

Task 4: Structured Interviews: Native and Foreign Airline Pilots' International Language Experiences (Prinzo)

Program Manager:

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Task Stakeholders/Sponsors

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Project Start Date: 11/1/2005

Anticipated End Date: 9/30/2010

Requirements Statement	
Operational Shortfall or Knowledge Gap	There is a lack of baseline data regarding the flight experiences of pilots who fly internationally.
Benefit in Closing the Shortfall or Gap	Not surprisingly, research is needed to identify and fill the gaps in communications data that would contribute to the understanding of some of the language issues, communication problems and procedural differences airline transport pilots encounter when flying internationally. Also, as digital voice communications systems and their applications emerge, it is important to know which messages may present a problem for non-native English speaking pilots.
Description of the Desired Product	A series of technical reports documenting U.S. and foreign ATP-rated pilots' international flight experiences related to (1) Background Information, (2) General/Pre-Flight Preparation, (3) Word Meaning and Pronunciation, (4) Language Experiences in Non-native English Speaking Airspace/Airports, (5) Language Experiences in Native English Speaking Airspace/Airports, (6) Non-native English Speaking Speaking-ATC/Native English speaking Pilot Communication, (7) ATC/Pilot Same versus Different Language Interaction, (8) Communication Problems, and (9) Technological Interventions.
Schedule	Provide the sponsor with a series of power point presentations as each major section of the interview has been compiled, condensed, and key issues identified.

Research Objective

Document the international language experiences that native and foreign pilots encounter when flying into countries where English may or may not be the local language spoken by air traffic controllers so the information gained from this study can be used by various FAA workgroups involved in the design and certification of future avionics systems that provide controller pilot data link communications and other air traffic services.

Background

The Federal Aviation Administration (FAA) is projecting major increases in the number of passengers arriving into, and departing from, the United States (U.S.) through the year 2025 (FAA 2008). As noted in that report, "The worldwide recession drives international passengers down 0.9 percent in 2009 but a rebound in economic growth leads to a 4.2 percent growth in passengers in 2010. For the balance of the forecast period, stable

worldwide economic growth leads to international passenger growth averaging 4.6 percent a year, and totaling 310.0 million in 2025” (p35).

As the volume of US and foreign flagship increases, so will the number of transmissions necessary to provide air traffic control (ATC) services. To save time, some controllers use nonstandard phraseology to decrease the number of words in an instruction (e.g., go fast). Still others communicate with pilots in ‘plain language’ using “can you accept runway...” in lieu of “expect runway....” The ability to quickly decode, understand, readback and comply with these messages can be a problem for all pilots, especially those who are unfamiliar with how ATC services are delivered by controllers in a particular region.

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Previous Activity on this Task

A structured interview was developed and administered to small groups of pilots to identify language issues that can become barriers to efficient and effective communication between the airline transport pilot (one group of native speaking English pilots, one group of non-native English speaking pilots) and air traffic controllers (who may or may not be fluent in English).

The questions were developed by the PI with expertise provided by several recently retired airline transport pilots, a member of the Proficiency Requirements in Common English Study Group (PRICESG), the sponsor, and several human factors research psychologists. The Questionnaire Construction Manual (Babbitt and Nystrom, 1989) was used to construct some of the interview questions and response alternatives. Additional items were added, a shake-down conducted, and a final interview submitted to, and approved by CAMI’s Institution Review Board. The structured interview was divided into 9 sections: (1) Background Information, (2) General/Pre-Flight Preparation, (3) Word Meaning and Pronunciation, (4) Language Experiences in Non-native English Speaking Airspace/Airports, (5) Language Experiences in Native English Speaking Airspace/Airports, (6) Non-native English Speaking Speaking-ATC/Native English speaking Pilot Communication, (7) ATC/Pilot Same versus Different Language Interaction, (8) Communication Problems, and (9) Technological Interventions.

Representatives were contacted by the PI from American, Continental, Delta, and United Airlines as well as China Air, LAN Chile, Aeroflot, and Alitalia for their support. Each representative was briefed on the project and provided with copies of the interview materials for review. Once approvals were obtained, interviews were conducted at their respective offices (either corporate or airport).

A total of 60 ATP pilots were interviewed in small focus groups ranging from 2-4 pilots per group. Each interviewee received a copy of the interview questions a week before the scheduled interview for completion and referred to it during the interview. All interview sessions were audio recorded and later transcribed. Pilots provided information pertaining to any problematic language-based communication, procedure, or observation they experienced or heard over their aircraft’s communications system during international flights.

In FY09 4 technical reports were developed: 1 was published and 3 are in review. The 1st provided an analysis of the first three sections of the structured interview: 1) Background Information related to the recency of international flight experiences among the pilot-participants, 2) General/Preflight Preparation, and 3) Air Traffic Control (ATC) Procedures. It covered the U.S. pilots’ responses and discussions of questions 1-23. The 2nd continued with U.S. pilots’ flight experiences when word meanings and pronunciation became barriers to efficient and effective communication. It covered the pilots’ responses and discussions to questions 24-30 in Section 4. The 3rd involved pilots’ responses and discussions of questions 31-38 found in Section 5. It addressed

their language experiences in non-native English-speaking airspace and airports. The 4th report continued with questions about their language experiences with controllers who spoke English as a foreign language.

Proposed or Planned Research

Continue writing a series of technical reports that document the language experiences of U.S. and foreign pilots.

Research Question(s)

What are the language issues that can become barriers to efficient and effective communication between the US airline transport pilot and air traffic controllers?

What are the language issues that can become barriers to efficient and effective communication between the Non-US airline transport pilot and air traffic controllers?

Technical Approach

Current Year

Continue analyzing the written and transcribed data obtained from the U.S. ATP-rated pilots and present that information in a series of technical reports and sponsor power point presentations.

Out-Years

Continue analyzing the written and transcribed data obtained from the foreign ATP-rated pilots and present that information in a series of technical reports and sponsor power point presentations.

Air Traffic Resources Required

None

Information Technology Resources Required

None

Calibration

None

FY10 Milestone Schedule		
Description	Proposed Start Date	Proposed Completion Date
Develop Project Description	FY06 Q1	FY06 Q1
Coordinate Pilot Participation	1 day after sponsorship	FY06 Q3
Create Interview Materials	FY06 Q2	FY06 Q4
Obtain IRB Approval	FY06 Q2	FY06 Q4
Develop SOW for pilot pay agent	FY06 Q3	FY06 Q4
Conduct Structured Interviews	FY06 Q4	FY07 Q3
Transcribe Interviews	FY06 Q4	FY08 Q1

Develop SOW for SME to summarize interview materials	FY07 Q4	Contract awarded FY07 Q4
Edit interview summaries	FY08 Q1	FY10 Q4
Develop a Series of Preliminary Reports documenting air transport pilot perceptions of their communications with foreign controllers during international flight operations	FY08 Q2	FY10 Q4

FY10 Deliverables		
Description	Proposed completion date	Actual completion date
Nine OAM Technical Reports documenting the problems U.S. and foreign pilots experience when flying internationally centering on 10 key areas: (1) Background Information, (2) Pre-Flight Preparation, (3) Air Traffic Control (ATC) Procedures, (4) Word Meaning and Pronunciation, (5) Language Experiences in Non-Native English-Speaking Airspace/Airports, (6) Non-Native English-Speaking Controllers Communicating With Native English-Speaking Pilots, (7) Language Experiences in Native English-speaking Airspace/Airports, (8) Native English-speaking Controllers Communicating With Non-Native English-Speaking Pilots, (9) Communication Problems, and (10) Technological Intervention. The contents of these reports will be used by the DataCom Human Factors Working Group to augment their knowledge and understanding of communication problems beyond domestic operations for developing requirements, best practices, and standards for future communications and avionics systems and applications and the certification of future avionics systems that provide controller pilot data link communications and other air traffic services.	FY10 Q4	