

## **BREAKOUT SESSIONS 1 & 2**

### **ELPAC Test Test Design and Construct Rationale**

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#### **BIO DATA**

*Adrian qualified as an air traffic controller in the United Kingdom with all ratings for tower, approach and en route and has also worked as a controller at Maastricht UAC. He is currently working at the Eurocontrol Institute of Air Navigation Services in Luxembourg, in the Training Development and Harmonisation unit.*

*Adrian has been involved in developing English language proficiency tests since 1988. First as Project Leader for Eurocontrol's PELA Test for student air traffic controllers and for the last three years as Project Leader for ELPAC – a test of English Language Proficiency for Aeronautical Communication.*

*He is also a founder member of the ICAO PRICE Study Group (Proficiency Requirements for Common English), that strengthened the provisions of SARPs relating to aeronautical communications and that developed the ICAO language proficiency requirements. Adrian works closely with ICAO's European and North Atlantic Office in Paris on language proficiency matters as a member of the EANPG/COG ATM Training Task Force.*

*Currently, Adrian is working to assist states in implementing the ELPAC test. Development has started on a version of ELPAC to enable student air traffic controllers to meet the European Commission's language proficiency requirements for the student ATC Licence.*

#### **SUMMARY**

*The successful development of a language test can be accomplished by having a clear aim as to what the test should accomplish. Being guided by best practice in language test design at every stage of development and ensuring that the trialling population is truly representative of the target population is essential. An external audit of test development and design helps stakeholders meet their expectations.*

#### **1. Rationale for the ELPAC test**

Amendment 164 to ICAO Annex 1 (Personnel Licensing) which strengthened requirements for language proficiency came about as the direct result of the work of the ICAO PRICE (Proficiency Requirements in Common English) Study Group, of which the author is a member. PRICE also developed language proficiency requirements (LPR) in the form of holistic descriptors and the ICAO rating scale.

The European Union through its Directive on a Community ATC Licence has adopted the ICAO LPR. The net result being that pilots and air traffic controllers now require a language endorsement to their licence.

With extensive experience in developing the PELA test for student controllers, Eurocontrol was directed by its Member States to develop a new language test.

## **2. Test objectives**

The primary objective was to design a specific purpose language proficiency test, in English, for air traffic controllers that would meet ICAO and EU language proficiency requirements. Test specifications were developed from a Needs Analysis. A thorough review of the needs analysis conducted for the PELA test showed that pilot / controller communications had not significantly changed and were still valid for aeronautical communication today.

## **3. Development Team**

Eurocontrol's Member States contributed English language and ATC experts to the development team. The project is led by Adrian Enright (Eurocontrol) assisted by language testing expert Magdalena Vecerova of the Czech Republic. The team was guided during development by Dr. Rita Green, a consultant in language test design. Software development was (and remains) the responsibility of ENOVATE from Bergen, Norway.

## **4. Test design**

The test examines aeronautical communication (phraseology and plain English) in conformity with the ICAO language proficiency requirements and holistic descriptors. The test ensures that all 6 ICAO language criteria at levels 4 and 5 are assessed. Language tasks are defined and items constructed so that suitable samples of language can be elicited during testing.

Based on experience with the PELA test it was decided at a very early stage that ELPAC would comprise two test papers. Paper 1 (Listening Comprehension) is web based – for test security and for economy of administration. Paper 2 is an Oral Interaction paper with visual and non-visual tasks.

## **5. Test development – trialling**

From the beginning the team agreed that successful trialling will only be accomplished if the sample population accurately reflects the target population – operational air traffic controllers. Great care is taken to select candidates on the basis of gender, age, work, experience, ATC function, language background etc. ensuring they are proportionally representative of the true ATC population in Europe.

More than 700 controllers from 20 countries took part in the trialling exercises during the development of the first test versions which were released in July 2007. Each trial generated approximately 100,000 items for analysis. Test versions were trialled, analysed, evaluated, modified, and retrialled in a continuous cycle. Once test design is decided and items accepted, the test is subject to standard setting by a selected team of experts who do not have close knowledge of the ELPAC test. Finally, test versions are constructed to produce parallel versions. Meanwhile, software development proceeds hand-in-hand with trialling, and often in advance as feedback comes in from test takers, examiners and administrators.

Test development did not stop in July 2007. New versions are being developed, trialled, reviewed, re-trialled, etc.

**6. Test evaluation**

Together with data from the statistical analyses, the development team is receiving feedback from all participants (test-takers, administrators, examiners, markers), bio data on test takers, reports from administrators and test results and Paper 2 recordings.. All of this information helps the team to check how tasks and items are performing. Thus we are able to determine the reliability of items and evaluate the “fairness” of the test.

**7. Validation**

Throughout development the team periodically conducts an internal validation - to ascertain that the test is meeting its objectives and the stated language proficiency requirements.

Additionally, Eurocontrol contracted the Linguistics and English Language Department of Lancaster University under Professor Charles Alderson to carry out an external, independent validation of the ELPAC test. This external audit demonstrated to stakeholders that the ELPAC test meets their expectations in having a reliable tool to measure the language proficiency of their controllers.

**8. Dissemination**

Dedicated websites were set up to provide all stakeholders and interested persons with information about the ELPAC test. Sample tests are available for test format familiarisation. Presentations are made on a regular basis to international fora e.g. Eurocontrol groups, ICAO, IFATCA, ICAEA and individual controller associations. ELPAC test administrators are kept updated on development through reports on trialling and workshops.

**9. Conclusion**

Delivery of the ELPAC test is achieved by applying best practice in language test design during development; by ensuring that language skills and not ATC skills are assessed and by developing a specific purpose language proficiency test.

## **Test Assessment and Implementation Rationale**

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### **SUMMARY**

*The need for a high level of security for such a high-stakes test was one of the factors that directed ELPAC development towards an internet based application. Language skills representative of aeronautical communication require both listening comprehension and oral interaction test papers which must reflect the linguistic actualities of the controllers’ job. Maintaining testing standards of all involved in testing is critical to ensuring valid and reliable tests. A transparent approach to keeping stakeholders informed of developments is essential in maintaining a healthy and robust test.*

## 10. Rationale for assessment and implementation of the ELPAC test

From the beginning, it was recognised that the ELPAC test had to achieve a very high level of security given the high stakes involved. Experience with developing a PC-based version of the PELA test stemmed from the desire of administrators to reduce the amount of paper involved and the consequent time spent on test administration. This experience and the need for a very high level of security confirmed the decision to develop ELPAC as an internet based test, allowing that the Paper 2, Oral Interaction, has to have a direct human interaction (although all materials are stored in the database). The test has also to be as objective as possible in assessment.

## 11. Paper 1 – Listening Comprehension

A test of listening comprehension with routine and non-routine situations which are generic to all ATC functions. All items are based on authentic materials which are reviewed and if necessary rewritten in line with test specifications. Audio files are recorded using a large variety of nationalities relevant to European airspace. Items in Paper 1 are constructed and standard set to ICAO levels 3, 4 and 5. An algorithm calculates a candidate's level once a trained and accredited marker has completed marking the paper. Candidates provide their responses to items through a keyboard being required to enter numbers or words (maximum three or four). The duration of Paper 1 is approximately 40 minutes.

### 2.1 Using the keyboard to input data

The **ELPAC test does not require candidates to be computer literate.** Knowledge of computer programs is not expected. The only thing **candidates need to know is the keyboard layout**, or in other words, navigation functionalities – **how to delete something, how to make a space between words, etc.** The keyboard layout may vary from a country to country but the basic keys (delete, enter, space etc.) are the same. All test items are spaced in such a way that when a candidate has a sufficient knowledge of English and types slowly using only one finger, s/he will still have enough time to input all the answers. When examining all items in all ELPAC Paper 1 live test versions, one can see that the fastest speed required is 10 words per minute (short words such as articles or prepositions are each counted as one word). If a candidate does not understand the recording, then the problem is not in the keyboard input but in an insufficient knowledge of English.

A special procedure is in place to cater for candidates who are unable to use the keyboard to answer the test items. Such a candidate must state (in writing and prior the test) that s/he is unable to use one or more of the following keyboard functions:

- a. Type with a speed of at least 10 words per minute (articles and prepositions each counted as one word).
- b. Delete a letter.
- c. Click on a box (using a mouse).
- d. Make space between words.

This statement is submitted to the ELPAC National Administrator who co-ordinates further actions with Eurocontrol.

## 12. Paper 2 – Oral interaction

Two trained and accredited examiners assess candidate performance in visual and non-visual interactions. Candidates may select Tower, Approach or En route scenarios but these only serve to put the interaction into a familiar context – it is always the language proficiency being assessed not ATC procedures. Candidate performance is assessed at level 4 or level 5. Specific tasks assess the candidate's ability to give an opinion, put forward an argument, evaluate, speculate or hypothesise. The candidate is encouraged to produce a rateable sample of extended speech. Interlocutors adhere strictly to a framework to ensure that each candidate receives the same test under the same testing conditions. The duration of Paper 2 is approximately 20 minutes.

### **13. Maintaining testing standards**

All test administrators, Paper 1 markers and Paper 2 examiners are trained by Eurocontrol. Accreditation is by the National Licensing Authority on the recommendation of Eurocontrol. A user group of administrators meets at least once, if not twice, a year to exchange experiences and put forward suggestions for test improvement. Regular refresher workshops take place for markers and examiners. The performance of markers and examiners is monitored by reviewing marked Paper 1s and recordings of Paper 2 performances. Candidate anonymity is guaranteed. New items for Paper 1 are trialled with each test version. These are then statistically analysed, evaluated and standard set before going forward to create new test versions. New Paper 2 tasks are trialled through familiarisation courses and training workshops.

### **14. Updating software**

Continuous development takes place through feedback from all testing personnel and candidates. New software upgrades are produced on a regular basis in an evolutionary manner. A helpline (telephone and/or email) is available for administrators. Regular meetings, emails and conference calls ensure that test and software developers keep abreast of user requirements.

### **15. Dissemination**

The ELPAC project disseminates information through a dedicated website ([www.elpac.info](http://www.elpac.info)) and makes available sample tests for familiarisation on [www.elpacsample.info](http://www.elpacsample.info). Development, training and testing is carried out on separate, isolated servers for maximum security. New websites have been established for the version of ELPAC being developed for the student controllers. The project is subject to scrutiny by Eurocontrol Member States through such fora as the Training Focus group (TFG) and the Human Resources Team (HRT). Close liaison on language proficiency matters is maintained with ICAO through the PRICE Study Group and the COG ATM Task Force.

### **16. Conclusion**

The ELPAC test is designed to assess English language performance at ICAO levels 4 and 5 for air traffic controllers. In meeting the need for security and economy of administration for such a high stakes test ELPAC is internet based. Sample tests are available for familiarisation and stakeholders are regularly informed of progress. Dedicated web sites allow easy access for information and a transparent approach to test design.