



Safety Assessment Federation Standard 01: 2001 (SS01:2001)

**Recruitment, Training and Competency of
Engineer Surveyors**

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FOREWORD

SAFed member companies provide safety engineering inspection and assessment services both in the UK and internationally. Between them SAFed members employ over 2200 inspection staff with specialist expertise covering an extensive range of mechanical and electrical plant, equipment and systems. Collectively they undertake on a daily basis safety inspections and assessments of thousands of items of plant, equipment and systems ranging from relatively simple items such as a hot water boiler in a restaurant or a car jack in a garage to major items such as a steam generator within a nuclear power plant or a tower crane on a building site.

In order to undertake these wide ranging safety inspection and assessment activities SAFed member companies need to employ inspection staff that collectively have the appropriate experience, knowledge and understanding over the complete spectrum of plant, equipment and systems that are the subject of the inspections and/or assessments. To this end SAFed member companies recruit their inspection staff from already experienced and mature personnel holding a range of differing levels of professional qualifications in appropriate engineering disciplines. Once recruited and prior to being deployed as inspection staff, personnel are subjected to extensive individualised training aimed at providing the appropriate knowledge and skills to enable them to undertake their inspection or assessment activities both competently and safely. Training requirements differ according to the starting base knowledge and experience of individual recruits, however, dependent upon the level of competency required, this could extend to several months. It is only when an individual has demonstrated that they have attained the appropriate range and depth of skills and knowledge required that they are classified as being competent by their employing company and are then deployed as inspection staff.

Once deployed, all inspection staff are subjected to periodic professional review and re-assessment by their employing company to ensure that they maintain and where appropriate extend their skill and knowledge base in order to be able to carry out their inspection or assessment activities as professionally and competently as possible.

As part of SAFed full membership, member companies must be accredited by the United Kingdom Accreditation Service (UKAS) or other approved national/certification bodies (e.g. NAB – EIRE) to the international standard for inspection/certification bodies as appropriate to the scope service provided:

- EN ISO/IEC 17020:2004 — General criteria for the operation of various types of bodies performing inspection
- BS EN 45011:1998 — General requirements for bodies operating product certification systems

This competency process is designed to satisfy the requirements of the international standards

This SAFed Standard forms the basis for the recruitment, training and competency of inspection staff to meet with the requirements as detailed above.

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1. INTRODUCTION

- 1.1 The Safety Assessment Federation (SAFed) is the lead trade body for companies that undertake a range of work activities which includes the independent safety inspection, quality assessment, and certification of machinery, plant, equipment and installations both mechanical and electrical. One of SAFed's main aims is to improve operational safety in industry by establishing and maintaining high operational and performance standards. By becoming a member of SAFed, companies are expressing their determination and will to demonstrate high professional standards in all their inspection and certification related activities.
- 1.2 One of the key elements of a company being able to deliver and maintain high level operational, and performance standards, is the employment of personnel with the appropriate demonstrable Competency to undertake their specific work activities.
- 1.3 The purpose of this Standard is to define a framework for the recruitment and training of personnel that will help ensure both the immediate and continued Competency of such personnel, hereafter referred to as Engineer Surveyors, to undertake the range of work activities offered by their employing company.
- 1.4 Member companies that comply fully with this Standard are demonstrating their commitment to employing Engineer Surveyors of the appropriate demonstrable Competency thus helping to ensure that they are capable of delivering and maintaining the highest level of operational and performance standards.
- 1.5 The mandatory elements of this Standard are printed in ***bold italics***. Guidance, where it is offered is, for ease of reference, identified with the letter G.

2. SCOPE

- 2.1 This Standard encompasses all stages from the selection of suitable candidates for interview to final authorisation by their employing company as Engineer Surveyors. Meeting the criteria herein for academic qualification and practical experience does not indicate suitability for the role of engineer surveyor. The criteria are simply minimum eligibility requirements to progress to the first stage of the recruitment candidate assessment process.
- 2.2 The Standard also prescribes the other activities that member companies must undertake in order that the Competency of their Engineer Surveyors is maintained.
- 2.3 The Standard is generic in that it applies to all Engineer Surveyors, however described by their company, and employed in whatever discipline or combination of disciplines at whatever level.
- 2.4 There are definitions contained within this Standard which shall be the accepted definitions in the context of the recruitment training and Competency of Engineer Surveyors.

3. DEFINITIONS

For the purpose of this document the following definitions apply.

3.1 Competency

The appropriate practical and theoretical knowledge and experience relevant to the type of plant or installation that is the subject of the Examination such that defects or weaknesses can be detected. This includes a risk assessment against environmental factors, use and safe systems of work adopted by the client. Following the detection of such defects or weaknesses, having the ability to assess and report clearly, both written and orally, on the continued safe use of the plant or installation.

3.2 Engineer Surveyor (ES)

A person who has been assessed and authorised by their employing company as holding the required level of Competency defined by Categories 1, 2 and 3 (below).

3.2.1 Category 1 — Applicable to the employment of Senior Engineer Surveyors or Technical Standards Engineers or similarly termed personnel. Category 1 personnel are likely to be in positions of technical leadership and decision-making that are more senior to that of the Category 2 Engineer Surveyor.

3.2.2 Category 2 — Applicable to the employment of fully competent field Engineer Surveyors (See also G5.1.1 (a) and G5.1.2 (a) and Annex A).

3.2.3 Category 3 — Applicable to the employment of those Engineer Surveyors that are limited in terms of the range and complexity of the plant that they will examine (See also G5.1.1 (b and c) and G5.1.2 (b and c)).

3.3 Continuous Professional Development (CPD)

The conscious updating of professional knowledge and the improvement of an Engineer Surveyors' Competency throughout their working life.

3.4 Discipline

A range of plant types or assessment activities expressed in common vocational terms e.g. Electrical, Pressure, NDT or a combination such as Lift/Electrical, Pressure/NDT or Product Certification.

3.5 Authorisation

The formal documented authority given by an employing company to each of its Engineer Surveyors.

3.6 Certificate

A formal document issued to an Engineer Surveyor by their employing company in its own style, which records the attainment of Competency.

[Note: The Certificate may also be the Authorisation, or the Authorisation details may be included within the Certificate.]

3.7 Core Equipment

The range of plant normally expected to be encompassed by a Discipline to the level of Authorisation.

3.8 Examination

A generic term that includes “thorough examination”, “examination” and “inspection”.

3.9 Technical Manager

A person, however designated, who is qualified and experienced in the operations of their company and who has the overall responsibility for ensuring the Competency of their Engineer Surveyors.

4. APPLICATION

The employing company shall apply this Standard to all its Engineer Surveyors irrespective of their type and terms of employment contract.

5. THE SELECTION PROCESS

5.1 Qualifications and experience.

The employing company shall have a documented academic and vocational requirements policy for the recruitment of Engineer Surveyors. This policy shall as a minimum require:

- (a) *A recognised academic qualification in a relevant field of engineering or recognised status via a relevant engineering Institution, and*
- (b) *A relevant level of practical experience in a related engineering field.*

G5.1.1 Engineering academic qualifications are subject to evolution and change but should be relevant to the required Competency and employment of the Engineer Surveyor (See also Annex A).
As guidance:

- (a) Categories 1 and 2 - HNC, HND, Degree, NVQ level 4 Full Technological Certificate, 1st Class Certificate of Competency - Marine Engineering, Incorporated or Chartered Engineer or equivalent qualification
- (b) Category 3 with constraints placed on unsupervised responsibilities - ONC, OND, Technicians Certificates at least T3 level, NVQ level 3, or equivalent
- (c) Category 3 who are to be under close supervision - a recognised relevant apprenticeship will serve in lieu of an academic qualification.
- (d) Credence can be given to vocational training courses run by professional bodies e.g. IMechE, COMPEX etc.

G5.1.2 Vocational experience should be assessed on the basis of relevance, breadth and length of service but as guidance:

- (a) Categories 1 and 2 - five years within a relevant engineering field, at least one of which should have been directly related to the intended primary Discipline
- (b) Category 3 with constraints placed on unsupervised responsibilities - three years within a relevant engineering field, at least one year of which should have provided the applicant with general knowledge of the plant, systems or services in the intended primary Discipline
- (c) Category 3 who are to be under close supervision - one to three years relevant general engineering experience
- (d) For the purpose of this standard relevant field experience would include activities regulated or controlled by a recognised professional body or organisation e.g. NICIEC, HM Forces, approved apprentice scheme etc.

G5.1.3 As an alternative to guidance above (G5.1.1. and G5.1.2) a points system of assessing eligibility can be used (see table 1 below). Minimum points required are as follows:

Category 1 — Minimum points required — 200

- Note: the minimum 200 point total must include a minimum of 50 points from column A attributes

Category 2 — Minimum points required — 100

- Note: the minimum 100 point total must include a minimum of 25 points from column A attributes (See also Annex A)

Category 3 — Minimum points required — 80

Table 1 — Inspection personnel recruitment points award system

ATTRIBUTES	A	B
	Academic Points	Experience Points
CEng	75	25 (Total)
MEng	75	
BEng (Honours)	50	
NVQ Level V (Engineering surveying)	70	30 (Total)
NVQ Level V (Other engineering subject)	70	10 (Total)
IEng	50	25 (Total)
BEng (Non Honours)	50	
Eng Tech	25	25 (Total)
NVQ IV (Engineering surveying)	50	30 (Total)
NVQ IV (Other engineering subject)	50	10 (Total)
Marine Engineering 1st Class Certificate	50	30 (Total)
HND	50	
HNC	50	
Full Technical Certificate (FTC)	50	
OND	25	
ONC	25	
Marine Engineering 2 nd Class Certificate	25	20 (Total)
Licentiatehip of City and Guilds Institute (LCGI)	25	20 (Total)
NVQ III (Engineering)	25	10 (Total)
Relevant Indentured/Recognised/Accredited Apprenticeship		30 (Total)
Specialised training (e.g. COMPEX, LEEA exams)		10 for each course
Direct relevant engineering experience combined with responsibility		30 for each year attained
Direct relevant engineering experience		20 for each year attained
Indirect relevant engineering experience		10 for each year attained

Notes:

1. *Points from Column “A” are not accumulative, only the highest Attribute points shall count. For example, a candidate with an ONC and a FTC would achieve a points total of 50.*
2. *Total points will be the addition of the points attained from columns “A” and “B”.*
3. *Industry specific or Foreign qualifications will need to be assessed against the Engineering Council (UK) requirements.*
4. *Direct relevant engineering experience means experience with installing, maintaining, repairing, testing or the inspection of the types of engineering plant within the core discipline for which it is planned the candidate is to be employed.*
5. *Indirect relevant engineering means experience with the design or the management of engineering plant (including relevant craftsmen) within and /or outwith the candidates core discipline*

5.2 Candidate Selection

Selection of suitable candidates shall be made through a formally documented assessment process.

- G5.2.1 The purpose of the assessment, which may include a technical interview and other elements, is to determine whether or not the interviewee has the general aptitude and appropriate level of relevant underpinning knowledge and understanding to perform the intended duties of an Engineer Surveyor when combined with the training provided by the employing company.
- G5.2.2 The employing company should nominate suitably capable and briefed engineers to both select candidates for assessment and to conduct a technical interview with each selected candidate.
- G5.2.3 A full record should be made of the assessment process. The record should include:
- Details of all personnel involved
 - Details of the candidates relevant qualifications
 - The conclusions of the assessment
 - Justification(s) for the assessment conclusion

6. ROUTE TO COMPETENCY

6.1 Identification of Training Needs

The employing company shall have a formally documented procedure to identify training needs. The Procedure shall include consideration of legislative, theoretical and practical issues commensurate with the desired competency.

- G6.1.1 The Procedure should include a methodology for identifying appropriate training requirements in order to achieve the desired competency.
- G6.1.2 All identified training requirements should be documented and be taken into account when drawing up the training plan for individual Engineer Surveyors.
- G6.1.3 Individual training plans should include details of health and safety training needs.

6.2 Training Plan

The employing company shall have a formally documented training plan for individual Engineer Surveyors.

G6.2.1 Individual training plans should include:

- The results of training needs identification
- The range of plant or manufacturing processes for which the Engineer Surveyor requires training
- The details of trainers and any special requirements
- Details of stage assessments
- The facility for modification resulting from any feedback from a trainer or trainee
- The details of how individual Engineer Surveyors will be assessed
- Results of assessment leading to either Authorisation or a review of training needs
- The requirement for post Authorisation technical review

6.3 Training Implementation

Training shall be implemented in accordance with the training plan. The employing company shall appoint a training supervisor and trainer(s) for the discipline(s). Trainees shall be provided with all necessary information and equipment to enable them to undertake their training.

G6.3.1 The training provided to the Engineer Surveyor should be documented and each trainee should have an individual training file. This should include a record of the types, location and dates of plant inspected or assessment activities undertaken. It should include details of the theoretical training undertaken by the trainee and document the general progress towards the attainment of competency.

G6.3.2 At the beginning of their training and prior to being exposed to plant or client sites, trainees should be provided with, and trained in the use of, all the personal protective equipment and clothing they will require.

G6.3.3 Trainees should be provided with all relevant technical and health and safety information, data and advice necessary to undertake their required activities. Trainees should also be provided with their own training log book in which to record the details of the plant examined or assessment activities performed. The training log book should also include:

- Details of any measuring/test equipment used
- Examination/assessment reports completed during training
- The trainees own appraisal of their confidence and competence to undertake their designated activities

G6.3.4 A person in the employing company should be designated as the training supervisor with responsibility to ensure that all of the activities detailed in the training plan are adequately dealt with. The Supervisor should also ensure that feedback and training problems which may arise are recorded and satisfactorily dealt with during the training programme. The Supervisor should be responsible for deciding whether or not training plans should be amended and for proposing the point at which trainees are ready to have their end of training Competency determined.

G6.3.5 Trainers should be appointed to the trainee by virtue of their technical Competency, ability to train and access to the relevant plant or manufacturing processes.

G6.3.6 Trainers should provide reports on the trainees' progress in accordance with the training plan, noting any particular strengths and areas for development. The trainee should be given the opportunity to discuss the progress of their training with their trainer or training supervisor.

G6.3.7 Training should include all aspects of the role of the Engineer Surveyor including:

- Examinations/assessments
- Reporting Philosophy/Procedures
- Legislation
- Standards
- Communication/Company procedures

G6.3.8 The training supervisor should be responsible for ensuring that training records have been completed in accordance with the employing company's procedures and the individual Engineer Surveyor's personal professional development plan.

6.4 Determination of Competency

The employing company shall have a formally documented procedure for assessing the level of competency of trainees against set criteria. The Procedure shall include:

- *A formal written examination with a pre-determined pass mark*
- *The evaluation of stage assessments and training records*
- *The results of on-site assessments*
- *A formal review and evaluation of feedback from trainers and trainees*

G6.4.1 Trainees should, as appropriate, be able to demonstrate that they can:

- Carry out satisfactory Examinations of the core equipment within their Discipline(s)
- Carry out satisfactory assessments of manufacturing processes
- Use test and measuring instruments effectively and be aware of calibration requirements and limitations
- Analyse, assess and understand the significance of defects found with regard to the normal use of the plant or installation
- Clearly and accurately identify acceptable levels of deterioration in the performance and condition of equipment, plant or systems
- Identify and apply data sources in the appropriate manner
- Report accurately and consistently on the condition of plant, equipment and systems

G6.4.2 Trainees should, as appropriate, be able to demonstrate a relevant knowledge of:

- The technology used in the manufacturing of the core equipment within their Discipline(s)
- Defects that may occur as a result of various manufacturing processes
- The way in which service use can lead to deterioration of equipment
- The way in which irregularities have a bearing on the results of manufacturing process assessments

G6.4.3 It should be determined that the trainee has the ability, as appropriate, to:

- Provide and maintain a satisfactory service to their employing company's clients
- Organise and plan their work effectively and efficiently
- Communicate decisions resulting from their activities concisely and logically
- Communicate effectively verbally, in writing, or by electronic means

G6.4.4 It should be determined that the trainee can:

- Demonstrate confidence in decision making
- Make consistent decisions on the basis of logical assessment of known data and physical evidence
- Appreciate the limits of knowledge and when to seek advice from either reference material or relevant personnel

G6.4.5 The trainee should have a good knowledge of:

- The legislation and standards applicable to their discipline(s)
- All appropriate health and safety procedures and guidance
- The relevant aspects of the employing company's quality system
- The employing company's procedures and philosophy

6.5 NDT

6.5.1 *Generic certification*

NDT Practitioners (employed or subcontracted) should as a minimum hold

level 2 certification, appropriate for the NDT method and the material/geometry of the components to be tested, issued by either:

- *a Nationally accredited certification body (e.g. UKAS/NAB), in the case of a 'central' certification scheme such as PCN, or*
- *the practitioner's employer, in the case of an 'employer-based' certification scheme such as ASNT, SNT-TC-1A.*

6.5.2 *Plant-specific qualification*

All practitioners undertaking the ultrasonic testing of shell-type boilers in accordance with SAFed guidelines SBG1 and SBG2 (and related guidance) shall hold the British Institute of Non-Destructive Testing (BINDT) qualification created in conjunction with SAFed for that purpose.

6.6 Health and Safety Training

The employing company shall ensure that all trainee Engineer Surveyors are competent to work safely within the environment and discipline concerned.

G6.1 Relevant Health and Safety Training

The trainee Engineer Surveyor should undertake a recognized training course on safe working practice and obtain the relevant qualification, such as:

- **NEBOSH, IOSH Certificate**
- **SAFed Health and Safety Passport**
- **FAS Passport (EIRE)**
- **All recognized formal Health and Safety Passports covering the competencies listed in HSE INDG 381**
- **All recognized specialist Health and Safety Passports e.g. IOSH Food Hygiene, Off Shore, Nuclear etc.**

6.7 Authorisation

Following satisfactory completion of the training programme, the Technical Manager, however named, having fully reviewed both the training on core items of plant and results of theoretical and practical assessments, shall authorise the Engineer Surveyor in accordance with a formally documented Authorisation procedure. The Authorisation shall be subject to periodic re-evaluation and shall cease whenever the Engineer Surveyor is no longer employed in that capacity. Engineer Surveyors shall only perform activities for which they have current Authorisation.

G6.7.1 Whatever Authorisation system is used, it should be controlled, permitting only specified personnel to have access to either update the information or produce copies of the Authorisation.

G6.7.2 The Authorisation should clearly indicate the Discipline(s), date of issue and the name of the employing company.

G6.7.3 Both the company and the individual Engineer Surveyor should hold a copy of the Authorisation.

G6.7.4 Authorisation should remain in force until the Engineer Surveyor either:

- a. Fails to maintain the necessary level of Competency, or
- b. Ceases to be employed by a company operating in full compliance with this Standard

7 MAINTENANCE OF COMPETENCY

The employing company shall have a formally documented procedure for systematically maintaining and updating the Competency of individual Engineer Surveyors through a process of CPD. The Procedure shall also include a mechanism for restricting or withdrawing Authorisation.

G7.1 The responsibility for ensuring the continued maintenance of Competency should rest jointly with the Engineer Surveyor and their employing company.

- G7.2 The employing company should maintain a training, experience and development record for each Engineer Surveyor. The Record should include details of how CPD is being achieved and should include for example:
- Initial training towards achievement of Competency
 - Specific training towards enhancements/additions to Competency
 - Familiarisation/re-familiarisation, coaching and training
 - Any alterations and/or withdrawals of Competency
 - Enhancements to qualifications
 - Membership of professional bodies/institutions
 - Attendance at seminars and any refresher training courses
- G7.3 Training, experience and development records should be integrated within the technical Competency regime operated by the employing company
- G7.4 The Record should be available to the employing company, the individual Engineer Surveyor, and to external auditors.

Annex A — Category 2 description (Informative)

A person holding the appropriate practical and theoretical knowledge and experience relevant to the type of plant or installation that is the subject of the Examination such that defects or weaknesses can be detected. Following the detection of such defects or weaknesses, having the capability to assess and report clearly their importance in relation to the continued safe use of the plant or installation.

In particular they should have demonstrable:

- a) Understanding of the Standards including equipment classification (as appropriate), design Standards and codes of practice for the selection and use of equipment together with the applicable inspection/examination criteria.
- b) Understanding of the safety rules and associated codes of practice that are applicable to the full range of plant, installations and systems within their discipline or disciplines.
- c) Understanding of the inspection and maintenance requirements of the full range of plant, installations and systems within their discipline or disciplines.
- d) Knowledge of appropriate test procedures which may be employed and the interpretation and limitations of those techniques.
- e) Understanding of drawings and manufacturing literature relevant to the plant, installations and systems to be inspected or examined.
- f) Knowledge of the materials and techniques used in the manufacture and assembly of the plant, installations and systems being inspected or examined.