



TRAINING STANDARDS COUNCIL

INSPECTION REPORT MAY 2000

Defence Evaluation  
and Research Agency  
Boscombe Down

## SUMMARY

The Defence Evaluation and Research Agency at Boscombe Down provides good training in engineering. Trainees are frequently assessed in a well-equipped engineering training school. Trainees' retention and achievement rates are good. Trainees are successful in obtaining employment. The agency promotes equality of opportunity satisfactorily but apprentices have little understanding of equal opportunities. Trainee support is satisfactory. The selection process for trainees is thorough. Apprentices' progress is monitored carefully. Management of training is good. There is wide representation of staff on committees. Priority is given to staff development. There are effective systems for ensuring that training is relevant to the operational systems. Staff have a poor understanding of the organisation's aims and values. Quality assurance of training is less than satisfactory. The self-assessment process is not fully developed.

### GRADES

OCCUPATIONAL AREAS	GRADE
Engineering	2

GENERIC AREAS	GRADE
Equal opportunities	3
Trainee support	3
Management of training	2
Quality assurance	4

### KEY STRENGTHS

- ◆ high retention and achievement rates
- ◆ frequent assessment of apprentices
- ◆ apprentices' success in securing employment
- ◆ good monitoring of apprentices' progress
- ◆ effective participation of staff in the management of training
- ◆ careful planning of training to match the needs of operational sections

### KEY WEAKNESSES

- ◆ adverse effect of rigid training structure on some apprentices' progress
- ◆ trainees' poor understanding of equal opportunities
- ◆ failure to set trainees targets for achievement of NVQs
- ◆ inadequate self-assessment process
- ◆ failure of quality assurance process to cover training

## INTRODUCTION

1. The Defence Evaluation and Research Agency (DERA) is part of the Ministry of Defence and offers land, sea and air capabilities at 22 locations throughout the United Kingdom. It employs approximately 30,000 staff. DERA at Boscombe Down undertakes the evaluation, testing and modification of equipment for military aircraft, employs some 150 military personnel and 1100 civilian staff. DERA Boscombe Down dates back to 1914 when an experimental flight was established in the Royal Flying Corps. The aeroplane and armament experimental establishment was opened at Boscombe Down in the second world war. Today, DERA Boscombe Down has 48 aeroplanes and helicopters including Gazelle, Harrier, Hawk, Hercules, Jaguar, Lynx and Tornado.

2. The engineering training school was formed in 1969 and has continuously provided skilled technicians for the Ministry of Defence, its agencies, and civilian aviation. Today, the school recruits, on average, 12 modern apprentices each year partly funded by the Wiltshire and Swindon Training Enterprise Council (TEC). After training, the technicians are responsible for maintaining the fleet of aircraft and working on experimental rigs used for testing. There were 41 modern apprentices at the time of inspection. Training is provided by DERA at the training school at Boscombe Down by 13 trainers. A local college is subcontracted to provide off-the-job theory training.

3. DERA Boscombe Down recruits apprentices nationally, although approximately half join from the surrounding area. In Wiltshire, the major industries are distribution, hotels and restaurants, followed by banking, finance and insurance. Employment is on the increase and last year 16 per cent of employers recruited more people. The growth areas are personal and protective service, clerical and secretarial, sales and associate professional and technical services. In 1999, the unemployment in the county was 1.6 per cent, well below the national average of 3.8 per cent.

4. The proportion of persons in the county from minority ethnic groups is low, at less than 1 per cent. In 1999, the overall number of school leavers in Wiltshire achieving five or more general certificates of education (GCSE's) at grade C and above was 52.3 per cent, above the national average of 47.9 per cent.

## INSPECTION FINDINGS

5. DERA Boscombe Down produced its self-assessment report in March 2000 in preparation for inspection. The manager of the engineering training school and a senior instructor wrote the report after consulting other instructors and the TEC. The report was then discussed in a training meeting. The first draft was shared with the TEC who gave feedback and advice. Trainees and employers were not asked to provide contributions to the report. The report was accompanied by a detailed action plan.

6. Two inspectors spent a total of 6 days with DERA in May 2000. They interviewed 14 staff, including workplace supervisors, managers and trainers, and 16 trainees. They visited the subcontracted college, and looked at trainees' files, management information and promotional material.

### OCCUPATIONAL AREAS

#### **Engineering**

#### **Grade 2**

7. There are 41 young people undertaking engineering training at DERA Boscombe Down. There are 15 avionics apprentices, 24 airframes/engines apprentices and two armaments apprentices. In the first two years, all apprentices undertake off-the-job training in the training school to acquire basic engineering skills, followed by a further year where the on-the-job training is tailored specifically to their specialist needs. In the first year of the apprenticeship, trainees gain level 2 of their NVQ. After two years' training they then rotate around operational sections of Boscombe Down. They work under the supervision of an apprentice master on placements maintaining modern planes and helicopters, or in specialist laboratories where they assist scientific staff making test rigs. While working in these sections, they gather evidence of their competencies in order to gain an NVQ at level 3. Trainees attend college one day a week in their third year of the apprenticeship to work towards theory qualifications. Some progress to degree qualifications. Staff in the training school have assessor and training qualifications. Senior instructors have responsibility for monitoring trainees' progress towards achieving the target qualification and for apprentices' personal welfare. Regular reviews of apprentices' progress take place in the training school or workplace. On completion of their apprenticeship, trainees apply for employment in one of the sections, where they may negotiate with their manager if they wish to study for further or higher education qualifications. Inspectors considered that many of the strengths and weaknesses stated in the self-assessment report were more appropriate to generic areas. They found both strengths and weaknesses the organisation had not identified. They awarded a higher grade than that given in the self-assessment report.

### STRENGTHS

- ◆ very good retention and achievement rates
- ◆ strong emphasis on health and safety
- ◆ frequent assessment of trainees
- ◆ good opportunities for trainees to progress to further training or employment
- ◆ well-equipped training facilities

### WEAKNESSES

- ◆ little scope for individual apprentices to complete their programme early

8. Nearly all the young people who embark on a training programme with DERA Boscombe Down achieve their qualification and gain employment in the occupational area of their choice. Over the past three years, 93 per cent of those apprentices commencing training have achieved the qualification and have secured employment. This proportion is well above the national average for trainees in engineering.

#### GOOD PRACTICE

*This is an example of good practice in key skill training. Apprentices are invited to organise and host an open evening for prospective applicants and their families. They have hosted a successful 'bring your daughter to work day'. These events provide trainees with good opportunities to gather evidence of their acquisition of skills in communications and working together.*

9. All apprentices start their training by studying for craft qualifications. Many progress to attend a subcontracted college of further education on a day-release basis to study for an ordinary national certificate. Some then take a higher national certificate. The subcontractor's training, resources and assessment practices are all satisfactory. There are further opportunities for apprentices to continue studying when they complete the apprenticeship. A number of former apprentices have gained degrees. Approximately 40 per cent of junior management positions are now filled by former apprentices. The manager of the engineering training school was also an apprentice. They provide good role models for today's trainees.

10. Health and safety regulations are covered in great depth during the apprentices' induction. The importance of maintaining high standards in health and safety practices, particularly in the context of experimental work on military aircraft, is emphasised at all stages of the apprentices' training programme.

11. Trainees' portfolios contain good evidence in the form of comprehensive and individual reports. Trainees gather evidence of their competence in key skills from a number of sources. For example, trainees participate in corporate events and from these, they are able to produce evidence of their acquisition of communication skills and their ability to work in a team. Apprentices and their supervisors identify ways in which evidence of competency in key skills can be obtained through on- and off-the-job training activities. Apprentices gather a minimal amount of evidence relating to key skills through project work. Apprentices attend a monthly assessment interview where they receive advice on how to gather evidence of competence and relate it to the NVQ log book. Assessment is largely through direct observation of the apprentices' work for the first two years. In the final year of the programme, when apprentices are in the operational sections assessment is mainly through witness testimony to the trainees' competence. The witness statements are collected properly but opportunities to assess apprentices by direct observation are missed at this stage of

their training.

12. The training centre is well equipped. There are good basic engineering facilities. Machines, although old, are fit for their purpose, well maintained and calibrated annually. The avionics workshop is also well fitted out. In addition, once apprentices have learnt basic skills, they have the opportunity to work on the school's aircraft which includes an operational bulldog aeroplane and a gazelle helicopter. There are also many aircraft components and airframe sections on which apprentices can work and develop competencies. After the first two years, apprentices go out on four- to eight-week placements, and these are selected to meet the needs of the apprentice and the business. Apprentices may be relocated if they make slow progress because of circumstances outside their control, such as a fall off in the amount of maintenance work. The aerospace industry works to high standards and these are expected of apprentices from the outset. Apprentices acquire good skills in order to perform to the industry's high standards and establish their credibility with experienced fitters and technicians.

13. The training pattern is fixed and all apprentices progress towards their NVQ level 2 at the same pace for the first year. Those who achieve the requisite competencies early fill in time with additional projects. Within the first two years there is no provision for the more capable apprentice to complete the programme earlier. The final year of the apprenticeship is arranged more flexibly and there is some scope for apprentices to progress at their own pace towards achievement of the NVQ at level 3. On- and off-the-job training are closely co-ordinated.

## **GENERIC AREAS**

### **Equal opportunities**

### **Grade 3**

14. DERA Boscombe Down is subject to the standard equal opportunities policy of the Ministry of Defence which meets contractual and legal requirements. This is implemented throughout the training school and is displayed prominently. Equality of opportunity is covered in the apprentices' induction programme. It is referred to in the candidates' guide to NVQs which the apprentices receive within the first month of their programme. The business management strategy details the complaints procedure for reporting cases of harassment. This procedure is explained to apprentices at induction. The training school is involved in a number of initiatives to address the shortfalls in the recruitment of women to engineering programmes. At the time of inspection, there were no apprentices with disabilities, 2.4 per cent of the apprentices were women and 2.4 per cent were from minority ethnic groups. The self-assessment report identified three strengths and no weaknesses. Inspectors agreed with only one of the strengths and considered the others to be no more than normal practice. They found weaknesses the organisation had not identified. Inspectors awarded the same grade as that given in the self-assessment report.

### *STRENGTHS*

- ◆ rigorous implementation of procedures for upholding equality of opportunity
- ◆ successful measures to recruit women apprentices
- ◆ effective guidelines to ensure an equitable selection process

### *WEAKNESSES*

- ◆ trainees' poor understanding of equal opportunities
- ◆ no staff training in equal opportunities

15. The Ministry of Defence is rigorous in promoting equality of opportunity. Penalties for infringement of its policy on equal opportunities are severe. The training school also upholds equality of opportunity rigorously. Staff lead by good example and apprentices follow this.

16. The training school has engaged in a number of activities designed to persuade more women to take up engineering. These include recruitment in one local girls' school, a '*bring your daughter to work day*' and positive promotion to girls at careers events. There have been nine applications from women for the 2000 intake. In 1999, no women applied. There have been articles in Ministry of Defence, local TEC publications and local newspapers about the achievements of previous female apprentices and these promote engineering as a career for women.

17. DERA Boscombe Down uses standard Ministry of Defence guidelines to recruit new apprentices. The aptitude test is administered by independent invigilators appointed by the main office in Glasgow, which also allows the use of readers for applicants with learning difficulties. The test results are analysed without reference to candidates' names. A three-person interview panel works to strict guidelines to ensure equality of opportunity for all applicants. The manager of the engineering school monitors the extent to which the organisation is successful in recruiting women and people from minority ethnic groups. The training school is accessible to persons in wheelchairs and most placements are also in buildings at ground level. It is, however, not practicable for some persons with restricted mobility to work on aircraft.

18. Apprentices are given a session on equal opportunities during induction. The equal opportunities policy is included in the induction pack. However, apprentices have a low awareness and poor understanding of equal opportunities. Most apprentices are unable to recall what they were told about equal opportunities during induction. They do not engage in any activities or discussion during the training programme to strengthen their understanding of equal opportunities.

19. There has been no staff development training on equal opportunities in recent years. This weakness has been identified in the self-assessment report the action plan accompanying it specifies ways of rectifying it.

## Trainee support

## Grade 3

20. Prospective apprentices complete a Ministry of Defence application form and are invited to sit an aptitude test, which is carried out by independent invigilators. Successful candidates are invited to attend an interview that assesses their personal characteristics and to discuss employment opportunities in the industry. Successful candidates are offered an apprenticeship subject to security clearance and medical examination. All apprentices attend a three-day induction spread over five days at the beginning of September covering health and safety, equal opportunities, security, the NVQ process and training school practices. All apprentices work to a standard training plan detailed in their '*standards based training*' document. If apprentices are identified as having extra learning needs, these are met by extra tutorial support and the use of extra time allowances for assessments in the case of apprentices with dyslexia. Counselling services are available through the welfare officer based at Boscombe Down. Apprentices receive monthly reviews of their progress and these involve trainees, instructors, apprentice masters and the principal instructor. In addition, the assessor meets individual trainees each month to discuss their progress towards achieving the NVQ and help them compile portfolio evidence, if appropriate. The self-assessment report identified five strengths and no weaknesses. Inspectors agreed with two of the strengths but found some weaknesses.

### STRENGTHS

- ◆ robust selection process
- ◆ good monitoring of progress through trainees' planning document
- ◆ highly responsive on-site welfare support

### WEAKNESSES

- ◆ poor target-setting following trainees' review
- ◆ initial assessment does not influence individual training plans

21. The selection test and interview process is very thorough. The organisation aims to recruit candidates who will be successful. Apprentices are selected carefully and applicants are judged against specific selection criteria. Apprentices have high retention and achievement rates and many are kept on as employees. During the selection process, sound advice is given to candidates on openings within the establishment and engineering apprenticeships in general.

22. At the start of the training process, each trainee is issued with a training plan entitled '*standards based training*'. This is used throughout the training process and trainees discuss and update it at the monthly meetings with their assessor. The plan enables apprentices to see, at a glance, how far they have progressed. A record of their progress is maintained.



23. All apprentices at DERA Boscombe Down are full employees and have the same rights and responsibilities as other civil servants on the site. They are entitled to use the welfare service that provides counselling and guidance for all employees. If appropriate, apprentices are referred to this service. When they use it, their needs are met promptly.

24. Supervisors write a monthly report on each apprentice. The report is discussed with the apprentices but he or she does not receive a copy of it. The report does not include targets relating to the NVQ that the apprentice has to achieve in the next month. In some cases there is a long delay in the writing of these reports as drafts have to be shown to a number of personnel in the establishment.

25. The trainees' results in initial assessment and the selection tests are not taken into account when drawing up the trainees' individual training plans. All training plans are identical. Some apprentices have their prior attainments in key skills identified and recognised, but others do not.

### **Management of training**

### **Grade 2**

26. Training at DERA Boscombe Down is carried out by the technical training department headed by a business area manager, who reports to the director of aircraft test and evaluation. A business group manager heads the engineering training school where government-funded engineering training is based. There are another 12 staff in the training school, including 10 instructors. Seven hold assessor awards and two are also internal verifiers. Others are working towards assessor qualifications. Two senior instructors are responsible for the apprentices in grouped avionics and airframes/engines/armaments. Detailed company procedures outline the routines for recruitment, training and staff appraisal and development. Staff receive an annual appraisal. Off-the-job training is provided within the school and at a subcontracted college of further education. Apprentices have a rotation of work placements in operational departments. The agency has been accredited as an Investor in People since June 1999. The self-assessment report identified some strengths and weaknesses. Inspectors agreed with some and identified others. They awarded the same grade was awarded as that given in the self-assessment report.

#### *STRENGTHS*

- ◆ staff involvement in the management of training
- ◆ successful matching of training to the needs of the operational sections
- ◆ comprehensive staff procedures
- ◆ good staff development

### *WEAKNESSES*

- ◆ weak monitoring of the subcontracted provision
- ◆ poor understanding of business aims and values on the part of staff

27. The management of the training is guided by a number of committees which meet regularly. They have appropriate terms of reference, clear agendas and meetings are carefully minuted. A wide cross-section of staff participate in the training process, including senior civil service managers, who have a countrywide perspective of Ministry of Defence training, business group managers from the operational areas, and instructional staff. Within the training school, there are monthly meetings at which staff discuss a range of issues including resources, training methods and apprentices' progress. The manager of the engineering training school knows each apprentice personally and can readily produce retention and achievement data. The data are considered carefully and appropriate action is taken to resolve any problems they present.

28. Within the operational sections, such as the flying squadrons, there is a comprehensive and detailed list of competencies required for each role. A database then matches each individual within the sections to the roles. Details of apprentices leaving training are entered on this database. There is a good match between apprentices, in terms of their skills and the job roles they undertake. The committee structure enables operational sections to provide feedback on training. A high degree of satisfaction is expressed. The manager of the engineering training school identifies what competencies are needed and influences the syllabus to ensure future needs are met. On joining, apprentices are warned that they are not guaranteed employment on completion of their training. However, during the past seven years, all apprentices except one have been successful in becoming employed technicians.

29. DERA is a government agency and benefits from comprehensive staff procedures developed over many years and regularly reviewed by experts within specialist departments. These cover many aspects including recruitment and selection, promotion, annual appraisal, and pension arrangements. There are good, local procedures for staff induction and organisation of training. Newly published job descriptions clearly describe the duties of the training school staff. Staff have a high degree of occupational competence. They are deployed effectively in order that they may extend the breadth of their experience for their own benefit and that of the organisation, and gain greater job satisfaction.

30. Part of the annual appraisal process is a performance development agreement. This is implemented immediately for staff joining the school who are enabled to follow highly worthwhile courses. For instance, within a short time of joining many of the instructors have obtained NVQ assessor qualifications. There are plans for them to attend instructional technique courses. Longer serving staff have obtained, or are progressing towards internal verifier awards, and one has obtained the qualification to accredit prior learning. Staff have received no training in equal opportunities.

31. Monitoring of the provision at the subcontracted college of further education is weak. Staff from DERA Boscombe Down do not call for external verifier reports or observe the training. They do receive a report on each apprentice twice a year and are advised about any trainees' poor attendance, but otherwise there is minimal contact between the organisations and the college.

32. DERA Boscombe Down publishes a strategic plan which includes a statement of its mission and values. It includes operational business aims and values. Training staff, however, have a poor understanding of these aims and values and make little contribution to their formulation. They say they feel marginalised and do not consider they contribute to the planning process. The training school is on different premises from the operational sections. Nobody from DERA, except the manager of the engineering training school, attended the inspectors' feedback sessions.

### Quality assurance

### Grade 4

33. DERA Boscombe Down has attained ISO 9000. A qualified internal auditor within the training school carries out internal quality audits. Following a recent reorganisation of DERA, the training school is now responsible for its own quality assurance procedures and these are currently being updated. Feedback from trainees is obtained at a number of stages throughout the training process. Feedback is analysed by the manager of the engineering training school who instigates actions on trainees' suggestions where appropriate. There are two qualified internal verifiers in the school. Awarding body guidelines have been adopted for internal verification. The assessment and verification process is explained to apprentices during induction. Inspectors considered the six strengths identified in the self-assessment report to be no more than normal practice. They agreed with the two weaknesses but found others. Inspectors awarded a grade lower than that given in the self-assessment report.

#### *STRENGTHS*

- ◆ frequent collection and analysis of feedback from trainees

#### *WEAKNESSES*

- ◆ failure of the quality assurance process to cover training
- ◆ no programme for the observation of training
- ◆ failure to make self-assessment integral to the quality assurance system
- ◆ inadequate self-assessment process

34. Feedback from trainees is obtained at a number of stages during training and in a number of different ways. Evaluation forms are completed by apprentices

approximately 10 times a year after they have completed each topic area of their training. Following apprentices' comments about one examination question the apprentices had difficulty in understanding, the question has been changed. There is a local apprentice committee consisting of two apprentices, the manager of the engineering training school and three representatives from the base. This meets every three months to discuss issues raised by the apprentices. Action is taken on these issues. For example, sessions have been introduced to update supervisors on the most recent requirements of the modern apprentice scheme. Apprentices are also able to provide feedback during their monthly progress reviews. The manager of the engineering training school is always available to who want to talk to him.

35. There is no monitoring or evaluation of the way training is carried out. The absence of such monitoring was identified as a weakness in the self-assessment report. Action is planned to rectify this weakness. At the time of inspection, however, no evaluative observations of training had taken place.

36. The qualified internal auditor rigorously audits in accordance with the ISO 9000 manual and its procedures. These audits take place on a six-monthly basis and are carefully recorded. Appropriate personnel are designated to carry out specific corrective action. The audits do not cover the training process.

37. Although there are comprehensive quality assurance procedures for the organisation's engineering sector, these do not extend to the training process. Following reorganisation, new procedures are being developed that extend to training.

38. The self-assessment process is new to DERA Boscombe Down and is not fully developed. It is not part of any annual cycle of action for improving quality. It is not an integral of the organisation's quality assurance process. An action plan has been produced and work to rectify identified weakness has begun. The self-assessment report gave a thin description and inadequate evaluation of provision. It failed to identify some key strengths and weaknesses.