

Competence Profiles – Guidance for applicants and Assessors

PART 2 – INDUSTRY CLASSIFICATION (K) – THE ARMY

Two Corps within the Army provide training suitable for Membership of the Institution: RE and REME. Their schemes are different and applicants and assessors should refer to the appropriate one.

Royal Engineers - Introduction

The Corps of Royal Engineers has the vital role of providing infrastructure engineering support to the 3 Armed Services and other government agencies. Its primary role is to help the Armed Forces to live, move and fight. To do this, The Corps requires a pool of officers and Senior Non-Commissioned Officers (SNCOs) who are Chartered or Incorporated in a group of mechanical engineering disciplines in order to provide an infrastructure capability on operations. In the recent past, this capability has enabled the Corps to shut down safely the oilfield process plant in an area of conflict, construct semi-permanent camps and hospitals, and re-instate the permanent infrastructure to provide fuel, electricity, and water to the civilian population.

In order to fulfil the Corps' role it is essential that all Royal Engineer officers and SNCOs have a good understanding of basic engineering and project management principles. To this end, all Royal Engineer officers and SNCOs are given training in engineering, management, and communication skills. Further to this, the Corps must maintain a strong pool of Chartered and Incorporated engineers in civil, electrical, mechanical, and building services engineering to fill specialist roles and to plan, advise on, and manage construction and maintenance tasks. Officers and NCOs with suitable academic qualifications may be selected for further training in order that they can fill specialist military employments and progress to corporate membership of a suitable professional institution.

Officers of the Corps are recruited almost exclusively from graduates, who then attend the Commissioning Course at the Royal Military Academy, Sandhurst. After some 6 years of military experience and promotion to Captain, those with suitable degrees are eligible to apply for Professional Engineer Training, a 2-year course leading to an MSc qualification and application for Chartered membership of IMechE.

Soldiers join the Corps as Sappers and are trained in an appropriate artisan skill. Having achieved Class 1 in their trade and been promoted to NCO, they may apply for training as a Clerk of Works (Mechanical), a 2-year course leading to an HND qualification and application for Incorporated Membership of IMechE.

Officers and SNCOs of the Corps are encouraged to continue to develop their academic and technical qualifications. Those Incorporated Engineers who gain suitable experience may apply for Chartered Membership of IMechE through the Technical Report Route.

The different routes to Membership are described in more detail below.

Chartered Engineer Training Scheme

The Royal Engineers (RE) Professional Engineering Training Scheme (PETS) prepares selected officers for employment as Chartered Engineers in specialist military employments. The Scheme is designed to meet the requirements both of the Corps and of IMechE, and is accredited by IMechE. The Scheme includes a number of training and experience elements that are common to all Royal Engineers officers. Suitably qualified officers are then selected to complete the Scheme by attendance on the Professional Engineering Training Course, which has 2 streams: civil; and electrical and mechanical engineering.

The Training Scheme covers a wide range of skills over approximately 8 years service and provides high quality training. It is kept up-to-date by the application of the Systems Approach to Training and liaison with outside organisations. Formal membership of the Scheme, which involves regular monitoring of trainee progress and completion of a record of training and experience, is open to all suitably qualified officers.

Structure of the Training Scheme

The Training Scheme consists of the following elements:

Royal Military Academy Sandhurst (RMAS). All potential officers complete the one year long Common Commissioning Course at the RMAS. This Course covers leadership and management skills in a military environment.

Royal Engineers Troop Commanders' Course (RETCC). All junior Royal Engineer officers complete the 6 month RETCC at the Royal School of Military Engineering (RSME) shortly after leaving Sandhurst. This Course covers basic design, engineering management skills, and an introduction to artisan and trade skills.

Subaltern Appointments. As a subaltern, a junior officer may fill a variety of posts including that of a troop commander. During this period he or she will receive experience, guidance, and on the job training in a wide range of areas, which are likely to include construction, installation, maintenance, leadership, and project management. He or she will be responsible for the employment, welfare, and career development of the personnel of the troop, as well as the delivery of assigned tasks.

Captain/Major Appointments. Following promotion, an officer may be employed in a range of responsible appointments during which he or she will receive experience, guidance and on the job training in a variety of skills usually including project management, cost and quality control, and equipment management. It is highly likely that he or she would also have substantial personnel management responsibilities, typically of 150 personnel.

Professional Engineering Training (PET) Course. The PET Course is intended for those officers who wish to be employed in technical appointments and to progress to Corporate Membership of an appropriate engineering Institution. The Course is 2 years long and is at post-graduate level. The Course has been validated by Cranfield University and students completing the course are awarded an MSc degree in Military Construction Engineering. The Course follows one of 2 streams: civil; or electrical and mechanical engineering; and is divided into 4 phases.

PET Course Phase 1. Phase 1 is based at the RSME, lasts 7 to 8 months depending on specialisation, and is an academic phase including formal lectures, practical instruction, individual research, and design practice. This phase of the PET Course is the final element of a Royal Engineer officer's structured engineering training. After its successful completion, he or she will have met the structured training requirements of the Engineering Council (United Kingdom) (EC^{UK}) and major institutions. The progress of trainees is assessed in this Phase by a series of design projects and is reviewed at regular intervals. Only trainees with the potential to become chartered engineers and to effectively fill specialist military appointments are allowed to complete Phase 1 and go on to gain responsible engineering experience.

PET Course Phases 2 and 3. Phases 2 and 3 of the PET Course are attachments to major civilian engineering firms. The trainee is employed in positions of responsibility for 7 to 9 months on a construction site and for a similar period in a design consultant's office. During these phases, trainees are required to keep a detailed record of experience gained and lessons learnt and must also write a number of technical papers. These 2 phases constitute the greater part of the technical engineering experience in a position of responsibility required by EC^{UK} and major institutions.

PET Course Phase 4. The fourth and final phase of the PET Course lasts 2 weeks and takes place at the RSME. During this Phase trainees receive instruction in organisational aspects of engineering in the Army specific to their role as professional technical engineers. They also present a technical thesis prepared during Phases 2 and 3 to an invited senior audience. The subject of the thesis is appropriate to a trainee's engineering discipline and its academic level is that of an MSc thesis. At this stage RE PETS graduates should have satisfied all the criteria to gain chartered engineer status and are in a position to apply to the relevant Institution.

The Training Scheme is appropriate for all officers who join the Corps with suitable academic qualifications. Necessary qualifications are one of the following:

Accredited MEng Degree. Ideally, an MEng degree accredited by IMechE

BEng Accredited Degree. In the case of officers with a BEng accredited degree, the PET Course is acceptable as the necessary further learning required before application for Corporate Membership.

Non-accredited Degree. Officers with non-accredited engineering, mathematics, or science degrees may complete the Scheme. In these cases, the officers apply to have their degree assessed under the individual case procedure after applying for, and ideally before starting, the course. An additional educational element and/or further responsible experience may be required before election to Chartered Engineer status.

Registration. All officers embark on the Training Scheme, but only those accepted for the PET Course will complete the Scheme and have the opportunity to progress through it to Chartered Engineer status. IMechE is notified by the RSME when a trainee begins the PET Course.

PET Course Selection. Officers are selected for the PET Course by a board consisting of senior military engineering and personnel officers. In order to be selected, officers must:

- a. Have suitable academic qualifications (see above).
- b. Be recommended by their commanding officer (CO).
- c. Hold a regular commission.

Professional Development Record

All junior officers are required to complete the Military Professional Development Record (PDR) issued during RETCC. This Record provides all officers with the opportunity to record details of courses, training, postings, experience, and CPD. The trainee must complete the Record regularly until election to corporate membership. The Record must be initialled, with very brief comments, if appropriate, by an experienced engineer (Chartered Engineer if appropriate). The original is retained by the trainee. It may be used when the officer applies for selection for the PET Course and for corporate membership of an engineering institution.

Institution Membership

Officers who wish to follow the Scheme are required to apply for Associate Membership of IMechE. Those officers without an accredited degree may not be accepted at this stage, but this will not debar them from the Scheme. These officers will need to demonstrate a commitment to undertaking the training and gaining the experience necessary to achieve Chartered Engineer status. They should apply for the appropriate grade of membership as soon as possible.

An officer will usually have completed about 8 years service at the time of election to Chartered Engineer.

Competences

As he or she progresses through the Scheme, an officer will receive training and accumulate experience that will satisfy the Competences required by the Institution. The table below lists the relevant Operational Performance Statements that describe the function of an officer in an Engineer Regiment. Against each Statement are listed the Professional Registration Competences that might be achieved by carrying out that function. This should help applicants relate their experience to the required competences. Below the table are some notes on the activities that might contribute to the achievement of the Competences.

Operational Performance Statements mapped to Professional Registration Competence Requirements

Ser	Operational Performance Statement	Professional Registration Competence
1	Provide construction engineering capability	
1.1	Carry out engineering recce	B1, B2, C1
1.2	Manage production of design work	B2, C2, C3
1.3	Supervise construction	B3, C2, C3
1.4	Manage operational infrastructure	C1, C2, C3, C4
1.4.1	Define requirement	A2, B1, C1
1.4.1.1	Option studies, feasibility studies, investment appraisal, business case	A2, D1
1.4.2	Manage construction	C1, C2
1.4.2.1	Programming, financial control, environmental considerations, CDM, safe systems of work, quality assurance, liaison with planning authorities, commissioning	B3, C1, C2, C3, C4, E1, E2, E3
1.4.3	Handing over with review of performance	A2, B3, C2
1.5	Manage contracts	C1, C2, C3
1.5.1	Audit contractor performance	B3, C2, C3
1.6	Audit construction standards	B3, C2, C3
1.7	Manage existing infrastructure	A2, C2
1.7.1	Development plan, maintenance register, establishment maintenance policy statement	A2, B1, C1, C2
1.8	Provide engineering advice and liaison	B2, D1, D2
1.9	Advise on and manage resources	C1, C2
1.10	Equipment procurement	A1, A2, C1, C2, C4

Ser	Operational Performance Statement	Professional Registration Competence
2	Additional requirements	
2.1	Policy matters	
2.1.1	Define engineering policy	A2, C1, D1, E1, E2, E3
2.1.2	Define engineering doctrine	B1, C1, D1, E1, E2, E3
2.1.3	Define engineering standards	A1, A2, B1, C2, C4, D1, E1, E2, E3
2.2	Carry out damage assessment and infrastructure appraisal	B1, B2, C1
2.3	Manage research and development	A2, B2
2.4	Carry out briefings and general staff work	B2, D1, D2, D3
2.5	Manage staff and budgets	C2, C3, D1
2.6	Liaise with engineering institutions on membership and training	D2, E1, E4
2.7	Maintain personal capability by carrying out CPD	A1, E4

Competences A and B

These Competences require candidates to demonstrate their understanding of engineering principles and practice. They should have no difficulty in describing examples of innovation and problem solving from their construction experiences with their Regiments and during their attachments to civilian industry. Some examples of the activities that could be included are:

- Research of options to achieve a process
- Development of solutions
- Design of systems
- Solution of problems on site
- Liaison with specialist suppliers and contractors

Competences C and D

Army officers should find little problem in satisfying these Competences. Their initial training at RMAS lays the foundations upon which they build during their experiences with their Regiments and their civilian attachments. Leadership, team-working, and inter-personal skills are key requirements for any Army officer. Communication skills are taught at RMAS, developed in Regiments, and practised on the PET course, with the presentation of designs to clients, project reviews to peers, and specifications to contractors. Project management is practised from an early stage and developed with the addition of responsibility for budgets. On the civilian attachment, the officer will be expected to have complete control, including financial responsibility, of a project, site, or process.

Competence E

A strong sense of ethics and the moral dimension are imbued into Army officers throughout their careers. It is second nature to obey rules and think first of the safety and welfare of their workforce. The difficulty they have with this Competence is stating what seems to them to be obvious. Their commitment to the Institution can be shown by attendance at learned society meetings. Their up-to-date Professional Development Record is the proof of their commitment to CPD.

Conclusion

The Royal Engineers Professional Engineering Training Scheme is a robust and well proven training scheme that supports a route to corporate membership of an engineering institution appropriate to the work of the Corps for suitably qualified graduate officers. A wide range of engineering skills is covered over approximately 8 years, leading to high quality engineers. The Scheme is continually reviewed and up-dated and is supported by experienced engineers.