## INSTITUTE OF CORROSION

## Corrosion House, 5 St Peters Gardens, Marefair

## Northampton, NN1 1SX

**TEL: +44 (0) 1604 438222**

**E-mail: admin@icorr.org Web site: http://www.icorr.org**

***TYPE or PRINT in black ink. This form is available in e-format from http://www.icorr.org.***

*Note that this form will be photocopied. Please send your completed form, copies of Certificates and supporting documents to:*

*Institute of Corrosion, Professional Assessment Committee, CP Sub Committee Chairman.*

*Note that the Institute of Corrosion needs this information, in addition to details of any courses and examinations that you have undertaken to assess your experience and competence in the field.*

## PART 1 - PERSONAL INFORMATION (if not relevant, insert N/A)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Title  |  | Surname |  | Forenames |  |
| Present Grade of Membership (delete as required) | None / SustainingTICorr / ICorr / FICorr | Membership Number |  |
| Date of Birth |  |
| Telephone Mobile  |  |
|  Business  |  |
|  Home |  |
| eMail Business |  |
|  Home |  |
| Private Address (Including Postcode) |  |
| Business Address (Including Postcode) |  |
| Which address for communications? | Business / Home |
| ***Please indicate Sector/s Certification is to cover (tick as applicable)*** |
| On-land metallic structures |  | Marine metallic structures; |  |
| Reinforced concrete structures; |  | Inner surfaces of metallic structures containing an electrolyte |  |

#### PART 2 - EDUCATION AND TRAINING RECORD

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Institution / Course attended | Dates | Subject studied | Qualifications obtained | Year awarded | Margin to be used by referees to initial verification |
|  |  |  |  |  |  |

 **Publications.** *Please list any publications that you have written below. Copies of papers, reports in the public domain and patent specifications should be sent where a full library reference is not available.*

|  |  |
| --- | --- |
| **Title and Reference** | **Date Published** |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |

# PART 3 –PROFESSIONAL DEVELOPMENT AND EXPERIENCE

**It is essential that you provide full details of your knowledge and experience in each sector for which you are applying to be certificated. This may be by the provision of design reports, consultancy reports etc. that demonstrate your competence to become a Cathodic Protection Specialist Level 4. If these are not provided for each sector, then that sector can not be considered for assessment.**

Please give, in reverse chronological order, relevant dates and the titles of all posts you have held, the names of your employer(s), a description of your personal duties and responsibilities, plus details of any structured training undertaken (including apprenticeships).

An individual certificated to Level 4 shall be competent to:

a) design cathodic protection systems;

b) establish and validate cathodic protection criteria and testing procedures;

c) interpret standards, codes, specifications and procedures;

d) designate the particular cathodic protection test methods and procedures to be used,

e) interpret the reported results of cathodic protection testing and use them in performance verification;

f) determine any remedial actions.

g) carry out and supervise all level 1,2 and 3 duties;

Level 4 personnel shall have demonstrated:

1. detailed knowledge of corrosion theory, cathodic protection design, installation, commissioning, testing and performance evaluation including safety in at least one application sector,
2. competence to undertake without supervision the design of cathodic protection systems in at least one application sector;
3. sufficient theoretical knowledge and practical experience of cathodic protection to select cathodic protection testing methods, survey requirements and performance criteria;
4. competence to evaluate and interpret results of cathodic protection performance in accordance with existing standards, codes and specifications;
5. competence to assist in establishing testing and performance criteria where none are otherwise available;
6. a general familiarity with cathodic protection in other application sectors;

Level 4 personnel may, if authorised by the Institute of Corrosion or the Scheme Provider , present or supervise training and examinations to Level 1, 2 and 3 on its behalf via the Scheme Provider.

**Present Employer**

|  |  |  |
| --- | --- | --- |
| Employer  | Address | Margin to be used by referees to initial verification |
|  |  |
| Tel:  | Date joined |  |
|  |  |
| Post Title | Grade (if applicable) |
|  |  |
| *Please specify your present duties and responsibilities, e.g. by indicating to whom you are responsible, and the number and type of persons for whose work you are responsible.* *A description of your knowledge, experience and competence in Cathodic Protection engineering that demonstrate that you meet the requirements listed as items a) through n) on Page 4 in the each of the Sector(s) for which you are seeking Certification is essential.* |
|  |

|  |  |
| --- | --- |
| **Please include an organisation chart below or as a separate attachment.** | Margin to be used by referees to initial verification |
|  |  |
| Note: The organisation tree should show the chain of command in your present post and indicate your position in relation to your immediate supervisor, equivalent, and immediate subordinate staff. Against each post please indicate the name, initials and qualification of the holder and where appropriate the grade of membership of their professional body. Your own position should be marked by an arrow, and the number of persons under your control should be given if this is not clear from the diagram. You may provide, if you wish, not more than two organisation charts covering previous positions you have held which you consider are relevant to this application. |
| **Previous Employer/s**Please specify your duties and responsibilities, e.g. by indicating to whom you were responsible, and the number and type of persons for whose work you were responsible. A description of your knowledge, experience and competence in Cathodic Protection engineering in **each Sector** for which you are seeking Certification is essential. |
| **Item No** | **From***(Month**& Year)* | **To***(Month**& Year)* | **Name and address of employer, position held and nature of work.** | Responsibilities | ***Margin to be used by referees to initial verification*** |
|  |  |  |  |  |  |

|  |  |
| --- | --- |
| Please use the following space if there is any additional information that you feel is relevant to your application that is not covered elsewhere in this application. | ***Margin to be used by referees to initial verification*** |
|  |  |

APPLICANT’S UNDERTAKINGS

I wish to apply for registration as a Certificated Level 4 Cathodic Protection Specialist in the following Sector(s): (***please tick relevant boxes***):

|  |  |
| --- | --- |
| **Sector** | **Mark Yes or No** |
| **On-land Structures (**Buried pipeline externals which may cross river/estuaries etc, buried tank externals, external bottoms of above ground storage tanks, well casings etc.) |  |
| **Marine Metallic Structures** (Externals of fixed and floating offshore drilling and production facilities, ships, submarine pipelines, harbour installations, lock gates etc) |  |
| **Reinforced Concrete Structures** (Steel reinforcement or steel pre-stressing or embedded steel in concrete which is atmospherically exposed, buried or immersed in fresh or sea water. Includes buildings, bridges, piles, pipelines and other types of structures.) |  |
| Inner Surfaces of Metallic Structures Containing an Electrolyte (Internals of tanks, filters, pipelines, heat changers etc.) |  |

**Attestation**

In signing and completing this form I confirm that the information given above is truthful and accurate. I acknowledge that my Certification can be withdrawn by the Institute of Corrosion if any element of the above information is shown to be false and that such withdrawal can be published by the Institute.

I also accept that the Institute of Corrosion will maintain records of my Certification and may disclose them at any time to any enquirer seeking personnel Certificated in Cathodic Protection. The Institute of Corrosion is authorised to make contact with me by the details that I have provided above.

I am also accepting and agreeing to work within the Code of Ethics for the Institute of Corrosion Scheme for Certification of Inspection and Cathodic Protection Personnel as detailed below:

**Code of Ethics for ICorr Certification of Inspection and Cathodic Protection Personnel**

This code must be upheld by all personnel Certificated to levels 1- 5 under the Institute of Corrosion’s *ICorr Certification Scheme* for Inspection and Cathodic Protection personnel engaged in painting and coating inspection, cathodic protection, and in inspection of pipe coating, insulation, fire proofing and metallic coatings.

This Code was approved by the Council of the Institute of Corrosion in December 2013.

Before ICorr Certification or Re-certification can be issued, participants in the scheme shall sign this Code of Ethics and undertake to comply with the following:

1. I undertake to uphold the dignity and good standing of my profession and the Institute of Corrosion and its Certification Scheme; I will observe the highest standards of ethical behaviour and obey local laws.
2. I will exercise due skill, care and diligence in all of my professional activities.
3. I acknowledge that my activities may impact on the health and safety of individuals, of the public at large, on the safety of plant and facilities on which I work and on the environment; I will be rigorous in the execution of my professional activities.
4. I shall not use ICorr Certification to mislead any individual, employer or authority by presenting it as testimony that applies to any task outside the scope of the Certification as declared on the ICorr Certificate. I shall not permit my ICorr Certification to be used by any other party nor shall I knowingly permit my Employer or others to misuse the Certification documents issued to me.
5. I shall always endeavour to become fully familiar with my duties and understand the scope of my authority prior to performing work. I shall not accept duties for which I am not trained and proficient; if I am requested to do so I will request – (in writing) – to receive additional training and mentored experience.
6. I recognise that it is my duty to perform tasks as I have been contracted to do and I shall not allow deviations from specified requirements unless given permission – (in writing) – to do so by a higher authority.
7. I will report – (preferably in writing) – to a higher authority if I am aware of any specified requirements which may lead to adverse work or conditions which were not intended.
8. I will endeavour to perform inspections, tests, measurements and any other work for which I have been contracted to the best of my ability and will inform my superior(s) – (in writing) – if I am unable to do so.
9. I will not accept gratuities of any kind which may affect my judgement in the work that I am performing as an ICorr Certificated individual.
10. I will endeavour to be fair, reasonable and objective towards the requirements for which I perform at all times.
11. I will not allow my work to be influenced by personalities or other individual considerations.

I hereby agree to uphold and abide by this code and I acknowledge that I may be subject to a disciplinary procedure which could result in loss of Certification if it can be proven that I have failed to comply or have provided false information associated with my participation in the scheme.

|  |  |  |
| --- | --- | --- |
| Name (Print) | Signature of Applicant: | Date |

**OPTIONAL**

As Level 4 Certificated Cathodic Protection Specialist you may be eligible to apply for the Professional Membership Grade in the Institute of Corrosion: MICorr. If you wish to apply for Professional Membership and thus become a full member of ICorr and gain all the associated benefits, please tick the **box**

|  |
| --- |
|  |

**Data Protection:** If your application is successful, details will be held on the Institute of Corrosion’s Certification Register database. This publicly available register will include your name, the Institute of Corrosion, and your Level 4 Certification Number. I Corr may wish to use the information you supply in order to be able to communicate with individuals effectively. Level 4 Certified Cathodic Protection Specialists have the right of access to their personal data held by I Corr and the right to prevent its use for direct marketing services.

|  |  |
| --- | --- |
| **If you wish to receive this information, please tick the box**  |  |

Please send your completed form, copies of Certificates and Professional Report

INSTITUTE OF CORROSION

Corrosion House,

5 St Peters Gardens

Marefair

Northampton, NN1 1SX

EXPERIENCE REPORT

It is essential that you provide full details of your knowledge and experience in each sector for which you are applying to be certificated.

This may be by the provision of design reports, consultancy reports etc. that demonstrate your competence to become a Cathodic Protection Specialist Level 4.

 If these are not provided for each sector, then that sector cannot be considered for assessment.

All applicants are to fill in Table 1 and 2. Only complete Sector Table(s) 3 to 6 for the Sector/s for which you are applying to indicate your experience in the relevant tasks for Level 4 Certification. (See ICORR QUALIFICATION PROCEDURE DOCUMENT (CP)

 Please put a line through/delete/remove the sectors not included..

**NOTE: To Applicant and Verifier:**

It is expected that during their time of experience, before and after Certification, ALL of the tasks below have been taught to the Applicant, in the field or in the classroom, by his colleagues, his employer and his Level 4 Cathodic Protection supervisors. We rely on the Applicant and the Verifier to be honest and rigorous in the assessment below of whether the Applicant is competent in their understanding and execution of the specific tasks below and whether the Applicant undertakes them regularly (at least once per month) (R). The Institute of Corrosion reserves the right to call Applicants for interview or examination in order to prove the validity of a proportion of applications for Certification.

Please enter N for any task that the Applicant does not understand and/or is not competent to undertake. Any Applicant indicating lack of understanding or competence in any task may be requested to carry out for additional training and assessment prior to awarding Certification by the Institute of Corrosion.

Please sign that you understand the above requirements:

Applicant……………………………………. Referees 1………………………………..

Print Names ………………………………… Referees 2………………………………..

Please complete the “Insert R, C or N” column:

R = Tasks you are deemed competent to carry out and have regularly carried out in your normal job activities.

C = Those tasks you are deemed competent to carry out although you present duties may not require them to be used regularly.

N = tasks with which you are not familiar and are not deemed competent.

Tasks to be fulfilled in all application sectors

Table 1 details tasks which shall be fulfilled by Level 4 whatever the application sector. The field of application of each of these tasks covers only the application sector of the certificated individual.

* **Table 1: Detailed Knowledge required by level 4 Applicants**

|  |  |  |
| --- | --- | --- |
| **Knowledge number** | **Description of knowledge** | **Insert****R,C or N** |
| 1 | Electricity relevant to CP application and measurements |  |
| 2 | Corrosion, electrochemistry and coatings relevant to CP |  |
| 3 | Theory, principles and criteria of CP |  |
| 4 | Requirements related to application of CP |  |
| 5 | Application methods of CP, galvanic anodes, impressed current |  |
| 6 | CP measurements and test procedures |  |
| 7 | Relevance of voltage gradient errors and influence on structure to electrolyte potential measurement |  |
| 8 | Factors influencing the correct selection of reference electrodes for potential measurements |  |
| 9 | Effects of excessive CP on coatings, high-yield strength steels and corrosion-resistant alloys |  |
| 10 | Diagnostics of CP systems |  |
| 11 | Interference conditions (alternating current and direct current) |  |
| 12 | Standards and codes of practice in the relevant application sector |  |
| Confirmation | Print Name | Signature | Date |
| Referee 1 |  |  |  |
| Referee 2 |  |  |  |

**Level 4 certificated personnel shall have a detailed knowledge of following standards for each applied sector:**

# Standards for On-Land Metallic Structures Application Sector

|  |  |
| --- | --- |
| BS EN 12954:2001 | Cathodic protection of buried or immersed metallic structures. General principles and application for pipelines |
| BS EN 13509:2003 | Cathodic protection measurement techniques |
| BS EN 13636:2004 | Cathodic protection of buried metallic tanks and related piping |
| BS EN 14505:2005 | Cathodic protection of complex structures |
| BS EN 15112:2006 | External cathodic protection of well casing |
| BS EN 18086:2017 | Corrosion of metals and alloys. Determination of AC corrosion. Protection criteria |
| BS EN 16299:2013 | Cathodic protection of external surfaces of above ground storage tankbases in contact with soil or foundations |
| BS EN ISO 15589-1: 2015  | Petroleum, petrochemical and natural gas industries - Cathodic protection of pipeline systems. Part 1: On-land pipelines |

# Standards for Marine Metallic Structures Application Sector

|  |  |
| --- | --- |
| BS EN 12473:2014 | General principles of cathodic protection in seawater |
| BS EN 12474:2001 | Cathodic protection for submarine pipelines |
| BS EN 12495:2000 | Cathodic protection for fixed steel offshore structures |
| BS EN 12496:2013 | Galvanic anodes for cathodic protection in seawater and saline mud |
| BS EN 13173:2001 | Cathodic protection for steel offshore floating structures |
| BS EN ISO 13174: 2012 | Cathodic protection of harbour installations |
| BS EN 13509:2003 | Cathodic protection measurement techniques |
| BS EN ISO 15589-2: 2015  | Petroleum, petrochemical and natural gas industries - Cathodic protection of pipeline systems. Part 2: Offshore pipelines |
| BS EN 16222:2012 | Cathodic protection of ship hulls |

# Standards for Reinforced Concrete Structures Application Sector

|  |  |
| --- | --- |
| BS EN ISO 12696:2016 | Cathodic protection of steel in concrete |
| [BS EN 13509:2003](http://shop.bsigroup.com/en/ProductDetail/?pid=000000000030105263) | Cathodic protection measurement techniques |
| BS EN 14038-1:2004 | Electrochemical realkalisation and chloride extraction treatments for reinforced concrete. Part 1: Realkalisation |
| DD CEN/TS 14038-2:2011 | [Electrochemical realkalization and chloride extraction treatments for reinforced concrete - Chloride extraction](http://shop.bsigroup.com/ProductDetail/?pid=000000000030185961) |

# Standards for Inner Surfaces of Metallic Structures Containing an Electrolyte

|  |  |
| --- | --- |
| BS EN 12499:2003 | Internal cathodic protection of metallic structures |
| BS EN 13509:2003 | Cathodic protection measurement techniques |

**Table 2: Tasks to be fulfilled by a level 4 applicants for all application sectors**

| **Task number** | **Description of task** | **Insert****R,C or N** |
| --- | --- | --- |
| 1 | Prepare technical reports |  |
| 2 | Prepare technical instructions |  |
| 3 | Collect general information for design purposes based on technical instructions for simple CP systems (as in Annex A Definitions) |  |
| 4 | Collect detailed information and data for design purposes |  |
| 5 | Check calibration validity of CP measuring and testing equipment based on documentation |  |
| 6 | Measure structure to electrolyte potential |  |
| 7 | Perform verification test of working portable reference electrode against master electrode of the same type based on measurement |  |
| 8 | Perform verification test of working portable reference electrode against another type of reference electrode |  |
| 9 | Perform verification test of stationary reference electrode against a portable reference electrode |  |
| 10 | Perform pre-commission testing |  |
| 11 | Check whether the positive output of the rectifier is connected to the anode and the negative output is connected to the structure |  |
| 12 | Identify a wrong polarity of the CP system by structure to electrolyte potential measurement |  |
| 13 | Perform start-up and commissioning |  |
| 14 | Record and report results of the measurements in a comprehensible format |  |
| 15 | Classify the results of the measurements |  |
| 16 | Define the limitations of application of the testing method according to established procedures |  |
| 17 | Interpret commissioning or performance verification data and prepare commissioning report, performance verification report or system review report for simple CP systems  |  |
| 18 | Interpret commissioning or performance verification data and prepare commissioning report, performance verification report or system review report for non-simple CP systems  |  |
| 19 | Measure current and voltage in the CP circuit |  |
| 20 | Carry out basic maintenance work on CP systems |  |
| 21 | Inspect and measure of DC power supply output current and voltage |  |
| 22 | Inspect and verify DC power supply overall operations |  |
| 23 | Inspect and maintain DC power supply output terminations if accessible without exposing persons to live AC equipment |  |
| 24 | Inspect and maintain DC power supply components |  |
| 25 | Verify DC power supply voltage and current outputs with portable calibrated meter |  |
| 26 | Routine and expected adjustment of current output to maintain pre-determined performance |  |
| 27 | Determine the validity of the data and analyse anomalies detected |  |
| 28 | Determine increase/decrease in current output to maintain optimum performance including remedial actions to correct anomalies and interferences |  |
| 29 | Ensure compliance with safety requirements related to application of CP in the application sector, task and competence level |  |
| 30 | Perform risk assessment of safety requirements related to application of CP in the application sector, task and competence level |  |
| 31 | Translate CP measuring and testing standards and specifications into technical instructions for CP measuring and testing, routine maintenance, and installations procedures |  |
| 32 | Investigate material weight loss corrosion when application of CP may be involved |  |
| 33 | Set up measuring and testing equipment and verify equipment settings |  |
| 34 | Investigate any case of material cracking when application of CP may be involved |  |
| 35 | Utilize new developments in science and technology of corrosion and CP along with field performance experience and participate in developing improvements to CP designs, operations, performance assessments and maintenance procedures |  |
| 36 | Write technical instructions for lower-level persons, supervise and train them in the practice of their tasks |  |
| 37 | Interpret and evaluate results in accordance with established standards, codes and specifications |  |
| 38 | Undertake, without supervision, simple CP system (as defined in Annex A) design works according to established procedures in a known environment  |  |
| 39 | Establish technical instructions including definition of CP test procedure and equipment to be used and the format for reporting data for tasks covered in standards, codes and specifications |  |
| 40 | Establish technical instructions including definition of CP test procedure and equipment to be used and the format for reporting data for tasks not fully covered in standards, codes and specifications |  |
| 41 | Interpret and evaluate results from all tests performed outside the scope of established standards, codes and specifications |  |
| 42 | Undertake complex CP designs |  |
| Confirmation | Print Name | Signature | Date |
| Referee 1 |  |  |  |
| Referee 2 |  |  |  |

**Work on the AC mains, side of transformer rectifiers is specifically excluded from the competence requirements of all levels of personnel. Regulations, training and specific certifications apply for work on mains voltage equipment.**

**Table 3: Specific tasks to be fulfilled by Level 4 Cathodic Protection Specialist for on-land metallic structures application sector**

| **Task number** | **Description of task** | **Insert****R,C or N** |
| --- | --- | --- |
| 1 | Measure metal to electrolyte natural (free corrosion) potential |  |
| 2 | Measure resistivity: four-pin Wenner |  |
| 3 | Measure resistivity: soil box methods |  |
| 4 | Measure resistivity: Schlumberger method |  |
| 5 | Calculate vertical resistivity distribution |  |
| 6 | Design simple CP systems. Examples are galvanic anode systems for small tanks in known soil conditions not affected by AC or DC stray current (as in Annex A Definitions) |  |
| 7 | Design non-simple CP systems (simple CP systems are as in Annex A Definitions) |  |
| 8 | Supervise the preparation of metallic surface for making cable connections and for repairing coating |  |
| 9 | Supervise the installation of cable connections: bolting, compression and conductive adhesive |  |
| 10 | Supervise the installation of cable connections: soldered, exothermic welded, pin brazed |  |
| 11 | Supervise the installation of galvanic anodes |  |
| 12 | Supervise the installation of DC power supply **(electrical AC supply excluded)** |  |
| 13 | Supervise the installation of deep anode impressed current groundbeds |  |
| 14 | Supervise the installation of shallow impressed current anode groundbeds |  |
| 15 | Supervise the installation of isolation devices |  |
| 16 | Supervise the installation of reference electrodes (including calibration) and coupons |  |
| 17 | Supervise the installation of AC mitigation earthing electrodes and DC decoupling devices |  |
| 18 | Verify the electrical continuity of all parts of the structure to be protected |  |
| 19 | Locate protected structure and of foreign metallic structures including buried steel-reinforced concrete and electrical earthing systems |  |
| 20 | Inspect and test electrical isolation |  |
| 21 | Measure structure to electrolyte ON potential |  |
| 22 | Measure structure to electrolyte instant OFF potential |  |
| 23 | Measure structure to electrolyte potential depolarization |  |
| 24 | Report measurements including comparison of measurement results to a selected CP criteria according to procedure |  |
| 25 | Perform close interval potential survey (ON or natural) |  |
| 26 | Perform potential measurement of structure to remote earth |  |
| 27 | Perform close interval polarized potential survey (ON/instant OFF) |  |
| 28 | Establish synchronization of current interruptions for instant OFF measurements |  |
| 29 | Confirm synchronization of current interruptions for instant OFF measurements |  |
| 30 | Measure ON and IR free potential as well as DC and AC current on coupons |  |
| 31 | Measure potential gradients in soil |  |
| 32 | Intensive measurements (see ISO 15589-1) |  |
| 33 | Perform AC frequency current signal attenuation measurements |  |
| 34 | Perform direct Current Voltage Gradient (DCVG), non-recording |  |
| 35 | Perform direct Current Voltage Gradient (DCVG), with recording of digital measurements |  |
| 36 | Perform Pearson surveys (ACVG) |  |
| 37 | Perform interference testing and measurement under interference conditions from a static (not time variant) DC source |  |
| 38 | Perform interference testing and measurement under interference conditions from a dynamic (time variant) DC source |  |
| 39 | Analyse and treat DC interferences from a static (not time variant) source |  |
| 40 | Analyse and treat DC interferences from a dynamic (time variant) source |  |
| 41 | Analyse and treat AC interferences from a static (not time variant) source |  |
| 42 | Analyse and treat AC interferences from a dynamic (time variant)source |  |
| 43 | Supervise cable and connection repair |  |
| 44 | Test casings for isolation from carrier pipe |  |
| 45 | Perform visual inspection of simple components of CP systems (e.g. test posts) |  |
| 46 | Perform visual inspection of coating for physical damage |  |
| 47 | Perform detailed inspection of coating and structure for damage |  |
| 48 | Test CP effectiveness under disbonded coating |  |
| 49 | Collect soil samples and deposits from the structure for laboratory corrosion analysis |  |
| 50 | Perform basic chemical and microbiological field test |  |
| 51 | Measure extent of corroded area |  |
| 52 | Assess data and determine cause of corrosion and remedial action |  |
| 53 | Perform E-Log I survey |  |
| 54 | Perform potential surveys of buried pipelines across bodies of water (lakes, rivers, estuaries) |  |
| 55 | Perform current requirement test for pipelines, plants, horizontal directional drilling, etc. |  |

**Table 4  Specific tasks for marine metallic structures application sector for Level 4**

| **Task number** | **Description of task** | **Insert****R,C or N** |
| --- | --- | --- |
| 1 | Design simple CP systems (as in Annex A Definitions)Examples are systems for buoys, small boats |  |
| 2 | Design non-simple CP systems (simple CP systems are as in Annex A Definitions) Examples are systems for coastal, offshore and submarine facilities, floating production and storage structures, ships |  |
| 3 | Supervise installation of galvanic or impressed current anodes and monitoring systems |  |
| 4 | Supervise installation of DC power sources **(AC power supply excluded)** |  |
| 5 | Supervise installation of isolation devices |  |
| 6 | Verify the electrical continuity of all parts of the structure to be protected |  |
| 7 | Measure structure to electrolyte potential in seawater from surface with portable reference electrode |  |
| 8 | Measure structure to electrolyte potential in seawater from surface with monitoring systems (permanent reference electrodes and connection by cables or acoustic transmission) |  |
| 9 | Measure structure to electrolyte potential in seawater with portable reference electrode connected to measurement system on surface |  |
| 10 | Measure structure to electrolyte potential in seawater by combined measurement device including reference electrode, voltmeter and contact tip |  |
| 11 | Measure anode current output from surface using monitoring systems (monitored anodes and connection by cables or acoustic transmission) |  |
| 12 | Measure current output of stand-off anodes using underwater clamp meter |  |
| 13 | Measure potential gradient in seawater |  |
| 14 | Organize underwater potential and/or anode current output surveys for simple CP systems (as in Annex A Definitions) Examples are systems for buoys, small boats |  |
| 15 | Organize underwater potential and/or anode current output surveys for non-simple (simple CP systems are as in Annex A Definitions) applications of the application sector |  |
| 16 | Analyse the results of potential and/or anode current output surveys for simple CP systems (as in Annex A Definitions) Examples are systems for buoys, small boats |  |
| 17 | Analyse the results of potential and/or anode current output surveys for non-simple (simple CP systems are (as in Annex A Definitions) applications of the application sector |  |
| 18 | Measure current and voltage in the CP circuit |  |
| 19 | Inspect and measure DC power sources output current and voltage |  |
| 20 | Inspect and verify DC power sources overall operations |  |
| 21 | Inspect and maintain DC power sources output terminations and check polarity |  |
| 22 | Verify DC power sources voltage and current outputs with portable calibrated meter |  |
| 23 | Interpret data |  |
| 24 | Review video record of inspection of structure and CP system with respect to physical damage, coating damage, corrosion damage |  |
| 25 | Supervise measurement of extent of underwater corroded area |  |
| 26 | Measure resistivity of seawater or mud with soil box |  |
| 27 | Measure resistivity of seawater by conductivity meter or salinity or chlorinity |  |
| 28 | Perform interference testing |  |

**Table.5 Specific tasks for reinforced concrete structures application sector for Level 4**

| **Task number** | **Description of task** | **Insert****R,C or N** |
| --- | --- | --- |
| 1 | Test electrical continuity of reinforcement to allow accurate potential measurements |  |
| 2 | Measure steel to concrete natural potential in concrete |  |
| 3 | Measure “Half Cell Potential Survey” (close interval survey natural potential) |  |
| 4 | Process potential data for mapping |  |
| 5 | Locate reinforcement with cover meter |  |
| 6 | Measure cover to reinforcement with cover meter |  |
| 7 | Supervise or undertake the collection of concrete drilling dust or core samples for chloride testing |  |
| 8 | Interpret chloride analysis results |  |
| 9 | Test carbonation to broken or cored concrete |  |
| 10 | Measure concrete resistivity (two pin or four pin) |  |
| 11 | Inspect surface of reinforcement when exposed for corrosion or physical damage |  |
| 12 | Measure pit depth with suitable gauge |  |
| 13 | Inspect surface of pre-stressing steel when exposed for corrosion or physical damage |  |
| 14 | Design CP system and other electrochemical treatments |  |
| 15 | Measure reinforcement electrical continuity (resistance and potential techniques) |  |
| 16 | Supervise reinforcement electrical continuity bonding and retest |  |
| 17 | Supervise installation of cable connection to reinforcement or embedded/surface mounted metallic items: mechanical |  |
| 18 | Supervise installation of cable connection to reinforcement or embedded/surface mounted metallic items: exothermic/welded/pin brazed |  |
| 19 | Supervise installation of cable connection to pre-stressing steel |  |
| 20 | Supervise installation of anode systems: galvanic and impressed current |  |
| 21 | Supervise connections of cables to anodes and (if applicable to anode system) primary anode system installation into secondary anode system |  |
| 22 | Supervise installation of reference electrodes, sensors and coupons |  |
| 23 | Supervise installation of DC power supplies and monitoring system **(electrical input AC excluded due to regulations/safety)** |  |
| 24 | Measure anode to reinforcement isolation (resistance and potential techniques) |  |
| 25 | Measure anode circuit continuity or resistance |  |
| 26 | Measure cathode and test circuit continuity or resistance |  |
| 27 | Correct or remove anode to reinforcement short circuit |  |
| 28 | Set up synchronized current interruptions for instant OFF potential measurements |  |
| 29 | Measure ON and instant OFF potential and current at permanently installed reference electrodes and coupons |  |
| 30 | Measure ON and instant OFF potential and potential decay from instant OFF at permanently installed reference electrodes |  |
| 31 | Survey/measure potential decay from instant OFF over concrete surface using portable reference electrodes |  |
| 32 | Perform interference testing |  |

**Table.6  Specific tasks for inner surfaces of metallic structures application sector**

**Level 4**

| **Task number** | **Description of task** | **Insert****R,C or N** |
| --- | --- | --- |
| 1 | Measure resistivity of electrolyte: soil box |  |
| 2 | Measure resistivity of electrolyte: conductivity meter |  |
| 3 | Design simple CP system, e.g. a small, plane surface, open tank containing sea water with regular but slow water replenishment (as in Annex A Definitions) |  |
| 4 | Design a non-simple CP system (simple systems are as in Annex A Definitions)) |  |
| 5 | Design CP taking into account impact on CP performance and safety implications of anodic and cathodic reactions, producing gasses (notably hydrogen and chlorine) and changing pH |  |
| 6 | Supervise installation of galvanic anodes |  |
| 7 | Supervise installation of impressed current anodes and reference electrodes |  |
| 8 | Supervise installation of DC power supply (electrical AC supply excluded) |  |
| 9 | Supervise installation of isolation devices |  |
| 10 | Verify the electrical continuity of all parts of the structure to be protected |  |
| 11 | Supervise and verify cable connections |  |
| 12 | Inspect and measure isolation devices |  |
| 13 | Measure metal to electrolyte natural potential |  |
| 14 | Measure metal to electrolyte ON potential |  |
| 15 | Measure metal to electrolyte instant OFF potential |  |
| 16 | Set up and confirm synchronized current interruptions for instant OFF measurements |  |
| 17 | Measure ON potential and current as well as IR free potential on coupons |  |
| 18 | Test interference |  |
| 19 | Verify DC power supply voltage and current outputs with portable calibrated meter |  |
| 20 | Perform visual inspection of CP system components (e.g. galvanic anodes) with respect to damage |  |
| 21 | Perform visual inspection of vessel and coating with respect to physical and corrosion damage |  |
| 22 | Comply with the hygienic requirements on products and materials in case of contact with drinking water |  |

**REFEREES**

Referees should be Professional Members of the Institute of Corrosion who are established Cathodic Protection Engineers, (preferably Certificated Level 4) who have known the Applicant personally and professionally for a minimum of three years. Two Referees are required, one of whom has direct knowledge of the applicants employment. If the MICorr referees cannot be found, a Professional Member of an alternative Engineering Institute who has direct knowledge of the applicant’s employment (e.g. supervisor or line manager) will be acceptable.

.

I confirm that I have read the Criteria for Level 4 Certification and confirm that the applicant is competent to carry out the tasks listed above. I recommend that the applicant, to the best of my knowledge and belief, is a fit person to be registered as a Certificated Level 4 Cathodic Protection Specialist through the Institute of Corrosion. I agree, on request of the Institute of Corrosion, to provide a confidential written reference.

**Referee 1**

|  |  |  |  |
| --- | --- | --- | --- |
| Name |  | Qualification |  |
| Address |  | Signature |  |
| Date |  |
| Tel No |  | Email |  |

**Referee 2**

|  |  |  |  |
| --- | --- | --- | --- |
| Name |  | Qualification |  |
| Address |  | Signature |  |
| Date |  |
| Tel No |  | Email |  |

**Payment**

Please enclose the required registration and administration fee of £50 – applications will only be fully processed if registration and administration fees are paid in advance and in full.

**Please send the following information to Institute of Corrosion by separate secure means, e.g. post, fax or telephone.**

**Payment by cheque**

|  |  |
| --- | --- |
| **I enclose a cheque crossed and made payable to The Institute of Corrosion for £50** |  |

**Payment by credit card**

|  |  |
| --- | --- |
| **Visa/MasterCard only** |  |

**Please debit my credit card Visa/MasterCard (delete as appropriate)**

**Amount £50 + £3.00 administration fee for use of credit card**

**Cardholder’s name:**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Card Number** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **3 digit Security No** |  |  |  |  |

**Expiry date:**

**Cardholder’s address (if different from Applicant’s above)**

**Cardholder’s signature: Date:**

Please send your completed form, copies of Certificates and Professional Report (See Guidance Notes and Example) to the INSTITUTE OF CORROSION

For office tracking and recording

|  |  |
| --- | --- |
| **Name** |  |
| **Individual Application Number** | **CP** |  | **Date of Award** |  |
| **Individual Certificate Number** | **CP** |  | **Date for Renewal** |  |
|  | Checked by | Date |  | Checked By | Date |
| Received |  |  | Assessors |  |  |
| Fee paid |  |  | Committee Chairman |  |  |
| Acknowledged |  |  | Certificate |  |  |
| Referees |  |  | CP register |  |  |