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**INTERNATIONAL ELECTROTECHNICAL COMMISSION SYSTEM FOR CERTIFICATION  
TO STANDARDS RELATING TO EQUIPMENT FOR USE IN EXPLOSIVE ATMOSPHERES  
(IECEx SYSTEM)**

**Circulated to: Ex Management Committee, ExMC**

**TITLE: A proposal from the US/NC IECEx Member Body:**

**“IECEx Certification Training Centre Scheme”**

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**INTRODUCTION**

This document contains a proposal from the US/NC IECEx Member Body proposing an initiative for the evaluation and qualification of Ex Training Centres.

This document is issued for consideration during the 2012 ExMC Calgary meeting.

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July 3, 2012

Mr Chris Agius  
Secretary IECEX  
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AUSTRALIA

**Subject:** 2012 ExMC Proposed Agenda Item, IECEX Certification of Training Centers Scheme

Dear Mr. Agius:

Since the introduction of IECEX Certification of Personal Competency, there has been one lingering question. How can an ExCB that issues an ExCoPC Certificate be assured that the training the individual has received is of value and is comprehensive? In addition, there are numerous specifications, particularly in the petroleum and mining industries, that employers must evaluate the merits of their employees (and in some cases contractors) training and education. To this we recognize the need for an independent, voluntary IECEX assessment program for Ex Training Centres.

While the safety record of some Ex installations has improved, there is still for the most part an industry need for adequate, recognized, Ex training. The existence of qualified IECEX Training Centres would provide an even greater awareness of this resource for industry, and will provide one more tool towards improving their overall safety levels.

IECEX assessment and qualification of training centres will ensure adequate and consistent Ex training is available at the national and international levels, similar to programs operating in the UK (i.e. CompEx used by the oil industry in the North Sea), Norway, and a few other countries, and will provide an additional resource for the IECEX CoPC program. The benefits include providing assurance of high quality training programs, consistency between training facilities, and ensuring that curriculums are up to date. Constantly evolving standards require companies that create training programs to reevaluate and revise them in order to remain relevant. The individual seeking training, as well as his or her employer, would like to know that the training centre has been assessed to the latest versions of the relevant rules and standards.

An ad-hoc working group of the USNC/IECEX consisting of Patricia Pasemko, Wayne Mayo, Paul House and Norm Ditrich were tasked to develop a proposal to IECEX for a program to independently qualify Ex training centres/programs. In addition, Wayne Mayo and Patricia Pasemko have expressed interest in continuing their involvement with this work including membership within ExCoPCC and its working groups.

Sincerely,

Secretary, USNC/IECEE

## **IECEX Training Centre Proposal**

The US National Committee for IECEx proposes an initiative for the evaluation and qualification of Ex Training Centres. We feel there is a need for an Evaluation/Assessment program to discern the overall quality and merits of training programs specified for Ex equipment, processes and services.

Since this development is aligned in part with the evaluation of personal competency then it is anticipated that this work be handled by the ExCoPCC – the IECEx Certificate of Personnel Competence Committee.

### **Background**

Training is specified for individuals in most National regulations for most industries, in particular for industries involved with electrical equipment. However, training of individuals involved with the installation, maintenance, inspection, and operation of facilities utilizing Ex equipment is for the most part not well regulated or specified at National levels.

The IECEx CoPCC provides a method for the evaluation of Ex workers utilizing 10 Units of Competency. Due to requirements such as ISO/IEC 17024, the assessment of individual's competency must be independent of their training. In addition, while training is evaluated towards the issuance of a Certificate of Personal Competence, there is as yet no means of identifying, auditing, and evaluating qualified centres for Training.

The proposal centres on industry needs for qualified training of individuals involved in the design of Ex facilities, the installation, maintenance and repair of Ex equipment, and in the inspection of Ex facilities. The purpose of the proposal is two-fold:

- (1) A complementary program to the Certification of Personal Competency program, to provide one means of assurance that the Ex education and training has come from a Training program that has been evaluated and audited on the basis of its own merits.
- (2) A program to provide industry with an IECEx set of recognized, evaluated Training Centres that allow additional assurance their employees have suitable Ex training and knowledge base. The merit-based evaluation method provides avenues for Ex Training Centres to target specific equipment along with the specific relevant parts of the IEC TC31 standards.

It is one goal of this initiative to provide a means to evaluate and to recognize Training programs that meet the rigorous requirements of the IEC TC31 standards and to provide additional support for the evaluation of personnel towards a Certificate of Personal Competence. It is the ultimate goal of this initiative to assist industry in the improvement in safety at Ex facilities, and in conjunction to support and promote regulatory requirements for safety in Ex installations.

## **Working Group Terms of Reference**

The objective of the IECEx qualification of Training Centres is to provide qualification of training centres inclusive of courses, facilities, and instructors for the purpose of providing training for individuals engaged in various aspects of equipment for use in explosive atmospheres. This includes but is not limited to the design of facilities, the installation, maintenance and repair of equipment, and the inspection of facilities. The training aspects may be specified to be correlated with the competencies specified in the IECEx Certification of Personnel Competencies Scheme or directly correlated to the IEC TC31 standards, or both.

## **The Concept**

(1) To provide certification bodies that are qualified to issue CoPCs a means to verify that a person's Ex training is adequate, thorough, and covers the appropriate subjects, and (2) to provide employers with qualified Ex training programs to assist in their evaluation of the skills of employees.

## **Elements of the IECEx Training Centres Proposal**

The ad-hoc committee considered how the proposed scheme best fits within the IECEx structure and elected as a guide the basic structure of other IECEx programs. However, it is recognized that the final form is best left to the IECEx CoPCC. The attributes most commonly accepted relative to the structure includes the following:

- Independence from CoPCC in that training from a qualified centre can be used towards the evaluation of individuals by employers and by CoPCC towards the evaluation of individual candidates for certification.
- The program is voluntary, in the sense that training other than that offered by qualified IECEx Training Centres can be used towards the evaluation of individuals for CoPC or by employers, recognizing that training from non-qualified institutions will likely require greater scrutiny.
- The program includes assessment of Training Centres curriculum against the relevant IEC TC31 standards or relevant (stated) parts thereof, assessment of the personnel involved including their experience and training, and the assessment of the quality system of the institution.
- The program relies on periodic IECEx audits of facilities and training programs, and for technical content the assessment is based strictly on the content of particular sections of particular editions of TC-31 standards, as specified in the Training course structure. This merit-based approach allows further development of the program without the need to further identify the particular technical aspects.

- Training Centres may provide programs in alignment with the Units of Competency as specified by ExCoPCC, or to particular parts or IEC TC31 standards, or both.

### **Further Development of the Proposal**

The ad hoc committee has prepared rough documents for consideration of the CoPCC towards potential further development, as follows:

1. Rules of procedure for the IECEX program for the assessment of Training Centres for Explosive Atmospheres
2. Procedures for IECEX acceptance of Certification Bodies (ExCBs) for the purpose of their providing an Assessment service for the qualification of Ex Training Centres
3. Procedures for the application from a candidate IECEX Training Centre including documentation and information requirements
4. Procedures for the assessment of a candidate IECEX Training Centres by an ExCB
5. Quality System requirements for IECEX Training Centres

At this point there is a need for peer review at the International level for further refinement and consideration for advancement.

### **Considerations for Further Development**

The following are considerations for the further development within the CoPCC:

- The terminology of the assessment/qualification of Training Centres needs further definition. Consideration should be given towards Certification, but other terminology such as accreditation, credentialing, endorsement, and recognition are also possible.
- According to the requirements of ISO/IEC 17024, the evaluation of competency must be proven to be separate and impartial from the training aspects of individuals. The development needs to determine how best to implement this in the rules of the program. For example, is it allowed that ExCBs that offer CoPC can also assess other organizations for their training programs? Further, is it allowed that an ExCB that offers CoPC could further provide training programs qualified by IECEX? Care must be taken in that the ExCB is not assessing their own programs for training.

- If a Training Centre provides a certificate of completion, it must be recognized that this does not also convey any implication of competency, which requires an assessment of individual's experience and skills along with education. So the further development needs to define limits on the meaning of a training certificate. The standard ASTM E2659-09 provides guidance on this.
- Further refinement and definition for the assessment of course instructors is needed, to better define the minimum qualifications for the courses being offered.
- Further review is needed towards the evaluation of the Quality System of Training Centres, in particular towards the overall scope and level for the assessments.

## **Resources for Further Development**

### **Regulations Specifying Training of Workers in Ex Areas**

In our review of various countries, we have found little in the way of regulations that specify specific training in Ex areas or on Ex equipment. There are some regulations in existence, for example the ATEX Directive 137 (1999/92/EC) regarding the health and safety of workers, which specifies that the employer must provide workers in Ex areas with sufficient and appropriate training with regard to explosion protection. Similarly DSEAR (2002) in the UK has specified that training is required. However, the nature and depth of the training is left unspecified in these Regulations.

In the USA, OSHA indicates training for workers, especially on or around electrical equipment, but additional training is not specified for Ex types of equipment. There are industry sectors such as those under the US Department of the Interior (particularly BOEM and BSEE) that specify training for the specific equipment involved.

Overall, we found there is a great need for improvement in the definition of Ex Training requirements at the Regulatory level – what individuals within an organization and what skills and training are needed. The IECEX CoPCC has done a great job in helping to focus on these deficiencies and to provide more insight on the subject, but more work is still needed at the National levels.

In terms of specifications within industry standards, the IEC TC31 standards (and the corresponding EN standards) call out specifications for the qualifications for personnel in the 60079 standards for installation, maintenance and repair. However, it is left to the employers to determine exactly what level of training is mandatory.

In general, private industry sectors have taken on the role of guidance to cover the training needs and to provide guidance for employers on Ex training for individuals. It is in the strength of these existing industry based programs that we see the potential for further growth and awareness of qualified Ex training through the support of IECEX.

Specifically:

ATEX 137 (1999/92/EC) – Specified as the “minimum requirements for improving the safety and health protection of workers potentially at risk from explosive atmospheres”.

This document further applies Directive 89/391/EC (regarding the assessment of risks to workers' health and safety at work) to direct the employer to draw up an explosion protection document which includes the identification of the hazards, the evaluation of risks, and the definition of specific measures to safeguard the health and safety of workers at risk from explosive atmospheres. The explosion protection document is specified to, among other things, ensure that the workplace and work equipment are designed, operated and maintained with due regard for safety, and that arrangements have been made for the safe use of work equipment.

Regarding training of workers, Annex II, Section 1.1 states “The employer must provide those working in places where explosive atmospheres may occur with sufficient and appropriate training with regard to explosion protection.”

DSEAR (2002) – UK Regulation – The Dangerous Substances and Explosive Atmospheres Regulations 2002

As one example of a National regulation, DSEAR draws on the ATEX regulation and provides some additional depth in detail, as indicated in the following highlights. Overall we found DSEAR providing a suitable model for other National regulations.

5. (4) (c) Where an explosive atmosphere may occur at the workplace and subject to the transitional provisions in regulation 17(1) to (3), sufficient information to show—  
(i) those places which have been classified into zones pursuant to regulation 7(1);  
(ii) equipment which is required for, or helps to ensure, the safe operation of equipment located in places classified as hazardous pursuant to regulation 7(1);  
(iii) that any verification of overall explosion safety required by regulation 7(4) has been carried out; and  
(iv) the aim of any co-ordination required by regulation 11 and the measures and procedures for implementing it.

7. (4) Before a workplace containing places classified as hazardous pursuant to paragraph (1) is used for the first time, the employer shall ensure that its overall explosion safety is verified by a person who is competent in the field of explosion protection as a result of his experience or any professional training or both.

9. (1) Where a dangerous substance is present at the workplace, the employer shall provide his employees with— (a) suitable and sufficient information, instruction and training on the appropriate precautions and actions to be taken by the employee in order to safeguard himself and other employees at the workplace

11. Where two or more employers share the same workplace (whether on a temporary or a permanent basis) where an explosive atmosphere may occur, the employer responsible for the workplace shall co-ordinate the implementation of all the measures required by these Regulations to be taken to protect employees from any risk from the explosive atmosphere.

OSHA 29CFR1910.399 – The USA Occupational Safety and Health regulations specify that individuals working on or near electrical equipment need to be qualified, but at this point there are no specific training requirements for individuals working on or near Ex equipment. In particular it states:

Qualified person. One who has received training in and has demonstrated skills and knowledge in the construction and operation of electric equipment and installations and the hazards involved.

Note 1 to the definition of "qualified person:" Whether an employee is considered to be a "qualified person" will depend upon various circumstances in the workplace. For example, it is possible and, in fact, likely for an individual to be considered "qualified" with regard to certain equipment in the workplace, but "unqualified" as to other equipment.

Note 2 to the definition of "qualified person:" An employee who is undergoing on-the-job training and who, in the course of such training, has demonstrated an ability to perform duties safely at his or her level of training and who is under the direct supervision of a qualified person is considered to be a qualified person for the performance of those duties.

## **Standards and Other Resources for Training of Workers in Ex Areas**

The IEC TC-31 standards including but not limited to the 60079 and 80079 series. For the installation, maintenance and repair aspects, the relevant standards and clauses are IEC 60079-14 4.0-4.4, IEC 60079-17 4.0-4.2, and IEC 60079-19 2.0-4.4.

The IAF (International Accreditation Forum, Inc.) provides guidelines for certification to ISO/IEC 17024. While this document is for the certification of persons, it may provide guidelines for the separation of training and certification of individuals.

The IDAC (International Association of Drilling Contractors) offers DIT – their Drilling Industry Training Accreditation Program.

JTL (provides training and competency services for the EEMUA rules and the CompEx Competency Scheme in the UK) might be contacted to provide information about their rules surrounding the independence of instructors and assessors.

The US Department of the Interior through BOEM (Bureau of Ocean Energy Management) provides criteria and safety rules through SEM (Safety and Environmental Management Systems) in 30CFR250.1915(a)(d) and 30CFR250.114(a)(b)(c) which incorporates by reference API RP14F and API RP14FZ for the design and installation of electrical systems on offshore production platforms.

The US American National Standards Institute has the document ANSI-PCAC-GI-505 – Guidance on Scope, Authority, and Organizational Structure of the Certification Body which includes a definition for Conflict of Interest relative to certification and training “For example, individuals who have access to the examination should not author study guides or conduct training programs leading to the preparation of the examination.” ANSI offers additional guidance in several other related documents.

The US API (American Petroleum Institute) offers the Training Provider Certification Program (TPCP) based on their recognition of the need for “a third-party certification program to evaluate and certify a variety of oil and gas industry training courses”.

The API also maintains RP-75, the Recommended Practice for the Development of a Safety and Environmental Management Program for Offshore Operations and Facilities.

The US NMA (National Mining Association) has developed their CORESafety program that focuses on mine safety through a 20-step program including training and enhanced safety guidelines affecting employees and contractors.