



## Dear Candidate,

The German Aerospace Center (DLR) provides you with free training software and information to assist you during your preparation for a DLR assessment. It is important that you make extensive use of this opportunity. Do not attend a DLR assessment if you have not had at least ten days time to thoroughly practise with all training tools and read all information texts.

Our CBTs will not enhance your *aptitude* (*synonym: ability*) for spatial orientation, perception, concentration, etc. . No software is able to do this since these aptitudes are – like talents – genetically and somatically determined to a large extend. However the CBTs will familiarize you with the test principles and increase your *test specific skills*. Doing so has several advantages:

- Being well trained will help you to really achieve your own individual maximum performance in the actual test.
- Having a comprehensive idea of what to expect in the actual assessment will help you to overcome excitement and fear prior to the assessment.
- Furthermore our CBTs and information texts are meant to put into perspective some of the rumours and legends you might hear and read from people with 'DLR experience' or other 'experts'. Although there are generally no objections against sharing impressions about the DLR with others there are still risks to be considered when asking others 'what DLR is looking for' or for their recommendations on 'how to pass the DLR': As an applicant it is very hard to judge the benchmarks and all the details of one's own assessment process. What had worked for one person might not work for others, because their strengths and weaknesses might be in totally different domains! Therefore do not rely on well-intentioned hints and recommendations from other sources than those authorized by the DLR. Extra caution is advisable if somebody offers you information or 'DLR Training' for money.

## The Competence Chain

Operating an aircraft involves various tasks and challenges and pilots need to have certain physical, mental and social qualities to meet these challenges. The physical qualities can be checked by an Aviation Medical Examiner while the mental and social qualities require a psychological examination like the one the DLR Aviation Psychologists conduct.

We differentiate between aptitudes, personality traits, skills, and attitudes. Acceptable perception, concentration, memory function, spatial orientation, motor coordination, multitasking capacity, and logical reasoning are among the most important *aptitudes*. A beneficial *personality* structure (regarding for example rigidity, introversion, stress resistance, etc.) is another important aspect of a pilot's competence. Aptitudes and personality are rather stable and hard to change because they are genetically and somatically determined to a large extend. *Skills* (e.g. geographical knowledge, English language or CRM skills) and *attitudes* (e.g. the preference of certain techniques or the

degree of a person's customer orientation) on the other hand are more easily influenced by training and experience.

Just as the strength of a chain is determined by its weakest link the overall competence of a pilot is determined by his/her most drastic deficiency. Example: How reliable would you consider a pilot who has impressive skills, a favourable personality, and good attitudes, but due to a deficiency in spatial orientation (an aptitude) tends to mix up left and right or has difficulties identifying another aircraft's position in reference to his/her own? Take a second example: Let us assume a person has no deficiency in his/her aptitudes, plus favourable personality traits and attitudes. However, due to a lack of English language skills he/she is unable to understand and adequately reply to the flight instructor's or controller's messages – especially in non-standard situations. The overall suitability (as a pilot) of this candidate has to be considered as rather poor. The fact that English language skills can be improved more easily by training than an impaired spatial orientation does not alter the finding that *at the moment of assessment* the requirements for a positive recommendation are not met by both candidates discussed here.

Although the DLR recommendation policy does not tolerate any significant deficiencies, the good news is, you do not have to be Superman or Superwoman either! Performing average in all categories of aptitude, personality, attitude, skill, stress resistance etc., is totally sufficient to receive the Aviation Psychologists' approval.

### **General remarks on psychometric testing**

Be prepared for different kinds of tests. Some have a so called 'multiple-choice' design: you choose which of the offered answers you consider correct. In DLR tests there is exactly one correct answer, not more - not less. For all multiple choice tests it is a good strategy to quickly do a first run and work only on questions that you *immediately* understand. Do not lose time agonising about a difficult question while there is still a chance of easier ones to come up! If you have time left, start a second run with the leftover questions and again set aside the most difficult ones.

In these sorts of tests you do not get extra credit if you finish before the time allowance has run out. Therefore, if you have time left use it to check your answers. The multiple-choice design is typically used in tests for English, maths, physics, or aeronautical knowledge.

Other tests are more dynamic. Some tests have increasing difficulty levels while in others the difficulty level remains stable. Some tests are computer paced, while in others you determine how fast you go. Some include auditory information via headphones, others contain only visual material. As a general rule for all tests (unless stated otherwise): always work *as fast and at the same time as accurately as possible!* I. e. if you find a task rather easy, try to do it faster. If you realise you have become so fast you started making mistakes or omissions, consider reducing your working pace in order to raise the accuracy. In other words: find a good balance between quality and quantity!

Then there are the questionnaires aiming at personality and/or attitudes. These questionnaires are not tests that you pass or fail, they are meant to give the DLR a first impression on who you are as an individual. Your very own personal opinion is needed! Therefore these questionnaires have no strict time allowance – everybody has to answer all questions. However, going through it as spontaneous as possible usually leads to the most accurate picture. So do not think about each and every question as if it were a test, give the first answer that comes to your mind without wasting time fantasizing 'what's behind' it.

When training with our CBTs, do not expect the real tests to be 100% identical. Small features may differ. Therefore, even after intensively training with the CBTs, please, carefully read the instructions and pay close attention to all demonstration items *of the real test* in your DLR assessment.

Expect most tests to be computer assisted with a touch screen for your inputs, so proficiency in typing on a keyboard or using a computer mouse is not of a benefit. However, we cannot exclude that some tests are in paper/pencil format.

## Training for the Basic Aptitude – Tests

Carry out each CBT as many times as you need to come to the impression that you are fully familiar with the testing principles and your results have not significantly increased during the last couple of runs. Normally, between five and ten runs are minimum to get to this point. The progress usually resembles the prototypical learning curve shown below (Figure 1) with significant gains in the beginning and an asymptotic convergence to your own individual maximum. Use the *DLR Training Record* to keep record of your individual results in each run (see respective chapter).

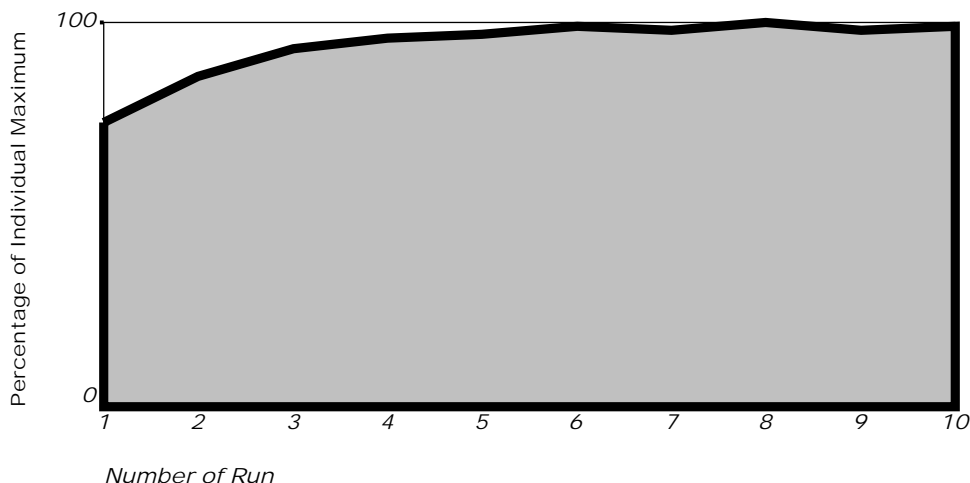


Figure 1: Prototypical learning curve of a fictitious person in a fictitious CBT. Note that in this case the individual maximum is practically achieved in run number 6. Further runs do not increase the individual results significantly. Attention! Please take into account that you might need to perform more than just six runs to achieve your own individual maximum!

It is not recommendable to run a specific CBT more than once per day. The training effect of, say, one run per day for five days is higher and more stable compared to doing five runs on one single day.

Regarding the psychomotor and multitasking test MIC (Monitoring and Instrument Coordination), please note, that in this case it leads to optimum results if you do the joystick training during the extensive exercise period in the actual test. More than 80% of the total time in the MIC is (not scored) training time in order to accomplish the full learning curve *under realistic and standardized conditions*. Trying to prepare for the MIC with the help of flight simulator programmes or other commercial software is not completely useless, but involves the risk of customizing to differing dynamics and losing your flexibility to react adequately to the actual characteristics of the real test. Keep in mind, *the MIC is not a flight simulator!* It is a test aiming at your eye-hand-coordination and your flexibility to adapt to and control an unfamiliar and highly dynamic

environment. However, it is very important to mentally prepare for this test by thoroughly and repeatedly going through the PDF 'Information and Preparation MIC'. Having fully internalized all tasks and the nature of the displayed instruments leaves mental capacity for the actual accomplishment of the task.

All tests aiming at basic abilities are designed to make it nearly impossible to achieve 100% correctly solved items in the given time. The reason for this is not the DLR's motivation to frustrate candidates but a scientific requirement: certain statistical operations need a normal ('Gaussian') distribution of the raw score. If – due to a low level of difficulty – many persons achieve the maximum raw score the resulting frequency distribution of this raw score is not normal but has a 'ceiling effect' instead and makes the test useless for differentiation.

The benchmarks in all tests are set by a specific norm group: As long as you do not score significantly below the average of your relevant norm group you pass. Since this average varies depending on certain factors (e.g. cultural background) it is not possible for us to inform you about a predefined benchmark for each CBT that you would have to achieve in order to have something like a guarantee of passing the real test.

Unless specified differently during the introductory part of each CBT, 'one run' is defined as a complete execution of a CBT on a specific difficulty level or the thorough and complete reading of a PDF-text.

## **The Importance of Basic Knowledge**

Everybody engaging in pilot training encounters phenomena and aspects that have a scientific background. Especially physics and mathematics but also a good share of geography, chemistry and biology are therefore the basis for a full comprehension of all principles in aerodynamics, navigation, weather, aircraft systems, weight and balance, physiology, etc. If you have not had these subjects in school or if this was long time ago you better brush up your skills before attending the DLR assessment - but even more important: before you start flight training!

The examination of these subjects touches another aspect of your overall potential: Additionally to the unsurprising fact that you have to have some basic knowledge (in terms of *skills*) in order to understand the more detailed and specific information taught to you during flight training, type rating, upgrade etc., we have indications for your interests, motivations and ambitions (as aspects of your *personality*). If you have not been into natural science until today, please ask yourself seriously whether working as a pilot really suites your character, your talents and your interests most! Good pilots have a sceptical and inquisitive mind, they are open for new information and continuously interested in broadening their horizons. They will not settle with 'black box explanations' for unfamiliar systems or situations but actively search for (scientific) background information. This sort of interest and motivation helps them through the hard periods of the training / job and provides them with the necessary drive. This is the second reason why the DLR sets a high value on basic knowledge.

There is a third reason for applying basic knowledge tests: Solving all sorts of problems or answering questions is a recurrent task in a pilot's professional life. Identifying the nature of the problem, separating relevant from irrelevant information, seeing parallels to familiar facts, and transferring knowledge to this new problem, all needs a certain amount of logical reasoning. And this is what the applied tests also aim at.

From a licence holder, too, we expect a profound knowledge and understanding not only of the aeronautical basics acquired in flight school but also of the underlying scientific

laws and phenomena – regardless of the time period since your High School days or your flight training.

English is *the* language in commercial aviation all over the world. Therefore your English language skills (reading, speaking, and writing) have to be rather good. Apart from the fact that you will need acceptable English communication skills during flight training and at work, you will also encounter instructions and explanations in English language in the DLR tests. Although a test itself might be language free – you will have to work through an instruction text in order to understand the test principle. Furthermore the interview will be held in English language.

## **Training Basic Knowledge**

For each subject we have outlined requirements and training recommendations in the PDF document 'Basic Knowledge'.

Brushing up your scientific knowledge or English language skills (or aeronautical knowledge for licence holders) might need much longer than just ten days, because this depends on the level you start from. If you have significant gaps here, take all time necessary to study books, attend courses, and practice thoroughly with written and oral tasks *before* you attend the DLR assessment. The selection panel will have to judge what they see at the day of the assessment, not what you claim to learn within the future.

## **Preparing for the interview**

The interview, just as the whole assessment process is your opportunity to present yourself to your future employer. You might also use this conversation to check whether this is actually the kind of job that suits your interests and talents best.

The interview is designed to find out indications for your long term motivation to do a pilot's job in a specific company. Additionally your personality, your strengths and weaknesses will be discussed in order to find out how to develop your potential and whether you will fit smoothly into the already existing workforce. Knowing *yourself* rather well in this respect will not only assist in making the interview as short and effective as possible, it is also one qualification we expect from a (future) pilot.

Other aspects highlighted during the interview are working style, problem solving behaviour and stress resistance. For this purpose sometimes little problems will be presented to you although you might already have had similar tasks during the computerized testing. These little problems often have a mathematical or technical background; others refer to common knowledge, i. e. basics in geography, biology, history etc.. Some problems have an aeronautical background (adequate to your licence level), some are simple logical exercises, and some might even refer to current topics in the daily news. Make sure you listen carefully to all details of the problem. Take all the time necessary to think about possible solutions. Consider thinking aloud, because this allows the board to follow your thoughts and support you in certain steps of the process. Do not rush into the (wrong) answer.

There is no such thing as the ideal and solely successful way through the interview, because it all depends on your individual situation and on your personality. So, do not bother acting as somebody else. On the contrary – authenticity is a favourable behavioural pattern in probably all professions (outside the theatre or movie set), although the ability to adapt your behaviour to the demands of the situation is just as important. Try to relax and be as open and informative as possible. Remember, your

future employer is looking for personnel and happy that you have applied! You can be sure that all persons in the interview board have every interest in seeing you pass. The task of the DLR psychologists is to assist you in presenting all aspects of your full potential.

### **Other aspects of preparation**

Take paperwork seriously - it is a sample of your work style! Furthermore, the papers you hand in during your application process leave a first impression on your future employer, and – of course – you want this first impression to be as good as possible! So, treat these papers as important documents, avoid bending and smearing. Carefully read all forms and texts, do not omit any questions, write precise answers, and give accurate information to the best of your knowledge. If you find a question not applicable indicate this accordingly (for example with a dash).

Make sure you lead a healthy life during your preparation period. Get enough sleep! Do not implement major changes in your nutrition during the last couple of days before your assessment; the adjustment process of your body might impair your performance! This refers especially to your regular consumption of coffee, tea and cigarettes. Do not experiment with any kind of drugs or medication even if they are non-prescription! If you are very anxious about your DLR assessment, refer to the chapter 'Coping with Anxiety' at the end of this brochure.

It is in your own interest to give your future employer the chance to see your *real* potential. In other words: undergo the DLR assessment only if you are mentally and physically in normal condition! If you feel impaired by any circumstances, be they physical, mental, emotional, family-related, job-related etc., then you are advised *not* to take the test or attend the interview on your scheduled date. Instead you should call the company you are applying at for a later appointment. Doing so does not negatively affect the evaluation of your future test results or performance. Equally, if you have received the preparation material later than ten days prior to your scheduled assessment or if you have not had the chance to study the material thoroughly, call for a delay of your test, because these circumstances may turn out to impair your chances of passing the assessment.

Any impairment that is expressed *after* the assessment will *not* favourably affect the evaluation of your performance. On the contrary, the selection panel will wonder why you accepted that risk in such an important situation!

### **Training Record**

Follow up on your training progression by keeping record of the dates you conducted specific CBTs or worked through certain information PDFs. This will help you to optimize your preparation. Use the blank *Training Record* we offer together with the other preparation material.

Bring the completed document along to your own DLR assessment and hand it to the test instructor.

To give you an impression how to use this training record, please refer to the sample on the right (Figure 2). Depending on your personal situation your own training record might look very different from this one!

Instead of just putting in a simple cross you might also use the available space to write down your specific results for an optimum monitoring of your training progress. Doing so enables you to draw your own learning curve similar to the one in figure 1.

Should you need more than one page, simply print another blank training record and continue your entries on the new one ('Page: 2'). Bring both along to your assessment.

DLR		German Aerospace Center Aviation and Space Psychology Hamburg, Germany		Training Record	
Study the document <i>DLR - Tips and Tricks</i> for details on how to use this training record. Please, complete this form according to your own training progression and hand it to your DLR test instructor. We require this information for quality management and scientific purposes. Thank you very much for any comments on the back of this page.					
Name: <u>Samantha Sample</u>				Page: <u>1</u>	
Training Module	Date	18.12.07	21.12.07	20.12.07	21.12.07
General Information					
DLR - About Us PDF		X			X
Tips and Tricks PDF		X			X
Basic Knowledge					
English Language - General PDF		X			X
English Problems CBT		X		X	X
Mathematics - General PDF		X		X	X
Mental Arithmetic CBT		X	X	X	X
Maths Problems CBT		X			X
Physics - General PDF		X		X	X
Physics Problems CBT			X	X	X
Aviation - General PDF		X		X	X
Basic Abilities					
OWT CBT		X	X	X	X
SKT CBT		X	X	X	X
ROT CBT		X	X	X	X
VLR CBT		X	X	X	X
RMS CBT		X	X	X	X
MEK CBT		X	X	X	X
MIC PDF		X		X	X
I have left comments regarding the training material on the back of this page. <input checked="" type="checkbox"/> <input type="checkbox"/>					

Figure 2: Scan of a Training Record completed by a fictitious person.

### Coping with Anxiety/Excitement/Stress - How to soothe your exam nerves

First of all do not worry if you are excited or anxious before and/or during your DLR assessment, this is very common and quite normal. It is an inevitable aspect of your undoubtedly high motivation to pass this important step towards a rewarding career. Up to a certain degree excitement is even beneficial! It will raise your alertness and thus help you to maximize your performance.

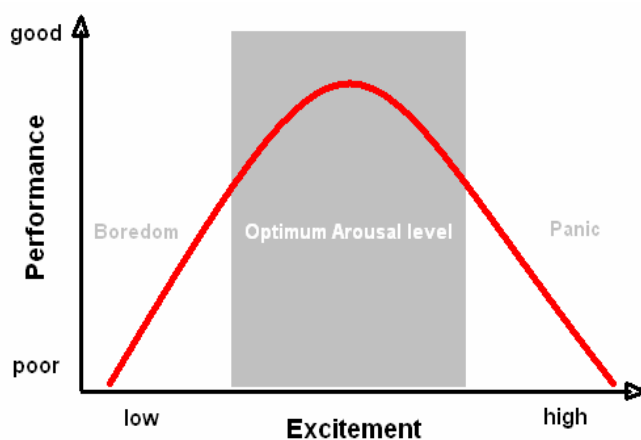


Figure 3: Relationship between Stress (Excitement, Anxiety) and Performance.

However, it is also a common observation that a *very high* degree of excitement impairs your performance. For many tasks the relation between stress and performance resembles an 'inverted U' (Figure 3). Mechanisms that explain why people perform poorly under great stress include 'hyper vigilance' (excessive alertness to a stressful situation developing into a panic) and 'premature closure' (quickly choosing a solution to end a stressful situation, e. g. rushing through a test or interview question).

So, what can you do to stay at the 'Optimum Arousal Level'? Here are a couple of suggestions. Some of them work to reduce long term stress (a serious threat to your health); others are intended to cope with direct, short-term stressors.

- Prepare well: Calm yourself with the notion that you are ready for the challenge. You have carefully read all information documents, you have thoroughly brushed up your basic knowledge, and you have trained with the CBTs up to your individual performance maximum. You have done everything possible, why should you worry?!
- Have an attractive 'Plan B': Failing the DLR assessment just as any other assessment would be disappointing but is not the end of the world! Inform yourself about appealing professional alternatives – inside and/or outside aviation.
- Reframe problems: See your DLR assessment not as a threat but as an opportunity. As a result of positive thinking, you will be able to handle whatever is causing your stress. Challenge negative thoughts and try to see the glass as half full rather than half empty.
- Connect with others: Develop a support system and share your feelings. Talking with someone else can help clear your mind of confusion so that you can focus on problem solving. Express your feelings instead of bottling them up. Learn to openly deal with your anxiety and other emotions. A good cry during periods of stress, or sharing your concerns with someone you trust can be healthy ways to bring relief.
- Do not try to control events or other people: Many circumstances in life are beyond your control, particularly the behaviour of others. Learn to accept situations you cannot change.
- Manage your time: Plan ahead. Make a reasonable 'DLR Preparation Schedule' for yourself. Include time for stress reduction (breaks, sports, meals, etc.) as a regular part of your schedule. Plan to do the most unpleasant tasks first instead of procrastinating. If you realize that the time left before the DLR assessment is just too short to allow for a proper preparation, decide to do the assessment later and convince your potential employer to comply with your decision.
- Arrive early enough at the location of assessment to avoid time pressure. If it is not near your home, make sure you know exactly when and where to be. Take into consideration that you might need an extra half day or so to get used to the unaccustomed location, especially when travelling abroad.
- Exercise regularly: Physical activity plays a key role in reducing and preventing the effects of stress. Besides sports (adequate to your age) try to implement physical activity into your daily routine, e. g. walk or cycle instead of using the car, take the stairs instead of the escalator/elevator, do little exercises during coffee breaks or even while sitting at the desk, etc. Some studies even suggest that more-active lifestyles may be linked with higher levels of alertness and mental ability, including the ability to learn. So sports can work twofold for you: alleviate your stress level AND increase your performance in the mental abilities tests!
- Get enough sleep: Adequate sleep fuels your mind, as well as your body. Feeling tired will impair your performance and increase your stress. If you have difficulties falling asleep try one of many well developed relaxation techniques like Autogenic Training, Yoga, Tai Chi, Deep Breathing, Progressive Muscle Relaxation, etc.
- Watch your diet: Eating several balanced, nutritious meals throughout the day will give you the energy to think and act rationally and clearly. Well nourished bodies are better prepared to cope with stress than malnourished.



- Do not self-medicate with alcohol or drugs: While consuming alcohol or drugs may appear to alleviate stress, it is only temporary. When sober, the problems that caused your stress will still be there. During the actual assessment drugs or alcohol are especially counterproductive because they impair your mental capacity. Apart from that, the regular or immoderate consumption of alcohol and drugs is incompatible with the pilot profession!
- Do something for yourself every day: Too much 'DLR Training' just as too much of any work is actually inefficient and can lead to burnout. Allow yourself some reasonable breaks; if possible take the weekends completely off. When things feel especially difficult, take a walk or change your scenery. During leisure time have fun. Engage in activities that make you happy.
- During Computer Assisted Testing (CAT): Mentally leave behind any test that you have already finished – you cannot change your result anyway. Do not engage in figuring how many errors or omissions you made or where you expect the benchmark to be; it is extremely hard for you to judge whether you have passed or failed. Furthermore, many tests are designed to make it practically impossible to solve 100% of all items. Just give your individual maximum and then concentrate on the next test.
- Make the best out of your breaks during CAT: Have a stretch, take a short stroll outside, do some light exercises, etc. Drink water even if you are not particularly thirsty. If you need a snack, instead of eating products with lots of dextrose (synonyms: grape sugar, glucose) eat an apple or a banana. Dextrose raises your blood sugar rapidly thus causing a heavy insulin release pushing down your blood sugar level again below the original level. A low blood sugar level however causes drowsiness which is the last thing you want to experience during testing! Unlike dextrose fruit sugar gets into your blood much slower and therefore provokes a less drastic insulin release.

As stated earlier, there is no such thing as the ideal and solely successful way through a DLR assessment. As long as you prepare responsibly, give your personal best and stay yourself you have a good chance of passing. Remember, your future employer is looking for personnel and grateful for your application, and it is the DLR's job to identify your potential. Everyone involved in the assessment process has a high interest in seeing you pass!

**We hope these recommendations are of use for you.**

**We wish you every success!**