

P61886-1

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Type of Project: Modify Existing Approved PAR

PAR Request Date: 22-Apr-2015

PAR Approval Date: 11-Jun-2015

PAR Expiration Date: 31-Dec-2017

Status: Modification to a Previously Approved PAR

Root PAR: P1886.1 **Approved on:** 06-Mar-2013

1.1 Project Number: P61886-1

1.2 Type of Document: Standard

1.3 Life Cycle: Full Use

2.1 Title: Subsea Equipment - Power Connectors, Penetrators and Jumper Assemblies with Rated Voltage from 3 kV (U_{max} = 3.6 kV) to 30 kV (U_{max} = 36 kV)

Changes in title: Subsea ~~Electrical Equipment Applications~~ - Power Connectors, & Penetrators and Jumper Assemblies with Rated Voltage from ~~1.2 kV (U_{max} = 3.2 kV) through 36 kV~~ to ~~U_m~~ 30 kV (U_{max} = 36 kV)

3.1 Working Group: 61886 Subsea Electrical Working Group (IAS/PCI/SubseaElec)

Contact Information for Working Group Chair

Name: Roy Jazowski

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3.2 Sponsoring Society and Committee: IEEE Industry Applications Society/Petroleum & Chemical Industry (IAS/PCI)

Contact Information for Sponsor Chair

Name: Robert Durham

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Contact Information for Standards Representative

None

4.1 Type of Ballot: Individual

4.2 Expected Date of submission of draft to the IEEE-SA for Initial Sponsor Ballot: 03/2016

4.3 Projected Completion Date for Submittal to RevCom: 08/2016

5.1 Approximate number of people expected to be actively involved in the development of this project: 40

5.2 Scope: This International Standard is applicable to single and three-phase wet-mateable and dry-mateable AC connectors, penetrators and jumper assemblies with rated voltage from 3 kV (U_{max} = 3.6 kV) to 30 kV (U_{max} = 36 kV).

Changes in scope: This standard ~~International Standard~~ ~~is applicable to~~ ~~connectors and penetrators rated 1.2 kV < U_m < 36 kV for subsea electrical applications. Connector assemblies are accessories to a single cable according to IEC 60502-1 dated 11/2009 and IEC 60502-three-phase dated 3/2005. This document presents design, testing, qualification, transportation, installation and operational requirements for wet-mateable and dry-mateable AC connector connectors, penetrators and penetrator jumper assemblies for with use rated in voltage subsea technology systems. Excluded from the 3 scope kV of (U_{max} this= standard 3.6 are kV) subsea to signal 30 and kV control (U_{max} connectors= and 36 penetrators kV).~~ ~~International Standard~~ ~~is applicable to~~ ~~connectors and penetrators rated 1.2 kV < U_m < 36 kV for subsea electrical applications. Connector assemblies are accessories to a single cable according to IEC 60502-1 dated 11/2009 and IEC 60502-three-phase dated 3/2005. This document presents design, testing, qualification, transportation, installation and operational requirements for wet-mateable and dry-mateable AC connector connectors, penetrators and penetrator jumper assemblies for with use rated in voltage subsea technology systems. Excluded from the 3 scope kV of (U_{max} this= standard 3.6 are kV) subsea to signal 30 and kV control (U_{max} connectors= and 36 penetrators kV).~~

5.3 Is the completion of this standard dependent upon the completion of another standard: No

5.4 Purpose: This document will not include a purpose clause.

Changes in purpose: The purpose of this standard is to define the requirements for the design, performance, qualification and testing for power connectors and penetrators for subsea electrical applications.

5.5 Need for the Project: Use of electrical power on the seabed is increasing. Both within the oil and gas and renewable industries there is an increasing use of electrical power equipment on the seabed. Subsea processing activities like compression and pumping require an increasingly higher amount of electrical power. Power generation, whether onshore or offshore requires development of equipment both for subsea transmission and distribution. The lack of accessibility (for replacement) defines strict requirements to reliability, beyond what is normally seen in topside applications.

Current standards for topside equipment do not include requirements related to equipment installed below the sea surface. Project/client specific specifications are used both for design and testing. The fact that equipment is qualified on a "per-project" basis, rather than to common standards, has several drawbacks:

- * Similar equipment is qualified to various type and routine test specifications, for instance for various clients.
- * Equipment has to be re-qualified for new projects that have slightly different requirements, for instance increased water depth.
- * Project specific ratings leading to higher number of equipment versions than strictly required.

As subsea equipment in many cases is interconnected to topside equipment, specifications for subsea equipment are considered to be within the TC 18 Scope.

All these issues lead to increased costs and schedule (for qualification testing), and also increased risk for failure (several qualification programs are performed on a high number of various designs). By standardizing tests and implement continuous improvement on fewer products, this risk will be reduced in the long term.

The SEPS JIP (Subsea Electrical Power Standardization Joint Industry Project) was established in 2010 by seven oil and gas companies, with the aim to develop common operator standards for subsea electrical power equipment and systems, and support further development of these into internationally recognized standards. This standard proposal is developed by SEPS. The aim for the SEPS JIP is to develop IEC/IEEE dual logo standards; hence both IEC and relevant ANSI/IEEE standards are referenced where applicable. Relevant equipment manufacturers have contributed with review and comments to the document.

Purpose of this standard is to define the requirements for the design, performance, qualification and testing for power connectors and penetrators for subsea electrical applications.

5.6 Stakeholders for the Standard: Oil & Gas Industries that use connectors and penetrators for subsea electrical applications.

Intellectual Property

6.1.a. Is the Sponsor aware of any copyright permissions needed for this project?: Yes

If yes please explain: SEPS JIP assigned rights of the draft to IEEE. A license agreement was signed in January 2014.

6.1.b. Is the Sponsor aware of possible registration activity related to this project?: No

7.1 Are there other standards or projects with a similar scope?: Yes

If Yes please explain: SEPS JIP has been developing a draft - Subsea Power Standard for High Voltage Connectors and Penetrators for use in subsea applications and wish to move the draft into IEEE under this working group and develop jointly with IEC.

and answer the following

Sponsor Organization: SEPS

Project/Standard Number: DNV-717-SEPS-001

Project/Standard Date:

Project/Standard Title: Subsea Power Standardization

HV Connectors and Penetrators

7.2 Joint Development

Is it the intent to develop this document jointly with another organization?: Yes

Organization: IEC TC 18

Technical Committee Name: Electrical Installation of Ships and of Mobile and Fixed Offshore Units

Technical Committee Number: TC 18

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8.1 Additional Explanatory Notes (Item Number and Explanation): 5.2 The scope was modified after joint development with IEC.

1.1 A change to the project number is needed. Because this is a joint development project with IEC, the project number will need to change from 1886.1 to 61886-1.