne Self-Separation: Use of Intent Information – van Dam, Mulder, van Paassen	714
The Chicken, the Egg, the Workspace Analysis, and the Ecological Interface. – van Paassen, Amelink, Borst, van Dam, Mulder	720
Using Ecological Interface Design for Energy Management During Idle-Thrust Approaches – van Paassen, Gernaey, Veld, Mulder	727

Measuring Safety Culture in a Non-US Airline Using the Commercial Aviation Safety Survey	
– von Thaden, Ragnarsdóttir	733
Effects of CDTI Alerting System Properties on Pilot Multi-Task Performance	
– Wickens, Colcombe	739
Wake Vortex Display Design and Model Evaluation	
- Wickens, Sebok, Bagnall, Kamienski	743
On Line and Off-Line Tools for Preventing and Analyzing Vestibular Spatial Disorientation Mishaps: A Summary of the Alion-MA&D/Air Force Research Program	
– Wickens, Small, Fisher, Keller, Socash	748
The Next Generation Professional Pilot – Not Your Father's First Officer	
- Wilson	752
1,001 Runway Incursions	
- Wischmeyer	757
The Alaska Airlines Flight 261 Accident: A Systemic Analysis of Functional Resonance – Woltjer, Hollnagel	763
Relative Importance of Conflict Geometry Variables in Influencing Pilots' Conflict Detection Using a Cockpit Display of Traffic Information	
– Xu, Rantanen, Huo	769
Effect of Display Format on Attitude-Maintenance Performance – Yamaguchi, Proctor	776
	770
Lane Position Head-Up Displays in Automobiles: Further Evidence for Cognitive Tunneling – Zheng, Brown, Herdman, Bleichman	782
₀ , ,	