

Signals Competency - Training for a New Skill or Higher Competency Level

EST-20-05

Applicability

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1 Introduction

1.1 Purpose

This Procedure defines the processes that signals staff and supervisors should undertake to gain a higher level of skill in a specific competency. It addresses organised training and Work Based Training and defines the Work Experience Records used as a basis for a Signals Competency Assessment and Upgrade Assessment.

1.2 Scope

This Procedure covers:

- a. Requirements for training and work experience for higher skill levels;
- b. Requirements for training on technically difficult equipment or processes;
- c. Requirements for supervision when working at a higher level task;
- d. Alternatives to Work Experience and Training Courses;
- e. Assessment and Recognition of current competence;
- f. Responsibilities of supervisors and managers for signalling competence.

1.3 Responsibilities

The Manager Standards is the document owner. The Signals Standards Engineer is the initial point of contact for all queries relating to this procedure. You may also email to standards@artc.com.au with inquiries regarding this procedure.

The Signals Competency Assessor is responsible for following the requirements and processes detailed in this procedure when assessing the competency of a person.

A Supervisor/Mentor managing any person undertaking any signalling work is responsible to ensure that that person has the appropriate competency for the task. The Supervisor/Mentor is responsible that appropriate supervision is provided for a person undertaking a task at a higher skill level.

A Supervisor/Mentor is responsible to endorse the Work Experience Record of any signals person under their responsibility and in accordance with the requirements detailed in this procedure.

1.4 Reference Documents

The following documents support this standard:

- EST-20-01 Signals Standards and Equipment Training Courses
- EST-20-02 Signals Staff Competency Assessment
- EST-20-03 Applying for Signals Competency
- ESI-20-04A Signals Competency Skills Definitions – Engineering
- ESI-20-04B Signals Competency Skills Definitions – Technicians

The following forms support this standard:

- EST2002F22A - Signals Qualifications Equivalence
- EST2002F22B – Signals Work Based Training Assessment
- EST2002F22C – Signals Current Competence Assessment
- EST2002F22D –Signals Competency Alternate Proficiency Certificate
- EST2002F25A – Signals Work Experience Record Supervisors Declaration
- EST2002F25B – Signals Work Experience Record
- EST2002F26 – Training and Education Record
- EST2002F24 - Request for Competency Upgrade Assessment

1.5 Definitions

The following terms and acronyms are used within this document:

Term or acronym	Description
AQF	Australian Qualifications Framework
RIW	Rail Industry Worker – this is the Pegasus competency portal and the related identification card.
RTO	Registered Training Organisation
RPL	Recognition of Prior Learning
SOC	Statement of Competency
Role	The various signalling competencies are divided into Roles based on engineering or technical qualifications and the general task being performed. For example Signalling Design is a separate Role to Signalling Maintenance, Signalling Construction & Testing or Signals Control Systems. Similarly there are separate Roles for those with Technician level qualifications.
Skill	<p>The person in a Role will undertake a range of different activities. The ability to do these individual activities is called a 'skill'.</p> <p>These skills may be specific to an item of equipment. The more technically complex the item of equipment, the more the need for specific training and work experience.</p> <p>Individual skills are detailed on the Statement of Competency. These may have options as to their equipment or tasks.</p>
Predecessor Qualification	<p>The various Signalling Competency Matrices include references to formal training qualifications. These are regularly updated under the AQF. Each update has a unique identifier. The most up to date qualification is referenced in the Signalling Competency Matrices.</p> <p>A Predecessor Qualification is a qualification that is considered equivalent to the current qualification.</p>
Work Experience Record	As a person's work experience contributes greatly to a person's competence, a formal record of the work experience is required. The Work Experience Record contains details of work undertaken, the level of performance, and endorsement as to accuracy by a suitable supervisor.
Work Experience Breadth	A generic skill may apply to an item of equipment such as a point motor, signalling cable track circuit equipment, etc. However, there are many variations of this equipment in use on a railway.

Term or acronym	Description
	A person may demonstrate Breadth of experience by working on multiple different types of the equipment.
Work Experience Depth	<p>A generic skill may apply to an item of signalling equipment or an activity in support of signals construction, testing, maintenance or design. There are many tasks required to support the equipment in service. The Depth of understanding of the equipment by a person may cover from simple tasks such as installation to more difficult tasks such as to 'set up and adjust' to very difficult such as fault find.</p> <p>Similarly, at the Engineering level, Depth may be indicated by applying the equipment or task as per the standards and manuals through to applying unique solutions that only have signalling principles as guidance.</p>
Level 0 skill	No certified knowledge of the subject. (This does not mean the person is not competent but ARTC must be able to demonstrate competency and the basis for the assessment)
Level 1 skill	Training exposure. Basic skill level attained but requires coaching. Has knowledge & Understanding of the Procedures. Person when performing the competency must be under supervision by a Level 2 or 3 person.
Level 2 Skill	Certified as being able to perform the identified competency in routine activities. Also competent to perform complex activities under the supervision of a level 3 person. Can supervise/mentor others up to level 2 and can be a team leader.
Level 3 Skill	Certified as being able to perform the identified competency independently and without supervision in routine and complex activities. Can supervise/mentor others and be a team leader.

2 Signals Competency Overview

A person gains competency through a combination of their qualifications, training and work experience.

ARTC defines the competency requirements for the various signalling Roles undertaken when working on ARTC infrastructure. The applicant can identify the competency requirements for a Role or the Roles that their competencies are applicable to.

2.1 **Competency.** The elements of competency are qualifications, training and work experience. Many qualifications and training courses have changed over the past fifty years. The following processes include alternate assessment methods that can be used for individual applicants as considered appropriate by the approved assessor.

2.1.1 **Qualifications.** The 'Role' that a person may apply for is based on the qualification that they have gained from approved training organisations. Australian universities have process for approving courses and degree or other qualifications. There are also Accords to recognise technical qualifications and degrees from overseas universities and related institutions.

Australian trade qualifications are covered under the Australian Qualifications Framework (AQF) and delivered by Registered Training Organisations (RTO). There are also provisions for recognition of overseas trade qualifications.

2.1.2 **Training.** There are three areas of training that contribute to a person's competence, namely industry based training courses, Product training courses and Work Based training.

2.1.2.1 **Industry Training Courses.** There is a broad range of Industry Training Courses. These include formal training such as TLIF 2080 Safely Access the Rail Corridor, ARTC Signals Standards Induction, ARTC Electrical Safety Induction and ARTC ST144 Signals Safeworking. These may be mandated for specific skills or for situations that may be encountered.

2.1.2.2 **Product Training Courses.** Suppliers or third party trainers may run courses for specific technology. These will cover the equipment in depth, the support manuals and will include an assessment of the individual trainee at the end of the course. ARTC requires that these courses be undertaken for technically difficult equipment. Alternate assessments are available for those applicants who have gained a similar knowledge and skill level in the equipment through other processes.

2.1.2.3 **Work-Based Training.** This is a means of learning basic skills from a competent mentor / supervisor. The mentor will explain the skill to the trainee and demonstrate how to perform tasks. The mentor needs to assess the trainee on their knowledge and performance of the tasks. This training method applies to skills not covered by the above training methods.

2.1.3 **Work Experience.** This is a means for increasing a person's competence in a skill where the training or basic level has already been achieved. It allows the trainee to gain a broader understanding through a wide range of different situations in using the skill.

It is recommended that a documented future work plan is agreed between trainees and their Supervisor/Mentors such that trainees get the right opportunities to gain the appropriate work experience to upgrade their required competency levels.

2.2 **Roles.** The ARTC Signals Competency Roles are divided into those based on an Engineering Degree qualification or equivalent (four roles) or those based on trade and related qualifications (six roles).

These are:

- F-01 Senior Signal Engineer (degree or equivalent)
- F-02 Signal Design Engineer (degree or equivalent)
- F-03 Signal Maintenance & Construction Engineer (degree or equivalent)
- F-04 Signal Control Systems & Communications Engineer (degree or equivalent)
- F-05 Signal Technician (trade qualification)
- F-06 Signals Installer-Tester (trade qualification)
- F-07 Signals Mechanical (trade qualification)
- F-08 Signal Supervisor Maintenance – Construction-Testing (trade qualification)
- F-09 Signals Control Systems & Communications Technician (trade qualification)
- F-10 Signals Trades and Assistants (trade qualification)

2.3 **Skills.** The person in a Role will undertake a range of different activities. The ability to do these individual activities is known as a 'skill'.

3 Level 0 to Level 1

- 3.1 All level 0 persons working in the rail corridor or in an operational situation shall be under Direct Supervision by a person with at least a level 2 competency for the tasks being undertaken. The Supervisor/Mentor shall also instruct the candidate in the standards and procedures relating to the competency and the activity.
- 3.2 **Training.** The best method for technical subjects is formal training and assessment by a Registered Training Organisation (RTO). This is mandatory where the subject is covered under the Australian Qualifications Framework (AQF). Signals staff and supervisors should be aware of what AQF training is defined. If a person completed training before the current AQF course was implemented then this should be shown as a previous equivalent to the current qualification as per section 17.
- 3.3 Some people may have gained knowledge and skill equivalent to the AQF course by *Work Based Training*. These Candidates must have the RTO assess and recognise this Work Based Training for the AQF subject under the Recognition of Prior Learning (RPL) provisions. This particularly covers trade staff who did not complete the equivalent training of the Certificate IV Electro-technology Rail Signalling. The Rail Safety legislation requires that AQF course training and qualifications be used where they are available. Candidates must be able to demonstrate qualifications from the AQF course, a predecessor training course or RPL by the RTO where the competency matrix requires the qualification.
- 3.4 There are only a limited number of other signals competencies currently covered by other AQF courses. Many of the signalling equipment specific skills are not covered specifically by AQF course material. However, rail industry and suppliers have often designed and delivered course materials for railway signalling specific equipment. Some of these courses cover simple technical equipment. There is a preference for training using these courses. However, structured work based training by experienced staff is also acceptable.
- 3.5 Formal Training courses by industry (Industry Based Training) is a mandatory pre-requisite for technically difficult subjects such as, level crossing predictors, computer based interlockings, processor based systems such as axle counters, telemetry, audio frequency track circuits and coded track circuits. See section 10 for details. For these subjects, work based training is not acceptable as the only means of training. The industry based signals equipment training provider must conduct an assessment at the end of the training and issue a Statement of Attainment to the candidate upon successful completion of the training course. The candidate records this in the Education & Training Record, form F26. Details of the courses should be documented as per EST-20-01 and endorsed by ARTC.
- 3.6 **Grandfather Clause.** A candidate can provide evidence of previous industry work experience record in the specific competency or skill within the previous 8 years. This shall be assessed by the approved Signals Competency Assessor and may qualify for a Competency Level of 1. This does not apply to skills detailed in section 10 'Technically Difficult Subjects'.
- 3.7 **Work Based Training.** This is training under the supervision and mentorship of a person who is competent in that skill or technology. This is best achieved under the mentorship of a level 3 person. However, a Level 2 person working to a structured program is suitable. This is typically phased as follows:

- a. Supervisor/Mentor provides reference information on the new skill or technology to the candidate. This may include manuals and standards.
 - b. Supervisor/Mentor demonstrates the skill personally to the candidate.
 - c. The Supervisor/Mentor supervises while the candidate undertakes the task.
 - d. The candidate performs the task with the Supervisor/Mentor in a hands off overview. The Supervisor/Mentor then reviews the performance of the candidate and provides guidance.
 - e. The candidate then undertakes the task as free performance on three separate occasions to a satisfactory level. Tasks not performed satisfactorily do not count as part of the three sets. The Supervisor/Mentor then assesses and checks how it was performed. During this process the Supervisor/Mentor is responsible for the performance of the task and is required to certify the tasks in accordance with the required standards and procedures.
 - f. The candidate completes the above experience in the Work Experience Record specifically for the nominated skill. The Supervisor/Mentor endorses that the candidate is able to perform the task/competency to a satisfactory level. In some cases the work may be carried out under different Supervisor/Mentors. Form F22B shall be used to record this Assessment of Work Based Training.
- 3.8 After successful completion of Basic level training by one of the methods above, the candidate can submit a Request for Competency Upgrade Assessment to Level 1 using form F24.

4 Level 1 to Level 2

- 4.1 Having achieved the Level 1 competency as above, the candidate undertakes the tasks with hands off supervision. The scope of the tasks is defined in ESI-20-04 Signals Competency Skills Definitions.

The Supervisor/Mentor is responsible for endorsing or certifying the performance of all work experience tasks undertaken by the candidate. These tasks shall be performed under Direct Supervision. The Supervisor/Mentor shall ensure that the candidate has knowledge and understanding of the relevant Standards and Procedures covering the tasks.

- a. The candidate performs four full sets of the task/competency including any out of course activities associated with the task to a satisfactory level. See section 7 for the amount of work to be demonstrated. Tasks not performed satisfactorily do not count as part of the four sets. This number of performances is to ensure that the candidate has a broader range of experience as not every situation is the same. ***This work experience is in addition to any work experience as part of Level 1 work based training.***
 - b. ***Where the competency skill covers a range of different scenarios, the Supervisor/Mentor shall ensure that these are covered in the required four work experiences.***
 - c. The candidate completes the above experience in the Work Experience Record.
 - d. The Supervisor/Mentor endorses that the candidate is able to perform the task/competency to a satisfactory level.
- 4.2 After completion of the above the candidate can submit a Request for Competency Upgrade Assessment to Level 2 using form F24.

- 4.3 Having achieved the Level 2 competency the candidate can perform routine tasks for that competency. See section 6 for definition and examples of routine tasks. The candidate is also able to undertake complex tasks under supervision of a person with Level 3 competency.

5 Level 2 to Level 3

- 5.1 Having achieved the Level 2 competency as above, the candidate undertakes the straight forward tasks without supervision including examples that are routine or out of the ordinary.
- 5.2 The candidate then works on complex examples of the task competency when the Supervisor/Mentor considers that the candidate is ready and suitable to undertake a level 3 task. The Supervisor/Mentor must be ready and able to provide mentorship and guidance as to the issues that affect a complex task. The Supervisor/Mentor must have this skill at level 3.
- 5.3 The candidate is supervised and mentored during the performance of the task in a complex example. The Supervisor/Mentor is responsible for the task and shall have the competency at the higher level. The Supervisor/Mentor is to check and certify the performance of the task/competency in accordance with the standards and procedures.
- 5.4 The Candidate is to satisfactorily perform the complex competency/task five times under supervision and mentorship. **Tasks not performed at level 3 competency do not count as part of the five sets.** The candidate completes the above experience in the Work Experience Record and has the Supervisor/Mentor endorse the entry with comments on performance.
- 5.5 It is required that 3 of these 5 task performances are undertaken on the ARTC network so that the candidate is exposed to and becomes well versed in the application of the applicable ARTC standards. Alternatively see section 8.**
- 5.6 When the candidate has completed five complex examples, then the Supervisor/Mentor is requested to endorse the Work Experience Record, that this performance has been satisfactory and in accordance with the standards and procedures.
- 5.7 After completion of the above the candidate can submit a Request for Competency Upgrade Assessment to Level 3 using form F24. This is then assessed by the Assessor, who relies upon the Supervisor/Mentor's endorsement of the work experience record, provided the Supervisor/Mentor has level 3 in the skill.
- 5.8 A competency at Level 3 represents the ability to handle any aspect of the competency including complex situations and those not detailed in the standards and procedures. It also represents a full and clear understanding of the standards, procedures for the item and related items and the safety and engineering outcomes to be achieved in performing the competency. The Level 3 practitioner will also be able to provide guidance to others in the subject.

6 Complex Tasks and Skill Levels demonstrated

- 6.1 Complex tasks shall be defined as "any task that requires the use of non-generic skills to perform". The complexity may arise from the type of technical issue, the number and interrelationship of the technical issues or the technical issue being without general precedent.

- 6.2 Provided all other requirements for a skill level progression have been met for the relevant stage of progression, successful completion of complex tasks as defined above can be considered as an appropriate demonstration of Skill Levels.
- 6.3 The Work Experience Record by the candidate shall provide a brief description of the task to adequately identify it as a complex task.
- 6.4 Examples of Routine Tasks and Complex Tasks. If a candidate has a work experience episode that is less than the items below, then it will not be counted in the complex competency/task count. The Assessor will need to consider whether work experience episodes are adequate for the work experience assessment.

	Routine Task (level 2)	Complex Task (level 3)
A	Design of a CTC crossing loop	Design of a Double Track Bi-directional working section
B	Design of a single line level crossing	Design of a double track level crossing
C	Design of automatic 2 aspect signalling for 8 signals	Design of automatic signalling with 5 minute headway and 4 aspects
D	Design of a CBI crossing loop	Design of CBI LX adjacent to crossing loop Home signal
E	Design of Auto signalling	Design of Auto signalling with conditional clearing of aspects
F	Design of a single track junction	Design of a double track junction

Table 1 Design skills for Signal Design Engineer or Signal Designer

	Routine Task (level 2)	Complex Task (level 3)
A	Maintenance of 2 turnouts or a crossover	Fault finding on a turnout detector circuit
B	Maintenance service on a level crossing	Maintenance logs for LX monitor download and review for fault or incident
C	Bridging single track level crossing circuits for re-railing	Bridging double track Predictor level crossing for re-railing on one track only
D	Track Circuit maintenance after track work and record on History Card	Track Circuit inspection, set up and adjust after significant event such as derailment, flooding etc
E	All maintenance services as per TMP	

Table 2 Maintenance skills for Signal Technician

	Routine Task (level 2)	Complex Task (level 3)
A	Investigation of a SPAD and report	Fault finding on a turnout detector circuit
B	Condition assessment of a level crossing	Fault finding for track circuit fail to detect
C	Scope for equipment maintenance renewal	Condition assessment for a crossing loop

	Routine Task (level 2)	Complex Task (level 3)
D	Test Team leader for reinstatement of signalling after renewal	Tester in charge for commissioning of new signalling

Table 3 Maintenance skills for Signal Maintenance Engineer

	Routine Task (level 2)	Complex Task (level 3)
A	Wiring an equipment cupboard	Wiring a relay room
B	Installation of a signal	Installation of a gantry with signals
C	Installation of a point motor	Installation of crossover with swing nose
D	Installation of a track circuit	Installation of single line section for train detection
E	Testing of a signals cupboard	Testing of an interlocking
F	Set to work of a track circuit or point motor or signal	Test team leader for set to work for an interlocking

Table 4 Maintenance skills for Signal Construction Technician

	Routine Task (level 2)	Complex Task (level 3)
A	Scope of works for a level crossing	Scope of works for a CTC crossing loop
B	Draft CWP for a level crossing or similar small project	Draft CWP for a crossing loop or double track level crossing
C	Direct site works for a level crossing or loop extension	Direct site works for a crossing loop or double track level crossing
E	Tester in charge of a single line level crossing	Tester in Charge of a double track level crossing
F	Test team leader for all track circuits in a single line CTC crossing loop.	Test team leader for all track circuits for a double track junction

Table 5 Construction and Testing skills for Signal Construction Engineer

6.5 The document ESI-20-04 Skills Definition provides further details of routine and complex tasks.

7 Amount and type of work in a Task.

For Work Experience requirements the items listed in 6.4 provide a good basis for the type of work expected for levels 2 and 3. If the candidate was only involved in half the work or doing amendments or updates, then this would not qualify as a full work experience example for level 3 assessment purposes, but may qualify for level 2. Within each of the examples in 6.4, the candidate has many opportunities to practise the application of the competency. This practice is an important part of expanding a candidate's work experience.

The **Breadth** of the work experience is also critical to ensure that the candidate has a full understanding of all of the issues associated with the skill. The work experience examples should not be limited to one type of task. For example the skill 'Like for Like replacement of a signal cable covers a range of tasks. This includes signal cable to track circuit connections to the rails, small multicore cable to a signal or point motor or LX cross arm and a multicore signal cable

between signal locations of 30 to 50 cores. It is expected that the candidate had work experience in each of these types of task. Similar issues apply to all of the other 'skills'.

It is recommended that the candidate document a work plan to cover the work episodes required to attain a higher skill level or a new competency (refer also section 2).

8 Alternative to Experience on ARTC Network

- 8.1 To attain a Level 3 competency, there is a requirement for work experience on the ARTC network. This is to demonstrate a detailed understanding of the relevant standards and procedures which can have both a direct and indirect impact on the ARTC network. It also provides needed insights into the types of rail traffic, the Network Rules and the manner in which work is performed on the ARTC network.
- 8.2 There may be occasions where a candidate has significant experience in a competency equivalent to Level 3 in another railway network and wants to be directly considered for Level 3 on the ARTC network.
- 8.3 This candidate may undertake an alternative process to demonstrate the understanding of the requirements from sections 5 and 6. This will include the following actions:
 - a. Undertake a desktop exercise on the subject to demonstrate knowledge of the subject and the ARTC standards and processes for all Levels 1 to 3.
 - b. Undertake detailed study and review of the relevant ARTC standards, procedures and guidelines that directly or indirectly cover the subject matter. This would include the making of notes regarding the significant items.
 - c. Review of work that has been completed by other people in accordance with the standards for Level 3. This could include the review of an existing design for a designer, the review of a Commissioning Work Package by a Test & Commissioning Engineer or Tester in Charge, the review of Maintenance work orders and technical maintenance plan by a Maintenance supervisor. This is a critical review and the document should be marked up with comments to represent an understanding of the subject. This should also identify any areas where the item could be improved.
 - d. Interview by the Assessor to demonstrate successful completion of the above requirements.
- 8.4 This work is then reviewed by the Assessor, who is an SME (or in conjunction with an SME) at Level 3 in the respective competency. The Assessor may evaluate the similarity or difference between the Signals practices associated with the applicants work experience. If these are similar, then the Assessor may consider that these meet the ARTC work experience episode requirements. The Assessor then determines the rating of the candidate.

9 Understanding ARTC Network and Standards

- 9.1 ARTC requires that people with work experience on other networks are able to understand and apply the ARTC Standards and Practices. They must be mentored to acquire this understanding and any assessment must consider and review this issue where the candidate does not have prior experience on the ARTC network.
 - a. A candidate may have a skill competency equivalent to ARTC Levels 1, 2 or 3 work experience from other railway networks or in past years. That candidate still requires work

experience in the understanding an application of those skills in accordance with the ARTC Standards and practices. In this case the Supervisor/Mentor provides the reference information including the standards, approved forms and examples of the application from past jobs.

- b. The candidate reviews the information and asks questions of the Supervisor/Mentor to achieve an adequate understanding of application of the ARTC processes for the 'skill'. The person shall demonstrate having attained the understanding of the skill prior to the assessment.
 - c. It is preferable that the Supervisor/Mentor reviews the understanding of the candidate for the skills and writes this up in the Education & Training Record – Work Based Training section.
- 9.2 The Assessor must review this issue as part of the assessment and not just consider the work experience. If appropriate, a practical and scenario based demonstration of the skill should be considered by the Assessor to assess the candidate's skill level.
- 9.3 Where it is some years since previous work experience for this 'skill' the same requirement applies. The period is 2 years where the candidate has not been working in the rail industry or 4 years if the candidate has not been working in rail signalling but has been working in the rail industry. The ARTC Standards, practices and forms are constantly being updated. The candidate follows the same process to update their knowledge. The Supervisor/Mentor follows the same process to evaluate and record the knowledge and understanding of the candidate in the Education & Training Record – Work Based Training section.

10 Technically Difficult Subjects

10.1 Section 3.5 above refers to requirements for technically difficult subjects. The list below details a number of technically difficult subjects that require formal training by an industry supplier or trainer. These courses should be in accordance with EST-20-01.

10.2 Formal Industry Training is required in these subjects:

- a. The technical complexity of the subject means that the item cannot be adequately demonstrated by several work experience episodes;
- b. There is a need to understand significant technical documentation to adequately undertake the tasks for the technology;
- c. Training covers the applicability of the various documentation and the use of software tools and hardware tools;
- d. The training can provide a tailored introduction to the technical complexity so that the principles can be understood;
- e. The training includes worked examples and assessment by the trainer;
- f. Training includes actions not to be followed.

10.3 Table of some examples of technically difficult subjects that require formal training.

Design	Maintenance	Construction *
Predictor LX	Predictor LX set up & adjust, Certify, fault find	Predictor LX set up & adjust, Certify
Computer Based Interlocking - data design; data load.	Computer Based Interlocking data load and fault find	Computer Based Interlocking data load and fault find
Computer Based Interlocking circuit design	CBI read design data and data logs	CBI read design data and data logs
Coded Track Circuits - design	Coded Track Circuits – Maintenance and fault find	Coded Track Circuits – Set to Work, Certify, fault find
Axle Counters -design	Axle Counters – fault find and maintenance, load data	Axle Counters – Set to Work, Certify, fault find
Control system – data, configuration	Control System – fault find, log download, re-configure	Control System – data upload, configuration, Certify, fault find
Simulator systems		
Computer based Train Order Systems		

Table 6 * excludes wiring

10.4 Inclusive Training Courses

Staff undertaking a training course Certificate IV in Rail Signalling or the Post Graduate Diploma in Rail Signalling have received training in some of the above subjects at a general level. This training is sufficient to cover the general principles of operation of the technology. It does not cover specific technology to the depth of the industry or domain specific training on the specific equipment.

For the specific items detailed above the Cert IV in Rail Signalling or the Post Graduate Diploma in Rail Signalling are not sufficient training to gain a skill level 1 in the specific technology.

11 Assessment of Current Competence

- 11.1 As detailed in section 10, the training of signals staff in **technically difficult subjects** is best undertaken via a formalised industry training course. However, there may have been situations in the past where a signals candidate has attained a level of competence in the subject through a variety of less formal steps. For signals staff who have attained an equivalent level of competence to that from a training course and achieved this prior to 2014, then Assessment of Current Competence is an acceptable means to demonstrate this. To ensure consistency of training and competence levels in the future from the beginning of 2014, staff should undertake industry based training for technically difficult subjects.
- 11.2 Assessment of Current Competence is a documented process as follows: It is undertaken by an approved Assessor, who is an SME (or in conjunction with an SME). The SME has a current ARTC Signals Statement of Competency with a level '3' rating for the skill that is being assessed. Either the Assessor or the SME must be independent of the organisation of the candidate being assessed. The results of the assessment are documented on form F22C Signals Current Competence Assessment or form F22D Signals Competency Alternate Proficiency Certificate. The assessment examines the knowledge and understanding of the candidate being assessed and not how they gained the knowledge. As in the real work situation the candidate being assessed can refer to manuals and other documents during the assessment.
- 11.3 As at the end of the Industry training course, there is an assessment of the items of the training curricula, the same applies for the Assessment of Current Competence. The Assessor and SME will use the EST-20-01 F01 Curriculum Outline for the Skill where it is available or will use the supplier technical manuals and ARTC standards/guidelines where these are available or a combination of both.
- 11.4 For example, an assessment for GCP level crossing design would consider: ESD-03-02 Level Crossing Predictor Design, GCP technical manual and if available the GCP Design training course Curriculum outline. The breadths of the elements are to be broad enough to cover all parts of the design process. An assessment of this type would typically be undertaken in 1 to 2 hours and include a practical demonstration or simulation. The results are to be documented and form part of the signals competency assessment. The Assessment is Open Book. Form F-22C is used to record the Assessment.
- 11.5 The applicant needs to achieve 75% in this assessment and only has one chance to demonstrate the current competence. If they fail to achieve the nominated level then they must either undertake the training course or get the training course provider to give them the same assessment as in the industry training course.

- 11.6 The above process can also be applied for some other competencies covered by training courses for subjects that are not technically difficult. A candidate may be assessed as to competence on Signals Safeworking if they have extensive experience but have not undertaken the full Signals Safeworking course. If they are successful in the Assessment, then they only need to undertake the Signals Safeworking Refresher course.
- 11.7 To assist with consistency of assessment of current competence for technically difficult subjects, a Technical Assessment Quiz will be drafted for certain equipment. This will be based on the Equipment Manuals, ARTC Standards, equipment training scope and Case Studies from using the equipment. An authorised Assessor must use these Quizzes to assess a candidate's current competence. The Assessor does not need to be an SME in the subject. To increase reliability in assessments and where available, it is important that practical assessments are included in the assessments.
- 11.8 The Quiz is undertaken as an open book assessment with hard copies of the reference documentation only (no electronic copies). The candidate has up to 90 minutes to complete the Quiz. The Assessor supervises the assessment and rates the candidate. The applicant needs to achieve 75% in this assessment and only has one chance to demonstrate the current competence. If they fail to achieve the nominated level then they must either undertake the training course or get the training course provider to give them the same assessment as in the industry training course. Form F22D Signals Competency Alternate Proficiency Certificate is used to record the successful assessment using this process.

12 Certification of work performed when in training for a higher level

- 12.1 When work tasks are performed by a candidate to gain work based training or experience at a higher competency level, a Supervisor/Mentor is responsible for the work. The Supervisor/Mentor shall have the competency at the higher level. The Supervisor/Mentor is responsible for the work and shall fully check and document all the work performed by the candidate. This check and certification is in lieu of the candidate check and certification. The Supervisor/Mentor is responsible for the certification of this work and must sign all the work. The name of the candidate must be indicated on the work as well.
- 12.2 This check and certification by the Supervisor/Mentor does not replace any other checks or certifications or verification that may be required in accordance with the standards and procedures.
- 12.3 The Supervisor/Mentor when endorsing this work shall indicate in the comments column that it is: <work based training>; <work at higher level> or <special experience for out of course activity>. The Supervisor/Mentor shall also indicate the level of proficiency achieved in the performance of the tasks by the candidate. This must be an objective assessment of the performance.
- 12.4 If the work performed by the candidate includes errors or omissions or under-performance, then the Supervisor/Mentor has some responsibility and may be requested to give reasons for these issues.
- 12.5 If the Supervisor/Mentor does not accurately report comments against the performance of the candidate, then the Supervisor/Mentor may be re-assessed as to their understanding and experience of the activity, the competency and the related standards and procedures.

13 Responsibility when verifying Work Experience

- 13.1 The Supervisor/Mentor is best placed to verify the Work Experience Record for a candidate under his/her control. In some situations a Section Manager may verify the Work Experience Record. The Verifier shall have a signal competency certificate that demonstrates competency in the related signalling matters.
- 13.2 The Verifier is responsible that the description of the task adequately and accurately describes the task. It shall not overstate the level of task performed by the candidate or the level of complexity of the task.
- 13.3 It shall correctly detail the level of responsibility by the candidate and the contribution of other people where appropriate.
- 13.4 There will be cases where work experience records are verified by a manager who does not have high signals competency skills in the subject or may not have an ARTC Signals Competency Certificate. This is only permitted where the senior supervising manager of the candidate (owner of the work experience record) verifies the work experience record for the candidate within their skill levels and not at higher skill levels.

14 Verifying Work Experience Records for higher skill levels

- 14.1 A Supervisor/Mentor with the higher skill level is required to verify a work experience record that is used for an Application for Higher Skill levels or a new skill or competency.
- 14.2 The Verifier shall include comments in the 'Comments' section of the Work Experience Record. These must indicate if the candidate has undertaken the tasks fully, independently and competently. If these comments are not provided the Assessor may down rate the value of the work experience in assessing an upgrade to skill levels.

15 Accountability when endorsing Work Experience Records

- 15.1 The Supervisor/Mentor is accountable for any inaccurate endorsement of Work Experience.
- 15.2 The Supervisor/Mentor is accountable for an endorsement that a candidate has completed on-the-job training to achieve a higher level of competency.
- 15.3 The candidate is responsible that the Work Experience Record clearly shows the work completed under mentorship. The Supervisor/Mentor is responsible that the endorsed record clearly shows that the work was undertaken under mentorship.

16 Accountability when allocating work to staff

- 16.1 The Manager of a section, team or organisation is responsible for allocating work to people who have been certified competent to perform that work.
- 16.2 It is permissible for a candidate to be allocated a task at a level above their competency, provided a process for mentoring and supervision is established. The Supervisor/Mentor must have the appropriate level of competency in the task. The Supervisor/Mentor must have time and resources available to support the candidate. The Supervisor/Mentor is responsible for the manner in which the task is performed and must check and endorse all of the work.
- 16.3 It is preferable that the process for Mentoring and supervision of the candidate is documented in some form between the participants so that there is no misunderstanding. Where the training is in a design skill then this documentation shall form part of the Design Management Plan documentation. Where this mentoring is from an external organisation (such as for new technology) then it is mandated that the process for supervision and mentoring and checking is formally documented and is available for audit. Refer also section 2 and 8.4 re recommendation to document a training plan.
- 16.4 Work shall not be allocated to people who do not have the nominated competency level except as per 16.2 above. A Manager who allocates tasks to people who are not appropriately certified as competent in the competency will be in breach of the ARTC Signals Competency Procedures.

17 AQF courses and competencies

- 17.1 The Certificate IV in Electro-technology Railway Signalling is an AQF course. This is the basis for new candidates to be trained for the F05 Signals Technician Role and competency certificate.
- 17.2 A candidate may have successfully undertaken a qualification prior to the current qualification being implemented. ARTC will recognise these Predecessor Qualifications where the candidate has been subsequently working continuously in the Role or a similar Role. These are detailed in ESI-20-04.
- 17.3 Predecessor Qualification Certification. The candidate and the Assessor shall record the details of the Predecessor Qualification and the current qualification and the continuous work on Form F22A Signals Qualification Equivalence. This may be used for upload to Pegasus Rail Industry Worker.
- 17.4 Other AQF courses to be detailed here.

Schedule 1 – AQF Courses for Railway Signalling

UEE41211 Certificate IV in Electrical – Rail Signalling

UEE41210 Certificate IV in Electrical – Rail Signalling

UEE41207 Certificate IV in Electrical – Rail Signalling

TLI31913 Certificate III in Mechanical Rail Signalling

TLI31911 Certificate III in Mechanical Rail Signalling

TLI31910 Certificate III in Mechanical Rail Signalling

TLIF2080 Safely Access the Rail Corridor

Schedule 2 – Educational Courses or Qualifications for Signalling

Post Graduate Diploma in Railway Signalling issued by an Australian Registered Training Organisation

Schedule 3 – Victorian Accredited courses

TLI**** Certificate IV in Electrical – Rail Signalling

TLI**** Diploma in Rail Signalling

18 Signals Competency Forms for Training and Higher Grades

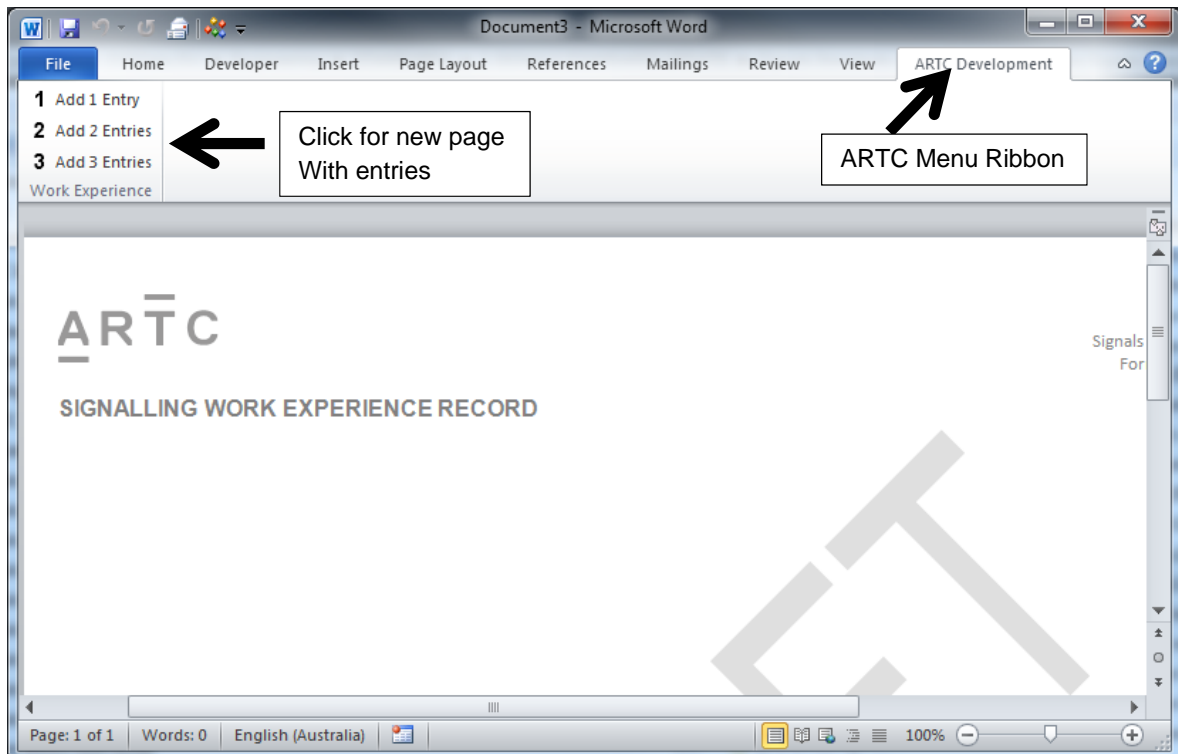
- 18.1 There are a number of Forms used within the Signals Competency process. The following are for specific purposes to ensure adequate information is provided for the purpose.
- 18.2 Form **EST2002F22A - Signals Qualifications Equivalence**. The Signals Competency Matrix will refer to the current AQF training and qualifications. A candidate may have successfully completed recognised training for a Role at a time before the qualifications were formalised. Separate matrices as part of the ESI-20-04 Signals Skills Definitions document will detail these alternate or Predecessor Qualifications and Training. The Assessor by reference to these matrices may assess the candidate as having completed a Predecessor Qualification. This Form records this Assessment. It may be separately input to Pegasus Rail Industry Worker portal against the qualification.
- 18.3 Form **EST2002F22B – Signals Work Based Training Assessment**. As detailed in section 3 a candidate may undertake Work Based Training and assessment by their Supervisor/Mentor. This form is used to record the training and assessment of the candidate in the workplace. It provides a formal record of all of the steps required for the successful assessment. It is referenced in part C of the F-26 Education and Training Record. Work Based Training is only used for training from level 0 to Level 1.
- 18.4 Form **EST2002F22C – Signals Current Competence Assessment**. As detailed in section 11, a candidate may have attained a level of competence in a skill or subject without completing formal training. This form allows the Assessor to assess the candidate and record the subject matter of the assessment. The form can be used to demonstrate competence in lieu of an industry training certificate.
- 18.5 Form **EST2002F22D – Signals Competency Alternate Proficiency Certificate**. As detailed in section 11, a candidate may have achieved a level of competence in a technically difficult subject without completing the respective industry training course. The candidate may undertake under the direction of the Assessor a documented Quiz on the subject. This form will indicate successfully passing the Quiz. This form may be used and referenced in F-26 Education and Training Record.
- 18.6 Form **EST2002F25A – Signals Work Experience Record Supervisors Declaration**. This has been separated from the actual Work Experience Records. This form must be used and cannot be replaced by a similar form from other railway managers. This form must be signed by each Supervisor/Mentor for the endorsement of the individual work experience episode to be valid. This includes the declaration from the Supervisor/Mentor that the information endorsed is correct.

It includes guidance for the Supervisor/Mentor when checking the work experience record episodes.

<p>Supervisor Verification The Supervisor for the <i>work experience episode</i> must endorse each record. The Supervisor must complete details in the table below regarding his/her details. The Supervisor in signing the Work Experience Record sheet is attesting to the performance of the tasks, the responsibility levels and may be held responsible for any inaccuracies in this endorsement. The Supervisor must make a comment against each <i>work experience episode</i> when endorsing an episode. When supervising work for a person working above their current competency skill level, the Supervisor must have the higher grade for the skill or competency.</p>						
<p>Verification Supervisors Declaration <i>I declare that the information that I have verified on the attached Signalling Work Experience Record is true and correct and fully provides all relevant details for the Assessment of the Signalling Competencies of the nominated person.</i></p>						
	Name	Position	Organisation	RIW ID	Signature	Date
1						
2						
3						

18.7 Form **EST2002F25B – Signals Work Experience Record**. This form has macros and drop down menus. The drop-down menu items allow the candidate to complete details of the work experience episode. They include a number of fields that must be completed to ensure that sufficient information is available for the Assessor to evaluate. Three versions are available for the 2016 version of Microsoft Word, the 2010 version of Microsoft Word and the 97-2003 version of Microsoft Word. A protected document format is used to allow the drop down menus to work and for forms fill in other fields.

A macro function allows additional pages to be added to the record while keeping the protected document. This is accessed from the Menu Ribbon at “ARTC Development” tab. On many computers with anti-virus software, “Enable content” must also be selected.




The User selects the number of work episodes on the page (1 or 2 or 3) and the page is filled or an extra page is added. The User can then fill in the information by selecting from the drop-down menu or by inserting words in the blank fields.

The User can then add additional pages in the same manner.

The User submits to the Supervisor/Mentor for Comments which are added into the Word version.

The Supervisor/Mentor prints the record and signs it. The User scans this for submission of assessment.



SIGNALLING WORK EXPERIENCE RECORD

Standard Form
Signals Staff Competency Assessment
Form number: ARTC Signals F-25B

Name:		RIW ID:		Page No.		
Dates From/To Mm/yy	Employer, Client, Infrastructure Owner, Project name or	Description of Task: Include description of Role(s), Project or general task description, Competencies used, levels and complexity of the task or the project	Ref	Equipment or System Types	Supervisor Verification Signature, Name & RIW ID.	Supervisor Observations (Assessment/ Follow-up/ Competence Cross Reference)
from to	insert employer insert client railway insert project	RESPONSIBLE PERSON FOR Insert role Insert description of project complexity insert task details performed by person	█	█ █ █ █	insert name insert RIW ID	PERFORMED WORK COMPETENTLY insert comments
from to	insert employer insert client railway insert project	RESPONSIBLE PER Insert role Insert description insert task details performed by person	█	█ █ █ █	insert name insert RIW ID	PERFORMED WORK COMPETENTLY insert comments
from to	insert employer insert client railway insert project	RESPONSIBLE PERSON FOR Insert role Insert description of project complexity insert task details performed by person	█	█ █ █ █	insert name insert RIW ID	PERFORMED WORK COMPETENTLY insert comments

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18.8 Form EST2002F26 – Training and Education Record. This has three sections covering:

- Education Record for formal courses and qualifications;
- Industry Training record for formal industry training courses and by equipment suppliers;
- Work Based Training Record for a short summary of skills achieved through on the job informal training by supervisors and mentors.

The candidate completes details on the form and references the training certificates. The Training Certificates are scanned in colour as one file including the reference ID for each certificate. The scan is verified by an Assessor or Supervisor.

Work Based Training items will reference EST2002F-22B Work Based Training Assessment. This includes details of the work episodes and assessment.

18.9 Form EST2002F24 - Request for Competency Upgrade Assessment. After a candidate has completed additional training or on the job work experience they may apply for an upgrade in the skills detailed on their Statement of Competency. The form includes an information page as to how it is to be completed. The candidate completes the form for the skills to be upgraded including the requested skill level. The candidate includes references to Work Experience Record episode reference numbers and training episode reference numbers. This is submitted for assessment.

Attachment 1 EST-20-02 Signals Staff Competency Assessment – extract 5.3

Supervision

Levels 1 and 2 require the supervision of the candidate by a suitably qualified person.

The level of supervision may vary according to the skills, experience and competency of the candidate and the task being performed. Supervision may take many forms, see examples below. The level of supervision, work based training and mentorship is decided by the supervisor.

Direct Supervision	The candidate is supervised by a competent supervisor/mentor who is at the same equipment location (or position where the activity is performed) and the person checks the work at least once a day.
Indirect Supervision	The candidate is supervised as part of a team which is under the control of a supervisor / mentor. The supervisor / mentor is in the same general location as the candidate but may be at a different equipment position. For example the candidate is at one end of a crossing loop and the supervisor is at the other end of the crossing loop. The supervisor communicates with the candidate at the start and at the end of the shift and provides a pre-work briefing to the candidate. The supervisor is available for discussion via communications link during the day.
Remote Supervision	The candidate is at a remote location performing the task under the supervision and mentorship of the supervisor at a different location. Communication is by radio or phone service. The supervisor will discuss the task with the candidate prior to undertaking the task. A review will be undertaken by the supervisor after the task is undertaken and prior to completing a shift of work.
Remote Mentor	The candidate is performing the tasks at a different location to the supervisor / mentor. The supervisor is available for advice and mentoring by radio or phone service during the undertaking of tasks but does not necessarily do a pre-work briefing every shift. The supervisor reviews performance at least weekly.
Task Supervisor/ Mentor	This would generally apply for design, construction activities where the results of the activities are not in service. The supervisor is available for advice and mentoring by radio or phone service or in person during the undertaking of tasks but does not necessarily do a pre-work briefing every shift. The supervisor reviews performance at least weekly.

Attachment 2 EST-20-03 Applying for Signals Competency – extract 9

Work Experience Requirements for Competency Levels

Level 2

To attain a Level 2 competence an individual must be able to demonstrate by means of verified work experience that they have carried out the activity a **minimum of four** times, independently, in a simple or routine task.

Where a competence is a broadening of a similar well experienced activity, then it is acceptable to gain a level 2 by providing evidence of carrying out the activity a **minimum of two** times, independently, in a simple or routine task.

An example would be where an individual has 4 verified experiences in DC track circuits and has 2 verified experiences on HVI track circuits. The individual would be able to gain a Level 2 in both activities due to the similarity in technologies.

Level 3

Level 3 can only be gained through verified experience gained including experience within the ARTC Network.

To attain a Level 3 competence an individual must be able to demonstrate by means of verified work experience that they have carried out the activity a **minimum of five** times, independently, in a complex task.

Where a competence is a broadening of a similar well experienced activity, then it is acceptable to gain a level 3 by providing evidence of carrying out the activity a **minimum of three** times, independently, in a complex task.

An example would be where an individual has 5 verified experiences in DC track circuits and has three verified experiences on HVI track circuits. The individual would be able to gain a Level 3 in both activities due to the similarity in technologies.

Half of these minimum number of work experience activities shall be performed on the ARTC network in accordance with ARTC Signalling Standards applied to demonstrate the high level of understanding of ARTC standards and practices.

Additional Comment:

Broadening of skill competence.

The following are similar technologies for Broadening of skills and reduced Work Experience Episodes. If not mentioned here then additional technologies need to be confirmed with ARTC.

- *SSI- Westlock (after additional training);*
- *Audio Freq track circuits and Overlay track circuits;*
- *Different types of Point Machines;*
- *VHLC and EC5 (Electrolog IXS requires additional training);*
- *Westrace I and Westrace II after additional training.*