



worldwide promotion of entertainment technology best practices

A Presentation on PLASA's
North American and United Kingdom
Rigging Certification Programs

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Why does PLASA have two different types of certification programs?

The United Kingdom and the United States have different standards for how certification (or qualification) programs are created and operated, so it was necessary for each region to create a program that met the relevant standards as well as addressing different legal, liability and geographic considerations.

In the United Kingdom the certification program models the UK National Vocational Qualification methodology whereby an individual's skills, knowledge and experience are measured to a set of prescribed statements of competence, derived from Government approved National Occupational Standards. These standards are created in consultation with the relevant industry.

In the United States, certification is the voluntary process by which a non-governmental organization grants recognition to an individual who has command of defined knowledge, skills and abilities.

Purpose

By providing a thorough independent assessment of knowledge, skills and abilities for entertainment technology disciplines, PLASA's programs enhance safety, reduce workplace risk, improve performance, stimulate training and give due recognition to the professional skills of entertainment technicians.

ETCP

The Entertainment Technician Certification Program (ETCP), which was developed in North America, focuses on disciplines that directly affect the health and safety of crews, performers, and audiences. There are two areas of certification - electrical skills and rigging skills and an entertainment technician may take exams to hold one or more of the following certifications: Rigger–Arena, Rigger–Theatre, and Entertainment Electrician. Upon passing the examination, the certificant receives a certificate and an ID card which specifies the type of certification achieved, the date of achievement and the date of expiration. This information is also posted on the ETCP website in a searchable database.

NRC

The National Rigging Certificate (NRC), which was developed in the UK, provides a mechanism to measure competence in rigging across the Entertainment and Events Sectors. The NRC is aimed at practicing riggers and incorporates 2 levels, which are mapped to the UK qualification framework for vocational occupations. These levels allow for progression and professional development, recognizing an increase in knowledge, skill and responsibility. The levels also incorporate other generic essential skills such as communication, health and safety and creating working relationships. This ensures that anyone employing an NRC Card holder will know they have achieved a level of practical competence and an understanding of their responsibilities. On achieving candidates receive a certificate and a PLASA NRC Skills Card which specifies the level, date of achievement and date of expiry.



Background

Who developed ETCP and what is the ETCP Council?

In March of 2003, the Entertainment Services and Technology Association's (now PLASA in North America) Board of Directors began to establish a personnel certification program for entertainment technicians. ESTA realized that the program would only succeed if all industry stakeholders were involved in its development and implementation and created the ETCP Council to act as the governing body for the program. Members of the ETCP Council volunteer their time and expertise to the program.

The Council marks an unprecedented alliance of these stakeholders representing all facets of the entertainment technology industry. At the core of the Council are the industry organizations whose presence ensures their members' voices are heard in the development of the program. Representing potential candidates, those who employ them, and those in whose facilities they work, these organizations have demonstrated a significant commitment to the program.

ESTA was joined in 2003 by the Canadian Institute for Theatre Technology (CITT), International Alliance of Theatrical Stage Employees (IATSE), International Association of Venue Managers (IAVM), Themed Entertainment Association (TEA), and United States Institute for Theatre Technology (USITT). In 2004, the Alliance of Motion Picture and Television Producers (AMPTP), InfoComm International, Live Nation, and Production Resource Group (PRG) accepted seats. Since then, the ETCP Council has added representatives from the following organizations: ACTSAFE, Broadway Across America, The Broadway League, Cirque du Soleil, Disney Theatrical Productions, The League of American Theatres and Producers, and NBC Universal.

Representing the Electrical and Rigging Subject Matter Experts on the Council are the Chairs of these groups, all highly respected authorities in their fields. Bringing additional viewpoints and leadership skills to the Council are individuals appointed for their experience in a wide range of areas including program development, marketing and fundraising, legal issues, safety and education.

Who developed the NRC and what is the PLASA National Rigging Advisory Group (NRAG)

Members of the rigging community in the UK had been concerned that although there was good training provision in their industry there was no standardized mechanism to determine the competency of a rigger. At the same time the introduction of the Working at Height Regulations in 2005 encouraged members of the rigging industry to approach PLASA as a neutral body to take development of a qualification forward.

PLASA's role was one of ownership, management, funding and facilitating the scheme. PLASA as a trade association recognized the importance of developing a qualification that was 'fit for purpose'. They formed the NRAG in 2005 made up of highly respected companies and individuals from the rigging community to advise on the structure, content and delivery of the qualification. Putting aside commercial differences in a



highly competitive climate to work together, they agreed to take responsibility for safeguarding the future development of the NRC and developing the criteria for assessment centres and assessors.

The NRAG continue to meet quarterly and shape the NRC as it has developed. They bring to bear experience and expertise as riggers, trainers and company directors. Members of the NRAG have always volunteered their contribution.

How were the assessments created?

ETCP

The first step in creating a valid certification program in the United States is to hire psychometricians to work with subject matter experts in creating and administering the examinations. A psychometrician is someone who practices the science of educational and psychological measurement. Psychometricians measure the validity, reliability, and fairness of an exam program and are an integral part in the process of creating valid and reliable tests. They are involved in all aspects of the development of the program, such as defining the knowledge, skills and abilities that the exam is designed to measure; the development of the test specifications, the item writing process and the standard setting studies. It is the responsibility of the psychometrician to ensure that each part of the process conforms to testing industry standards in the United States, including those in the Standards for Educational and Psychological Testing and the National Organization for Competency Assurance. These standards are considered the primary source for test publishers, test takers, and test users. The firm Applied Measurement Technologies (AMP) was selected for their extensive experience, large base of clients, and the expertise of their leading psychometricians.

The next step in developing a legally defensible certification program was to create a formal job analysis. A job analysis is a systematic study of a certain job (in this case, Arena Rigger, Theatre Rigger or Entertainment Electrician) to determine what activities and responsibilities are included, the qualifications necessary for the performance of the jobs and the conditions under which a specific job is formed. These analyses investigated the frequency and importance of job duties, safety issues within the requirements of the job, the percentage of time employees spend doing a certain task, and whether certain duties constituted fundamental parts of the job.

ETCP chose to perform an Empirical Job Analysis which is the most thorough of the job analysis options that were presented by AMP. This method included the collection of extensive background information, the writing and assembling of a draft survey, and meetings with the subject matter experts who reviewed and finalized the survey instrument and rating scale. The survey was pilot-tested and modifications were made based on the initial results. The subject matter experts assisted in creating a sampling plan that would cover as many different geographical areas as possible and would touch thousands of technicians who work in a range of venues. AMP required that ETCP paint a very complete picture of the types of jobs these technicians do on a daily basis. The survey was distributed to thousands of technicians across North America and the subject matter experts conducted additional meetings to summarize the data, review the results



and finalize the test specifications. This approach took eight months to complete and the final product created the Detailed Content Outline (DCO) for each examination. The final DCOs determined how many questions were to be developed for each section of the examinations.

The subject matter experts were then required to attend item-writing workshops which taught them how to use psychometric techniques to develop the exam questions to ensure direct relevance to the skills being tested and to remove any biases, whether gender, geographic, or educational from the questions. Although the subject matter experts were extremely familiar with the items on the DCOs, they had to learn the proper way to formulate each question. The workshops taught them skills such as being able to phrase the stems of the questions as clearly as possible and to provide distracters (wrong answers) that are plausible but incorrect.

NRC

The NRAG initially agreed a definition of what constitutes rigging and the minimum level of knowledge and skill required of someone rigging at Level 2 and 3. This process involved analyzing both job descriptions from NRAG member companies and identifying and incorporating United Kingdom industry best practice.

Working with the PLASA team, they then set about forming the content of the NRC by developing National Occupational Standards for the Level 2 – Rigger and then Level 3 – Supervising Rigger, respectively. These were later submitted to UK Government Sector Skills Council for approval. The units of competence which make up the NRC are derived from these standards today.

Experienced riggers were selected by the NRAG to become assessors and were trained to achieve the UK qualification for assessing vocational qualifications across all sectors (A1 Award). These NRC Assessors developed the assessment criteria for the NRC based on the units of competence. Written questions were developed, practical scenarios and evidence templates created to log work experience. The following three assessment methods should be used to prove competence: underpinning knowledge - so that people knew why they did something a certain way; practical skill – demonstration of them applying the knowledge correctly; prior work experience - evidence of applying knowledge and skill in context over time.

From this pool of assessors some were developed to become the internal verifiers and their respective organizations then became the first official NRC assessment centres to deliver the assessments. A pilot was conducted with around thirty rigging candidates who through feedback and learning contributed to the shape of the assessment process.

How are candidates assessed?

ETCP

Certification standards in the United States consider a multiple-choice examination to be the most objective and least biased form of examination. For this reason, this type of testing is most commonly used when certifying professionals that deal with health and



safety. Each ETCP examination consists of 165 multiple-choice questions. 150 of these are graded while 15 are being pre-tested to see how they perform for possible inclusion in future examination forms. New questions must be vetted for performance. Questions that do not meet the strict performance guidelines are either modified or removed from the question pool. Candidates have three hours to complete an examination. Special accommodations can be made for individuals with documented disabilities.

A practical examination is not included in the ETCP testing system for several reasons. AMP advised ETCP that a practical component was not necessary, that the strict pre-qualification experience requirements to sit for the examination and the depth and breadth of the examination content, based on the job analysis, would accurately test the subject area. In the United States, practical examinations are not considered psychometrically sound unless they are conducted in a manner that conforms to established standards. To meet those standards, a practical examination would require three examiners for every individual taking an examination, and each examiner would be required to be an expert in that particular field and to have had no previous contact with the examinee. If multiple locations are used to conduct practical exams, each location must have absolutely identical testing equipment that has received exactly the same amount of wear and maintenance. Because ETCP serves an immense and geographically diverse candidate pool, the addition of a practical examination is not financially or geographically feasible for either the candidates, who would have to travel great distances at their own expense to reach a testing center, or the program.

Another factor in the decision not to offer a practical examination is the liability considerations for the examiners. Because these are industry as opposed to government issued certifications, the examiners giving the practical examination would be subject to lawsuits and could potentially be held personally liable should an accident involving a certificant occur. The examiners are not protected by law in the same way as government sanctioned examiners, like those, for example, who administer the test to acquire a driver's license.

In addition to creating liability issues for the examiners themselves, testing with a practical examination can create significant liability issues for the organization granting the certification and the facility where the testing takes place. Because a practical examination is more subjective in nature, a candidate could sue these organizations if he/she did not pass the examination, claiming the exam was subject to bias because of a particular examiner or examination conditions.

NRC

There are currently two Levels available for assessment Level 2 Rigger and Level 3 Rigging supervisor. Level 2 requires a two day attendance at an approved NRC Centre in order to meet the standards in health and safety, risk assessment, working at height with PFPS, rigging installation and rigging operations. Candidates progressing to Level 3 attend a Centre for a further day to carry out a risk assessment and examination, followed by an on-site assessment where an assessor accompanies the candidate in a live work situation to assess the supervisory component of the qualification.



Stage 1 – Registration: A candidate registers through the PLASA website, and when payment is received is sent through a candidate pack including the Rigging Handbook and information detailing evidence they need to submit to the Centres of previous work experience, PPE logs, method and/or risk assessments. From date of registration they have two years to complete their assessments.

Stage 2 - Centre Assessment: Candidates are inducted into the centre. Over the two days they are assessed through a written paper, two practical scenarios and a review of the evidence they have provided. There are four examination papers which are rotated by the Centres.

The assessor will observe and assess their rigging aptitude throughout the two practical scenarios (a rigging task including carrying out a lift and working at height). The maximum number of candidates is 6, the minimum is 4. He/she will examine the candidates Personal Protection Equipment (PPE) and PPE inspection record. If being assessed at Level 3, candidates will also carry out a risk assessment of the scenarios. He/she will observe throughout the scenarios and record in their file each time the candidates meet the criteria.

Assessors check evidence produced (submitted evidence, written paper and demonstrated during scenarios) is fair, valid, sufficient, reliable and current. The assessor reviews all the evidence against the NRC Standards and gives the candidate the outcome of the Centre assessment – they achieve or they do not achieve. If they have achieved this stage and are applying for Level 3 they can then schedule their on-site. An assessor will attend on-site for each Level 3 candidate and observe and record as in the Centre, against Level 3 units of competence.

Checks are made at various stages in the process to ensure decisions are fair and consistency is managed across the centres. The assessor's decisions are sampled by the internal verifier at the centre and by an external verification process jointly carried out by PLASA and EAL (EAL co-award the certificate with PLASA). In addition, standardization meetings are held to ensure that the candidate experience and assessment process is the same across the Centres. This methodology is used for all National Vocational Qualifications within the UK.

How are the assessments graded?

ETCP

Since standardized testing with a passing mark is a requirement for most certification programs that deal with health and safety, AMP recommended the Modified Angoff Method of grading. The committee was expected to define the level of competence that a practitioner must have in order to earn each specific credential. Keeping this definition in mind, the subject matter experts reviewed the entire test and rated the expected difficulty of each item for the minimally competent practitioner at the level for which they were certifying. The ratings that they provided took the form of the expected percentage of minimally competent practitioners who would get that item correct. A rating of 25 for an item, for example, indicates that this item is very difficult. That is



because the rater expects that 25% of practitioners who operate at the level of minimal competence for the specific credential would get that item correct. A rating of 90 for an item indicates that the rater judges it to be very easy, because this rating indicates that the rater expects 90% of minimally competent practitioners to get the item correct. The average across all raters and all items gives the expected passing point for the exam.

The test results for the inaugural group of over 200 riggers indicated that the items on the test forms were performing properly. When testing large numbers of candidates, different versions of the examination are required. Should a candidate not pass on the first try, they will not have the same version of the test on the next try. Each version of an exam that is given pulls questions from the 300-item test bank. The Modified Angoff Method assures that each test form is weighted in exactly the same manner and is equally difficult.

Even though the current item banks are written, there is a continual review of these exam items to make sure that the questions are performing properly. Since the examinations have now been taken by a large number of people, the ETCP Rigging subject matter experts have completed a new job analysis and are in the process of writing new test questions to make sure that the content is refreshed and is applicable to current practices. The Electrical subject matter experts will start this process within the next two years.

NRC

The NRC assessment process leads an individual to either an achievement, or a non-achievement of the qualification. They can demonstrate competency to the required standard, or they cannot. Candidates are withdrawn if their registration period expires.

A candidate must get 100 % correct in the written paper to achieve. When designing the exam it was fully recognized that many candidates may have some fear about written questions therefore the assessor marks the questions prior to the practical assessment. The assessor will then create an opportunity at another point to ask the question that the candidate may have answered incorrectly in another way, ensuring that a misunderstanding of the question is not the problem. If they still do not answer the question correctly they may need to come back for re-assessment. All candidates are given feedback. If there are gaps in knowledge or skill the candidate is made aware of the specific areas where they need to undertake development or training before re-assessment.

Candidates are informed by the assessor when they have met all the standards and fully achieved the NRC. At Level 2 it is possible for a candidate to achieve the NRC in the two days at the centre, providing they have all their evidence and meet the standards. This process is verified. In the event there is a disagreement between assessor and candidate there is a formal appeal process in place.



Who are the assessments designed for?

ETCP

The rigging certifications are designed for highly experienced riggers (rigging supervisors, high steel riggers, fly-persons, etc.). The Arena certification encompasses rigging that employs chain hoists and truss systems to temporarily suspend objects from overhead structures in any environment. ETCP recognizes that these methods and hardware are used throughout the entertainment industry in arenas, convention and trade show spaces and in theatrical venues. However, the principles, practices and components are consistent and similar in all applications and are different from those used in traditional theatrical spaces. The Theatre certification incorporates rigging that employs the use of counterweighted systems, mechanical systems, usually, but not always, permanently installed in facilities for the use of theatre technicians in the execution of their rigging responsibilities.

The Electrical certification encompasses the installation, interconnection, safe use and repair of all portable distribution; utilization of entertainment-industry-related electrical equipment and the safe use of all venue electrical equipment. Additionally, this certification's Content Outline includes the design, layout, and interconnection of portable electrical distribution equipment, including generation, if necessary, as well as the safe connection of portable distribution feeders to the fixed power sources. Applicants are expected to know electrical theory and the safe installation and use of entertainment electrical equipment.

NRC

The NRC is currently aimed at practicing riggers and rigging Supervisors and therefore covers health and safety, risk assessment, rigging installation, rigging operations and working at height. Every NRC candidate must show evidence of PPE inspection, work experience and a statement supporting their competence when applying to take their assessment. Rigging in a college or university setting is not enough. These Levels were prioritized by the NRAG, as they were viewed as the people most at risk from rigging work, and there is an intention to develop Level 4 to cover management of rigging tasks.

What is the application process?

ETCP

ETCP uses a point system to determine eligibility to sit for examinations. A candidate must have 30 points and these points can be earned through work experience, training (internships or apprenticeships only) and education. Points can be earned through work experience alone or through a combination of the above. Candidates must complete the application and turn it into ETCP with the appropriate fee. It is important that candidates only list the experience that is relevant to the exam for which he/she is applying. For example, ETCP does not accept electrical experience for the rigging examination and vice versa. General stagehand experience does not count. The best way to determine which type of experience counts is to look at the Content Outlines for the exam the candidate is taking – if it is on the exam, it counts as work experience. All work experience and other points claimed are verified by ETCP. These requirements to sit for the



examinations ensure that the candidate has achieved a certain level of experience appropriate to the level for which they are being certified.

NRC

Candidates must have rigging experience. In the case of Level 2 or 3 they would need to provide evidence of this in the form of a witness testimony and a record of previous rigging jobs. Templates are available on the PLASA website if needed.

The NRC does not stipulate the amount of work experience necessary for Level 2 candidates as skill acquisition can vary depending on individual circumstances - the onus is on the candidates to ensure that they have the required skills and knowledge to undertake the assessment. Those applying for Level 3 NRC must have held a Level 2 NRC card for a period of a year before undertaking their assessment.

When the NRC was launched all practicing riggers were given three years to register directly to take Level 3. This was to encourage uptake among experienced riggers and create a body of qualified supervisors. It was anticipated that after three years most of those would be captured and therefore, progression should only be via gaining of the Level 2 qualification. When building an NRC capability in other countries, achievement of Level 3 is an important stage in providing suitably qualified candidate who can then train as assessors and internal verifiers.

How are the assessments administered?

ETCP

All three exams are available for computer based testing and a candidate can make arrangements to take the exam at one of 190 testing centers across the US and Canada. Should a group prefer to offer the examinations in paper and pencil form, this is also an option. ETCP can schedule a proctor to come to a specific site, provided the space meets the requirements set forth by AMP, or AMP can provide a site.

The rigging exams have also been translated into French by Quebecois subject matter experts, but are offered only in paper and pencil form.

NRC

PLASA manages the administrative policies and processes, publications, external verification, registration, certification, card issue, and renewal associated with the NRC. The NRC Centres manage the assessments and coordinate the assessors. The NRC centres are required to meet specific criteria in terms of space, resources and equipment to host the practical rigging assessments.

International Dimensions

ETCP - How are the examinations administered outside of North America?

For candidates who speak English, the examination is available two ways: testing at a computer-based testing center or testing at a prearranged site in paper and pencil form, provided the space meets the requirements set forth by AMP, or AMP can provide a site.



There is a small additional fee for any candidate wishing to test outside of North America.

There are over 50 international testing centers available for web-based testing. A full list of international testing centers can be found at <http://www.goamp.com/displayTCList.aspx?pExamID=20980> and by selecting “International Only”. AMP is extremely accommodating regarding new location requests, so new testing opportunities could become available in the future.

ETCP - Can the examinations be translated into other languages?

In 2009, ETCP was approached by the Conseil québécois des ressources humaines en culture (CQRHC) with grant funds provided by the Fonds de développement et de reconnaissance des compétences de la main-d’oeuvre (FDRCMO) to translate the rigging examinations into French for potential candidates in Quebec. The translation process took about six months to complete the two examinations.

There were many steps to complete the translation process and it began with selecting a translation company and identifying a group of bilingual Subject Matter Experts. A team of subject matter experts and translation experts were formed and were trained in item writing skills by AMP. They were asked to carefully translate the items and attempt to match the cultural contexts of phrases. All of the testing items were then independently back-translated and reviewed and any differences were resolved with the team. The exam was then administered to a test group, the results of which determined the pass rate for each exam form. It was also necessary to translate the examination handbooks and all other accompanying materials such as letters, forms and web pages.

NRC Registration and Assessment outside the UK

PLASA are currently running a pilot in the Nordic countries. This project starts with setting up a local rigging advisory group, and incorporates assessing the suitability of Level 3 candidates, assessing them, training them as assessors and setting up a local centre. Translation of all written materials also takes place. Responsibility for assessment and internal verification would devolve to the country/region, but external verification would remain with PLASA. Although different legislation may need to be taken into account, the establishment of best practice for rigging and health and safety is the priority. The principle is that if someone holds an NRC (regardless of geography) the same standards have been met. A subject expert would work closely with the local advisory group.

How much does it cost for an applicant?

ETCP

The cost for each examination is \$600, with a \$100 discount per examination available to members and employees of members of the following organizations: PLASA, AMPTP, CITT, IATSE, IAVM, InfoComm International, The Broadway League, TEA and USITT. Candidates who are taking multiple examinations will also receive a discount: \$400 (\$300 member cost) for the second examination if applying for the second examination



within one year of applying for the first exam. There is an additional fee of \$50 for any candidate testing internationally.

NRC

Currently a Level 2 NRC costs £500 + VAT and Level 3 costs £700 + VAT (VAT is currently 20%). There is a discount to PLASA premier members of 25%, and individual PLASA members get 10% discount.

Re-Certification

ETCP

The standards for certification programs in the United States require regular re-certification. ETCP certification is valid for five years; six weeks prior to their expiration date, certificants are required to renew their certification if they want to remain current. Continued training and professional development are essential in the changing entertainment technology environment; therefore, to maintain an ETCP Certification, a certificant must accumulate 40 renewal credits. Renewal credits may be gained through continued work experience and must include either attending training, teaching, serving as a Subject Matter Expert, or standards writing.

NRC

When an individual achieves the NRC they are awarded a certificate and an ID skills card. The certificate does not have an expiry date on it (like any UK accredited qualification) however the skills card does. The reasons for this are firstly to ensure anyone holding the card is current in their practice, secondly to ensure practice is in line with legislation changes or new technologies. The card has a five year expiry date on it. The card is reissued providing evidence of continued practice is provided and any other changes to assessment criteria are met. It is not required to do the complete assessment again.

Summary

We believe that PLASA's Skills programs have enhanced safety, encouraged training and increased responsibility in the entertainment technology industry. It is critical, when considering which type of certification process you may want to adopt for your region, that you take into account all applicable laws, regulations and standards.

It is also important that you consider all relevant issues including the geographic size of your target area, the size of the candidate pool, the legal climate of that area and potential liability issues for both the certifying organization and any volunteers or staff who might be involved.

Launching a program in your region requires a major long-term commitment in terms of resources - financial and human - from you and your supporters. It is important to build a wide coalition of support among all stakeholders including employers, venues, union and non-union labour, industry associations, and subject matter experts.



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