

Competence Profiles – Guidance for applicants and Assessors

PART 2 – INDUSTRY CLASSIFICATION (J) – HEALTH & SAFETY DEPARTMENTS AND GOVERNMENT INSPECTORATES

Introduction

The use of safe working methods and a sound knowledge of the relevant health and safety legislation and codes of practice are, of course, prerequisites for engineers working in all industrial sectors, to ensure that risks to their own and other people's health and safety and the environment are controlled properly. Professional capabilities in this area are covered under the Institution's Professional Review Competence Unit E and should be investigated (and demonstrated) at the interview stage, for mechanical engineers in all branches of industry.

However, health and safety specialists of all disciplines including mechanical engineering are also employed, notably in the Health and Safety Executive (HSE), with the specific duties of enforcing the law and of advising and supporting their colleagues, industry, Government and professional bodies so that steps are taken to ensure that risks in and from the workplace are properly controlled. The Health and Safety Commission, of which HSE is the operational arm, was set up over 25 years ago and represents employers, employees, local authorities and others. The Commission sets policy and through the Executive provides advice, co-operating with other regulatory bodies, representing UK interests in the EU and encouraging well-informed debate on risk and its management.

In common with most other Governmental and privately owned organisations, the HSE undergoes periodic restructuring of its organisation, which can make the assessment of an individual's rôle and responsibilities more difficult. At the time of writing, the HSE Divisions and Directorates likely to employ professional mechanical engineers are:

- Technology Division — this tends to concentrate on the assessment of the implications for health and safety of scientific and technological advances, the development of solutions to generic health and safety problems and the provision of technical advice to upgrade guidance, HSE policy and national/European/international standards. The Division is also responsible for the initiation and management of a significant body of research. Recently, attention has become focussed in some Units on more immediate health and safety concerns.
- Hazardous Installations Directorate (HID) — this, as the name implies, provides expert strategic and technical advice on the particular risks associated with hazardous installations and sites, including mines and offshore structures. Mechanical engineers in HID contribute to inspection and accident investigations and provide support for enforcement action, including the provision of expert evidence in legal proceedings.
- Nuclear Safety Directorate— this carries out regulatory tasks similar to those of HID but in the specific field of nuclear installations (power stations, sites with nuclear powered submarines, fuel supply and reprocessing facilities, radwaste treatment and storage facilities, and defence applications). NSD operates the nuclear licensing regime on behalf of HSE. Its staff undertakes the inspection and assessment of safety cases, of systems, plant and operations.
- Field Operations Directorate (FOD) — this provides regulatory specialist inspection and other front-line services on site-specific investigations, covering areas such as shops, offices, factories, railways, construction sites and agriculture. Specialist groups in each of the seven UK Divisions include mechanical engineers who are likely to be called to provide expert advice across the whole spectrum of mechanical engineering activity.
- There is also a research laboratory (HSL) owned by, but not now forming part of, HSE. Its rôle is to carry out research projects in support of the HSE Divisions and Directorates and to assist with forensic investigations of accidents, including mechanical engineering aspects.

In addition to these technically oriented parts of HSE there are, of course, the usual non-technical functions such as HR, finance, procurement, etc., none of which are expected to involve the services of professional engineers.

In common with other scientific and technical branches of the Civil Service, the HSE inspectorate has a hierarchical staff structure. Recruitment is normally at the Inspector (Band 3) or occasionally at the Principal Inspector (Band 2) grade; and it is important to recognize that, for mechanical engineers, the levels of academic achievement, training and professional responsibility expected at entry are all commensurate with full Membership of the Institution. In fact, the majority of recruits have already achieved MIMechE; and those that have not are normally fully ready to apply.

Requirements for election or transfer to Member

As mentioned above, applicants for Membership who work as Inspectors in the HSE should normally have little difficulty in demonstrating competence in all five Units of the Professional Review. In fact, the HSE's own competence-based assessment formula for recruitment bears a striking resemblance to the Institution's Professional Review scoring procedure and, as such, should give applicants a good foundation for the production of their Professional Review Report and preparation for the interview.

Depending on which Division or Directorate an applicant works in, he/she may be more or less able to demonstrate high levels of competence in particular fields. For example, an Inspector in the Technology or Nuclear Safety divisions may be playing a key rôle in harnessing the potential of new techniques, to help improve standards of health and safety; such an applicant would be expected to score highly in Units A and B. On the other hand, a front-line regulatory Inspector from FOD may have less opportunity for innovation but could carry a heavy legal and representational responsibility for advice given, e.g. to accident investigations; this would tend to weight the scoring profile towards Units C, D and E.

Examples of areas where HSE Inspectors may be routinely required to exercise professional competence of a high order include:

- The application of mechanical engineering principles to the assessment of mechanical integrity, safe design and use, and risk
- Detailed familiarity with pressure vessels, pipework and other containment and the storage of hazardous substances
- Expertise in machinery such as automated systems, mobile and fairground equipment, hydraulic and pneumatic systems
- Knowledge of materials handling plant and equipment
- Maintenance experience, e.g. maintenance strategies, safe isolation, working in confined spaces, Permit-To-Work systems
- Inspection and testing, e.g. plant and equipment where inspection and testing are key to avoiding failure; test and inspection techniques, defect assessment methods
- Mechanisms of mechanical failure, degradation of materials and life extension

Assessment of Competences

Professional mechanical engineering responsibilities for the positions described will, as stated above, depend to some extent on the applicant's Division or Directorate and the individual job description. This reinforces the importance of carefully assessing applicants' personal responsibilities, together with their direct input to assignments in their work area and their degree of supervision. In addition, clear and comprehensive organisation charts may assist the appraisal process.

In the event that an applicant appears to spend the **majority** of his/her time in project engineering or project management, assessors may find it helpful to refer to the section entitled "Engineers in Project Management Rôles" which appears later in Part 2 of this manual.

Competence statements A and B

Successful applicants will be able to demonstrate their use of a combination of general and specialist engineering knowledge and understanding to optimise the application of existing and emerging technology in carrying out their duties in any of the areas outlined above.

Those few applicants who are engaged primarily in project engineering or management should provide, and assessors should seek, evidence of responsibility for technical specifications, technical risk management, evaluation of technical solutions and monitoring against technical performance standards.

Examples of situations or activities that may give mechanical engineers the opportunity to achieve and demonstrate professional competence in these areas include:

- Providing expert advice on safety matters associated with specialist topics, including the adequacy of equipment design
- Accident and incident investigations, alone or as part of a team
- Carrying out inspections with respect to specialist issues as part of their Division's or Directorate's work plan
- Making technical contributions to Divisional or Directorate work
- Inspection of COMAH or other high hazard establishments in a specialist rôle
- Technical assessment of safety reports/cases

Competence statement C

Because of their specific working responsibilities, applicants are not necessarily expected to have line management experience in order to meet the required level of competence in this section. Also, engineers who have moved into highly specialist technical rôles, e.g. in Technology and Nuclear Safety Divisions or HID, may have minimal management responsibilities; such applicants would be expected to have a high degree of autonomy in planning and monitoring their activities and care should be taken to explore the interface between them and their colleagues and supervisors.

Examples of situations or activities that may give engineers the opportunity to achieve and demonstrate competence in these areas include:

- The planning and personal supervision of research projects and inspection programmes
- Active participation in strategic reviews
- The periodical review of inspection strategies for existing types of installation and the formulation of new procedures and systems for additional installations and novel processes

Competence statement D

Communication and interpersonal skills should be assessed by consideration of both the Professional Review Report and interview performance. Assessors should look out for a report which has a logical structure, clearly aimed at presenting a portfolio of evidence against each of the five competence statements, while providing a qualitative description of activities and achievements.

Assessment of verbal communication skills should analyse the ability to give clear, concise and relevant answers that address the question without undue digression and provide sufficient, but not superfluous detail.

Additional evidence of competence in this area may be sought by investigating:

- Whether the applicant routinely makes presentations to fellow occupational professionals, industry, HSE operational staff and policy makers in HSE and elsewhere

- Whether the applicant provides support for enforcement action, including the provision of expert evidence in legal proceedings

Competence statement E

As noted above, the observance of safe working procedures, including compliance with internal and national codes of practice, is inherent in virtually all engineering activities. Applicants should be able to demonstrate their commitment to observing and promoting the use of any such codes that are relevant.

Evidence of professional integrity and commitment should include a Self-Development Action Plan, in any convenient format, outlining how the applicant intends to maintain and enhance competence through personal development. The Plan should include short, medium and long-term goals and explain how these are likely to be achieved. Assessors should be aware that SARTOR 3 interprets Continuing Professional Development (CPD) as commencing at the point where Chartered status is attained; therefore applicants are not required to provide a record of courses attended, etc., when applying for corporate membership.

Examples of CPD activities recognised by the Institution as acceptable include:

- extra qualifications such as an MBA, Diploma in Engineering Management
- any relevant technical or business courses
- conducting or attending workshops
- attending, presenting or participating in seminars and conferences
- presenting or attending lectures
- writing technical papers
- reading technical articles and journals
- distance or open learning
- secondments and job rotation
- updating in own and other fields of work
- Institution meetings or events
- active IMechE committee work
- learning a foreign language
- involvement in government activities
- community and charity work

Requirements for election or transfer to Fellow

Senior management posts within the HSE inspectorates, such as Head of Division or Head of Unit should be considered as generally likely to meet the requirements for the class of Fellow. In addition, Principal Inspectors who are already Members may, depending on their duties and level of responsibility, be able to demonstrate suitability for transfer to Fellowship.

Successful applicants at Head of Division or Head of Unit level will generally have significant responsibilities for resources (both financial and manpower) and may demonstrate wide understanding of strategic, commercial and financial issues. Principal Inspector applicants are likely to be experts in their particular fields and “champions” for their Directorate, Division or Unit.

Valid applications for election or transfer to Fellow may be received from other engineers with established reputations in important positions of responsibility in engineering science or practice. In addition to demonstration of achievements and standing in their field of engineering science or practice, applicants would be expected to participate in external forums, for example by promoting the importance of engineering issues in debate with Government and other bodies, via the Institution. In any case, an involvement in the professional development of young engineers would be expected, as would documentary evidence of Continuing Professional Development. Further examples of suitable CPD activities not covered under the Membership requirement for Competence Statement E above include:

- MPDS mentoring
- Acting as an IMechE Membership Panel interviewer

For candidates applying directly for the class of Fellow, a Professional Review Report similar to that required for the class of Member would be required in addition to an interview. In particular, this report must contain additional supporting evidence detailing:

- The position of senior engineering responsibility held by the applicant
- The applicant's contribution to the professional development of young engineers
- How the applicant intends to keep up to date regarding developing technologies, from both a technical and a commercial standpoint.

Finally, a Development Action Plan detailing a future programme of CPD would be required from applicants in either category (transfer from Member or direct election).