CERTIFICATION SCHEME FOR WELDING AND INSPECTION PERSONNEL

DOCUMENT NO. CSWIP-DIV-9-03

Requirements for General Inspectors of Offshore Facilities

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Issued under the authority of the Governing Board for Certification
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CSWIP is administered by TWI Certification Ltd

FOREWORD

The Certification Scheme for Welding and Inspection Personnel (CSWIP) is a comprehensive scheme which provides for the examination and certification of individuals seeking to demonstrate their knowledge and competence in their field of operation. The scope of CSWIP includes Welding Engineers, Welding Technicians, Welding Inspectors, Welding Supervisors, Welding Instructors, General Inspectors and Underwater Inspection Personnel. CSWIP is accredited by the United Kingdom Accreditation Service.

CSWIP is managed by the Certification Management Board, which acts as the Governing Board for Certification in keeping with the requirements of the industries served by the scheme. The Certification Management Board, in turn, appoints specialist Management Committees to oversee specific parts of the scheme. All CSWIP Boards and Committees comprise member representatives of relevant industrial and other interests.

The CSWIP In-Service Inspection Management Committee is one such Management Committee and is representative of offshore operators, diving contractors and classification societies. This Committee oversees the scheme for General Inspectors.

ACCESS TO CERTIFICATION

Access to certification schemes is not improperly restricted. The sole criteria for certification are given in this document (and any subsequent amendments) and no other criteria will be applied. Certification is not conditional on the candidate applying for other services or membership from TWI Certification Ltd, its parent, or any other groups or associations.

1. General

1.1 Scope

This document describes the procedures by which personnel may be examined and if successful, certificated in relation to general inspection of offshore facilities. The scheme is intended to meet the majority of users' requirements to provide industry with an assured minimum standard of proficiency. The specialist user may add specific tests or requirements related to his own needs. The examination procedure is designed to test the candidate's grasp of the inspection methods and techniques, and his/her understanding of the operations he/she performs. The examination procedure involves written, oral and practical tests where appropriate.

Specimen written examination questions and syllabuses for the guidance of organisations and individuals preparing for certification are included as appendices to this document.

The policy of the CSWIP In-Service Inspection Management Committee is to keep all technical requirements under regular review to ensure that current industrial needs and new technology are adequately covered. It is therefore important for users of the new scheme to ensure that they are aware of any amendments to, or re-issue of, this document.

This document covers one grade of activity: this applies to individuals who are involved in general inspection.

1.2 Vision requirements

All candidates must provide evidence of an eye test within 12 months prior to examination showing unaided or corrected near visual acuity in at least one eye, such that the candidate is capable of reading N4 Times Roman type at a distance of not less than 30cm on a standard reading test chart.

1.3 Job responsibilities

Candidates will be expected to be able to apply appropriate inspection methods and techniques. They should be capable of maintaining appropriate job records, of preparing

written reports and of producing an adequate oral commentary on their work as and when required.

2. General Inspector, Grade OGI1

2.1 Training

Grade OGI1 candidates (except those taking advantage of the special dispensation, see section 1.4) will be required to have satisfactorily completed a CSWIP approved training course on the methods in which they are to be examined.

2.2 Approval procedure

Candidates will be required to satisfy the examiners in all parts of the examination.

2.2.1 Written examination

The test will include a written examination consisting of:

a) 50 multi-choice questions which will include questions on concrete structures, and

b) Five questions requiring longer written answers, one from each of five sections:

i) visual inspection, structure and superstructure
ii) visual inspection, pipeline and pipework
iii) recording methods
iv) protective coatings
v) NDT methods (basic general knowledge) and A-Scan thickness measurement.

An oral examination will normally only be required in the case of candidates attempting retests following failure in the written examination. It will be designed to reveal the candidate's background knowledge and experience in the inspection and NDT techniques on which he/she is being examined.

2.2.2 Practical examination

All practical examinations will be conducted using a mock-up structure. For examination purposes ladder or platform access will be available for the areas to be inspected. As part of the examination an adequate oral commentary by the candidate during inspection work will be required.

Not more than 2.5 hours will be allowed for practical tests.

The practical examination will consist of conducting inspection and reporting the results in all the following areas:

i) visual examination of a steel structure
ii) coating inspection
iv) digital photography
v) video with oral commentary
vi) written report on a feature.

3. General Information

3.1 Examination equipment and specimens

For the OGI1 examination, suitable structures are situated at test centres and all necessary video, photographic, and ultrasonic equipment is provided.

3.2 Application for examinations and fees

Applications must be made on the appropriate application form to the examining organisation, details of which are given at the end of this document. Application forms ask for specific details of experience, training and health and must be signed confirming that these details are correct and supported by such other documents as may be necessary to confirm that the candidate is eligible for examination. No applications can be confirmed until receipt of a correctly completed application form and the full fee. In the event of a false statement being discovered any certificate awarded as a result of the test will be null and void.

3.3 Certification

3.3.1 Results notices

All candidates will be sent a results notice. This notice will also be sent to the organisation paying the examination fee, if not paid by the candidate.

3.3.2 Successful candidates

Two copies of a certificate of proficiency will be issued to the sponsoring organisation or person, i.e. self employed or self sponsored candidates will receive both copies of the certificate.

Duplicate certificates to replace those lost or destroyed will be issued only after extensive enquiries.

3.3.3 Unsuccessful candidates

Brief details of the reasons for failure will be given in the results notice sent to the candidate and to the organisation paying the fees.

Candidates who fail part(s) of the initial examination may attempt one retest of the failed part(s) provided such retest is completed within six (6) months. Candidates who do not complete the retest within the specified time or those who are again unsuccessful will be treated thereafter as initial candidates.

Candidates are strongly advised to arrange some individual refresher training through one of the CSWIP approved training establishments.

3.3.4 Validity of certificates

Certificates will be valid for five years from the date of completion of the original test. The renewal procedure after five years is described in Section 3.4.

Certificates issued as a result of previously failed parts of the examination will be valid from the date of completion of the original test as described above.

Certificates are only valid provided:

a) they are within certification period
b) they are on standard cream CSWIP paper bearing the CSWIP logo, black on gold, signed by an officer of CSWIP and embossed with the CSWIP stamp
c) all fees have been paid.

Photocopies are unauthorised by CSWIP and should be used only for internal administration purposes.

3.3.5 Complaints and appeals

Any ‘party’ which considers itself to have reasonable grounds for questioning the competency of a CSWIP qualified person may petition the In-Service Inspection Management Committee for withdrawal of that person’s certificate. Such a petition must be accompanied by all relevant

facts and if, in the opinion of the Committee, a prima facie case has been presented, a full investigation of the circumstances under dispute will be initiated. If the petition is substantiated to the satisfaction of the Committee, the person's certificate will be withdrawn and a further test will be required.

Appeals against failure to be certified or against non-renewal of a certificate may be made by the person concerned or the employer upon application in writing to the CSWIP In-Service Inspection Management Committee.

3.4 Five year renewal

To ensure continuity it is desirable for five year tests to be carried out up to six months prior to the final expiry date of the original certificate**.** If successful the certificate shall be dated five years from the original expiry date.

If for any reason it is not possible for the candidate to complete the renewal test before expiry of the original certificate, then the period during which the renewal test can be taken may be extended *for up to three months only* if application is made before, or within 30 days of, the expiry date. Requests for extra time should be made in the first instance to the CSWIP Secretariat, TWI Certification Ltd. It should be noted that this extra time does not change the expiry date on the certificate and work carried out beyond the expiry date has no certificate cover.

3.4.1 Experience

Candidates will be required to provide authenticated logged evidence of a minimum of 100 hours general inspection experience over the five year validity period of the current certificate, to be accepted for five year renewal examination.

Due to the degree of similarity in inspection practice, candidates may be permitted to count 3.1U or 3.2U underwater inspection hours toward the OGI1 five year renewal requirement subject to approval on application.

3.4.2 Five year renewal procedure

The five year renewal test consists of both theoretical and practical examinations. The theory will consist of OGI1 multi-choice of paper. The practical element will be as follows:

i) visual examination of a steel structure
ii) coating inspection
iv) photography
v) use of video with oral commentary

3.4.3 Failure of Five Year Renewal Examination

One retest of any part failed of the five year renewal examination is allowed within 6 months of the examination.

4. RECORDS

Records of all successful and unsuccessful candidates are maintained. These records are accessible to the In-Service Inspection Management Committee or its nominees at all reasonable times.

At all times the rules of CSWIP current at the time of the examination apply. The In-Service Inspection Management Committee will not be responsible for failure of candidates or their sponsors to inform themselves of these rules.

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CERTIFICATION SCHEME FOR WELDING AND INSPECTION PERSONNEL

GENERAL INSPECTORS

APPENDICES TO DOCUMENT CSWIP-DIV-9-03

Appendix 1:	Examination Syllabus
Appendix 2:	Specimen Written Examination Questions

APPENDIX 1: EXAMINATION SYLLABUS

Any aspects of the syllabus may be included in the written, oral and practical examination**.**

The level of knowledge required by the candidates varies according to the topic. To ensure comprehension by all parties the following terms have been selected to demonstrate an increasing level of knowledge.

DEFINITIONS

OUTLINE KNOWLEDGE:	The candidate must be familiar with the subject in outline terms. He/She should know that the topic exists and what it is applied to. In the context of inspection methods/techniques the candidate would be expected to know “what it is, what it does” but would not be expected to know the finer points of application of the technique.
KNOWLEDGE:	The candidate must have a working knowledge of the subject and be able to apply it.
DETAILED KNOWLEDGE:	The candidate must have a depth of knowledge sufficient to enable him/her to exercise judgement.

OGI1

GENERAL

1. INTRODUCTION

The candidate will demonstrate OUTLINE ***KNOWLEDGE*** in the following general areas:

The need for inspection in relation to the safety and integrity of offshore structures.
Basic terminology of steel structures, concrete structures, superstructures risers and pipeline facilities.
Basic knowledge of offshore production including process plant and pipework terminology.
Outline modes of failure and deterioration experienced on offshore facilities, risers and pipelines.
Appreciation of the roles and responsibilities of others - offshore installation managers offshore inspection engineers, inspection coordinators and verification bodies.
The importance of control documentation, accurate records and good communications.
The need for written procedures to control inspection activities.
Concrete terminology.

2. VISUAL INSPECTION

KNOWLEDGE OF:

Cleaning for the purpose of general inspection standards only (scraper, wire brush).
Potential hazards associated with deposits, scales and coatings and their removal.
Standards of surface finish.
Weld terminology.
Clamp, guide, support and steelwork terminology.
Identification of concrete defects.

DETAILED KNOWLEDGE OF:

Types of external visual defects and their likely locations on structures, risers and process pipework and utility plant
Welding processes; materials and edge preparations
Standard terminology for weld defects
Identification of visual weld defects and appreciation of likely weld defect locations
Dimensional checking, methods of estimation, direct and indirect measurement and principles employed in engineering practice.
Use of measurement tools (pit gauges, profile gauges, calipers).
The importance of written procedures in determining the level of inspection required.
The application of customer inspection, reporting and anomaly criteria.

3. RECORDING METHODS:

OUTLINE KNOWLEDGE OF:

Video equipment, use of copying and e-mailing images.
Structural and pipework component identification code systems.
Engineering drawing conventions, piping isometrics, PFDs and P&IDs

KNOWLEDGE OF:

Requirements for care in use and deployment of photographic and video equipment.
Digital photographic equipment, charging batteries and equipment maintenance.
Importance of size references, idents and record keeping.
Completion of inspection datasheets (calibration, description, location, dimensions, sketches, date, name, signatures, etc.)

DETAILED KNOWLEDGE OF:

Methods of setting up identification markers and size references.
Optimum lighting in photography and video, awareness of shadow and backlighting. Use of establishing, stand-off, close-up, macro and photomosaic views.
Use of video to give optimum results.
Narrative commentary during video inspection.

4. CORROSION

OUTLINE KNOWLEDGE OF:

General principles of corrosion and corrosion protection by protective coatings.
Awareness of corrosion rates in the offshore environment.

KNOWLEDGE OF:

Typical instances and causes of corrosion sites on structure, risers and pipework.
Appreciation of the criticality of corrosion on structure, risers and pipework.

DETAILED KNOWLEDGE OF:

Corrosion reporting requirements: (Anomaly criteria, category of corrosion, extent, depth, recording options).

5. COATINGS

OUTLINE KNOWLEDGE OF:

The purposes of coatings (anti corrosion, fire protection, blast protection, identification, insulation, high visibility, non-slip,).
Methods of coating application and repair, multi-layer coating systems.
Surface preparation requirements for coatings application.

KNOWLEDGE OF:

Types of coating (cladding, Thermal Sprayed Aluminium, enamel, epoxy, bituminous, elastomeric, cementitious, intumescent, retrofit mechanical) and their modes of deterioration and failure in-service.
Typical coating problems and their recognition.
Sites of typical coating problems.

DETAILED KNOWLEDGE OF:

Coating and coating defect terminology.
Visual inspection and reporting of coating condition.

6. NON-DESTRUCTIVE TESTING (NDT) TECHNIQUES

OUTLINE KNOWLEDGE OF:

Methods, capabilities and limitations of dye penetrant, magnetic particle, 'A' Scan ultrasonic equipment and eddy current inspection, ACFM and radiography.
Qualification schemes for NDT inspectors.

7. REPORTING AND REPORT WRITING

DETAILED KNOWLEDGE OF:

Principles of report writing.

The function of data sheets, logs, videos, photographs and recording media.
Importance of standard terminology, need for accuracy, simplicity, consistency, clarity and methodical approach.
Necessity of fluent verbal description during recorded inspection activities.
Necessity of post-inspection written reports.
Necessity of recognition and reporting of anomalies.
Quality control procedures relating to inspection.

APPENDIX 2: SPECIMEN WRITTEN EXAMINATION QUESTIONS

The examination is in two parts, A and B Both parts must be attempted and the total time allowed is 2 hours and 40 minutes.

PART A: Multi Choice Paper (1 hour)

50 questions have to be answered, 3 examples are included in this specimen paper

1. Which of the following equipment would you require to conduct a wall thickness survey on a section of pipe

   a) MPI system a)_____
   b) ACFM b)_____
   c) Photogrammetry c)_____
   d) None of the above d)_____

2. Which of the following is classed as a miscellaneous visual defect?

   a) Surface porosity a)_____
   b) Transverse fatigue crack b)_____
   c) Spatter c)_____
   d) Incompletely filled groove d)_____

3. Which of the following could be used to detect a fine surface breaking fatigue crack?

   a) Visual inspection a)_____
   b) ACFM b)_____
   c) Radiography c)_____
   d) None of the above d)_____

PART B: NARRATIVE PAPER (1 hour 40 minutes)

1 **Visual Inspection, structure and superstructure**

What are the key considerations in taking and recording close-up photographs during the course of inspection?

2 **Visual Inspection, pipelines and pipework**

Prepare a sketch of a typical Oil Export Riser from Pig Launcher to Lowest Astronomical Tide indicating all features of interest to a General Visual Inspection workscope.

3 **Recording Methods**

List the documentation you would expect to be provided with and the records (paper and other) that would be completed on a General Visual Inspection of Jacket Structure

4 **Corrosion Protection**

Report levels of coating breakdown

5 **NDT Methods**

Give a brief description of two NDT methods that could be utilised as part of a follow up inspection for fatigue defects in a crane pedestal.