

Requirement ID:

Sponsor Organization: AFS

POC: Les Vipond

Requirement Title: Language Barriers Result in Maintenance Deficiencies

Funded Requirement:

- FY01: No
- FY02: Yes
- FY03: Yes
- FY04: Yes

Requirement Statement: To determine whether the growing number of maintenance and inspection personnel who possess a wide range of non-native English reading, writing, and speaking abilities are more inclined to commit an error than personnel whose native language is English

Background: The existence of maintenance and inspection personnel whose native language is not English suggests that language barriers may be causing performance errors. Within the airline maintenance environment there is an increasing trend towards outsourcing. Phillips (2002) in *Aviation Week and Space Technology* notes "...the move by airlines to slash costs is driving outsourcing to new levels." In a related paper, Sparaco (2002) sees the formation of global MRO (Maintenance and Repair Organizations) networks involving US and foreign airlines as well as repair stations. In addition to offshore MROs, there are many within the USA where non-native English speakers form part of the labor pool. There is an increasing population of non-native English speakers, some of whom can be employed as mechanics or inspectors. Again, the difficulty of moving between languages creates an additional potential for error. An earlier report on human error in repair stations from the FAA's Human Factors in Maintenance and Inspection initiative also showed the trend toward outsourcing (Drury, Wenner and Kritkauskay, 1999). What did not emerge specifically from this report was that many Part 145 facilities are not located in the USA, creating some potential for errors where the staff does not have English as their native language.

The language of aviation is primarily English, both in operations and in maintenance. An Aviation Maintenance Technician (AMT) must pass their examinations in English, and all maintenance documentation in use at the Federal Aviation Administration (FAA) approved facilities is in English. This poses a second-language or translation burden for Non-Native English Speakers (NNEs) that can potentially increase their workload, their performance time or their error rate, or even all three measures.

In a 2001 report to the Secretary of Transportation by the Aircraft Repair and Maintenance Advisory Committee, many of these issues were raised in considering changes to the domestic and foreign FAR Part 145. The issues concerned the qualifications and standards for personnel, makes one conclusion:

“Although new Part 145 requires supervisors, inspection personnel, and personnel authorized to approve an article for return to service to be able to read, write and understand English, there is some concern that communication, particularly with regard to the ability to speak English, may be a problem in foreign repair stations. However, there is no data to indicate that there is a problem in this area.”

and a recommendation that:

“The FAA should establish a method for determining whether language barriers result in maintenance deficiencies.”

This grant proposal is a direct response to these concerns that NNES, in repair stations in the USA and abroad, may be prone to an increased error rate that could potentially affect airworthiness.

Output: (a) Quantitative data identifying patterns of language related errors and magnitude estimates for current and future problems associated with third-party repair station maintenance deficiencies resulting from language barriers, (b) Recommendations in reducing third-party repair station maintenance deficiencies by changing maintenance personnel qualifications or changing maintenance tasks and/or procedures, (c) Recommendations will address maintenance documentation issues, and personnel issues (e.g. selection and training)

Regulatory Link: