DEP SPECIFICATION

JETTY GANGWAYS

DEP 35.00.10.11-Gen.

February 2014

DESIGN AND ENGINEERING PRACTICE

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The information set forth in these publications is provided to Shell companies for their consideration and decision to implement. This is of particular importance where DEPs may not cover every requirement or diversity of condition at each locality. The system of DEPs is expected to be sufficiently flexible to allow individual Operating Units to adapt the information set forth in DEPs to their own environment and requirements.

When Contractors or Manufacturers/Suppliers use DEPs, they shall be solely responsible for such use, including the quality of their work and the attainment of the required design and engineering standards. In particular, for those requirements not specifically covered, the Principal will typically expect them to follow those design and engineering practices that will achieve at least the same level of integrity as reflected in the DEPs. If in doubt, the Contractor or Manufacturer/Supplier shall, without detracting from his own responsibility, consult the Principal.

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3) Contractors/subcontractors and Manufacturers/Suppliers under a contract with users referred to under 1) or 2) which requires that tenders for projects, materials supplied or - generally - work performed on behalf of the said users comply with the relevant standards.

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1. INTRODUCTION

1.1 SCOPE

This new DEP specifies requirements and gives recommendations for the detailed design, fabrication and installation of gangways utilized for shore-ship interface at oil and gas facilities. It includes the associated fire monitor system.

This DEP only considers shore-ship connections and replaces project specific specifications developed in the past.

The following related activities or systems are not covered by this DEP:

1. Dismantling of any existing facilities, including removals of civil, mechanical, and electrical work, if applicable.
2. Electrical feeder line to supply power to the gangway junction box.
3. Supply and installation of the gangway anchor bolts.
4. Hiring of floating cranes, work boats, construction crews, etc., necessary for the assembly, installation, and commissioning of the new gangway.
5. Delivery of gangway from the port of export to the job site.

1.2 DISTRIBUTION, INTENDED USE AND REGULATORY CONSIDERATIONS

Unless otherwise authorised by Shell GSI, the distribution of this DEP is confined to Shell companies and, where necessary, to Contractors and Manufacturers/Suppliers nominated by them. Any authorised access to DEPs does not for that reason constitute an authorisation to any documents, data or information to which the DEPs may refer.

This DEP is intended for use in facilities related to oil and gas production, gas handling, oil refining, chemical processing, gasification, distribution and supply/marketing. This DEP may also be applied in other similar facilities.

When DEPs are applied, a Management of Change (MOC) process shall be implemented; this is of particular importance when existing facilities are to be modified.

If national and/or local regulations exist in which some of the requirements could be more stringent than in this DEP, the Contractor shall determine by careful scrutiny which of the requirements are the more stringent and which combination of requirements will be acceptable with regards to the safety, environmental, economic and legal aspects. In all cases, the Contractor shall inform the Principal of any deviation from the requirements of this DEP which is considered to be necessary in order to comply with national and/or local regulations. The Principal may then negotiate with the Authorities concerned, the objective being to obtain agreement to follow this DEP as closely as possible.

1.3 DEFINITIONS

1.3.1 General definitions

The **Contractor** is the party that carries out all or part of the design, engineering, procurement, construction, commissioning or management of a project or operation of a facility. The Principal may undertake all or part of the duties of the Contractor.

The **Manufacturer/Supplier** is the party that manufactures or supplies equipment and services to perform the duties specified by the Contractor.

The **Principal** is the party that initiates the project and ultimately pays for it. The Principal may also include an agent or consultant authorised to act for, and on behalf of, the Principal.

The word **shall** indicates a requirement.

The word **should** indicates a recommendation.

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1.3.2 Specific definitions

Term	Definition
Gangways	Provision that give access to a vessel deck under normal operational conditions. The level between vessel deck and loading platform changes due to tide, vessel range and loading/unloading.
Store crane	Hoisting machine with a power-operated inclined or horizontal boom and lifting tackle for moving loads.
Control cabin	Cabin housing the monitoring and controlling facilities.
ATEX directive	Consists of two EU directives describing what equipment and work environment is allowed in an environment with an explosive atmosphere.
Anchors	Mounting hardware used to fix the gangway elements to each other and/or to the jetty or quay wall structure.
displacement	The total mass of water that a vessel displaces when it is floating; fully laden for an import berth or ballast for an export berth.
Beam (breath)	The waterline width of the ship, excluding beltings or strakes
Freeboard	The distance between the water line and the freeboard deck of the vessel.
Drift	The magnitude or speed of the current measured in knots.
Lowest Astronomical Tide (LAT)	The lowest tide that can be predicted to occur under average meteorological conditions and under any combination of astronomical conditions, before allowance for negative surges.
Deadweight (DWT)	Carrying capacity, including cargo, bunkers and stores, in metric tonnes. It can be given for any draft, but here it is used to indicate summer deadweight at summer draft.
Length Between Perpendicu-lars (LBP)	LBP is the length of a vessel along the waterline from the forward surface of the stem, or main bow perpendicular member, to the after surface of the sternpost, or main stern perpendicular member.
Length Overall (LOA)	Extreme length of a ship.
Operating envelope	Space required to execute the full range of motion of the installation.

1.3.3 Abbreviations

Term	Definition
CHCP	Crane hydraulic control panel
CHPS	Crane hydraulic power system
CHPU	Crane hydraulic power unit
FAT	Factory Acceptance Test (associated with the manufacture and official factory testing of the COBC)
HCP	Hydraulic Control Panel
HCP	Hydraulic Control Panel
HPS	Hydraulic Power System
HPU	Hydraulic Power Unit
IACS	International Association of Classification Societies

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Term	Definition
IMO	International Maritime Organisation
ISO	International Organisation for Standardisation
ITP	Inspection and Test Plan
MDR	Manufacturer's data record
NDE	All Non-Destructive Examinations
NDE	Non-Destructive Examinations
NDT	Non Destructive Testing
PCS	Process Control System
PLC	Programmable logic controller
PLF	Product Loading Facilities
PMI	Positive Material Identification
PMI	Positive Material Identification
QC	Quality Control Plan
SIS	Safety Instrumented System

1.4 CROSS-REFERENCES

Where cross-references to other parts of this DEP are made, the referenced section or clause number is shown in brackets ( ). Other documents referenced by this DEP are listed in (6).

1.5 SUMMARY OF MAIN CHANGES

This is a new DEP.

1.6 COMMENTS ON THIS DEP

Comments on this DEP may be submitted to the Administrator using one of the following options:

Shell DEPs Online (Users with access to Shell DEPs Online)	Enter the Shell DEPs Online system at https://www.shelldeps.com Select a DEP and then go to the details screen for that DEP. Click on the "Give feedback" link, fill in the online form and submit.
DEP Feedback System (Users with access to Shell Wide Web)	Enter comments directly in the DEP Feedback System which is accessible from the Technical Standards Portal http://sww.shell.com/standards. Select "Submit DEP Feedback", fill in the online form and submit.
DEP Standard Form (Other users)	Use DEP Standard Form 00.00.05.80-Gen. to record feedback and email the form to the Administrator at standards@shell.com.

Feedback that has been registered in the DEP Feedback System by using one of the above options will be reviewed by the DEP Custodian for potential improvements to the DEP.

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1.7 DUAL UNITS

This DEP contains both the International System (SI) units, as well as the corresponding US Customary (USC) units, which are given following the SI units in brackets. When agreed by the Principal, the indicated USC values/units may be used.

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2. GENERAL REQUIRENMENTS

2.1 RELIABILITY, MAINTENANCE AND OPERATIONS

1. Mechanical and electrical systems supplied shall be of adequate duty, robustness and reliability so as to ensure that major components do not require replacement during the design life.
2. The design of the gangway system shall be such that any maintenance necessary to achieve the design life can be undertaken safely, causing minimum disruption to the on-going marine operations, and without the need for removal of complete units.
3. The gangway shall be capable of being in intensive operational use and shall allow for any extremes of loading, weather or other environmental occurrences.
4. The equipment shall allow for the effects of fatigue and the load spectrum provided in the project specifications.

2.2 STEELWORK

1. Steelwork for gangways shall comply with DEP 34.28.00.31-Gen. for onshore steel structures and the applicable regional codes and standards as listed in Table 2.1 of that DEP.
2. All welding shall be in compliance with DEP 30.10.60.18-Gen.

2.3 ANCHORS

1. Anchors shall be installed as per Manufacturer's/Supplier's instructions with the following minimum requirements.
2. Gangway structures on new concrete deck structures shall be installed by means of cast-in-place embedded anchors.
    a. Cast-in-place anchors shall be set in place with the aid of a template frame to set the anchors within the proper tolerances.
    b. The template frames shall be supplied by the Manufacturer/Supplier.
3. For installation into existing concrete structures, alternative methods such as the drilling of holes and the use of adhesive anchors are acceptable.
4. The required embedment depth shall be designed according to the local ASTM or Eurocodes taking the concrete strength, reinforcing bar design, and the various load combinations, into account.
5. Carbon steel anchor bolts shall conform to ASTM A307, ASTM A325 or BS EN ISO 898.
6. Carbon steel anchors shall be coated in accordance with the options for coating of fasteners in marine environments as listed in Section 3.1 of DEP 30.48.00.32-Gen.
7. Stainless steel anchor bolts and nuts shall be of grade 316 stainless steel and comply with ASTM F593/ASTM F594 or BS EN ISO 3506.
8. Refer to the relative sections for additional requirements.

2.4 ELECTRICAL INSTALLATION

1. Electrical installation shall conform to (4) of this DEP.

2.5 FABRICATION

1. Gangway systems shall be manufactured in accordance with this DEP and in line with the ISO-9000 series quality procedures.
2. Each unit shall be marked to make it traceable and material and production records shall be provided by the Manufacturer/Supplier.

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3. The Contractor shall be fully responsible for the coordination with all Sub-Contractor's for materials and services to be provided by them.
4. The Contractor shall be solely responsible to the Principal for compliance with the specified requirements.
5. The Principal reserves the right to require the Contractor to submit a list and summary of all Sub-Contractor's for the Principal's approval.
6. All structural welding and welded joint details shall conform to DEP 30.10.60.18-Gen. and shall undergo non-destructive testing (NDT) in accordance with the procedures specified in DEP 34.28.00.31-Gen.
7. Full details of the post weld heat treatment shall be submitted for Principal's review including overall arrangement details of all heater controls, thermocouple layout and attachment and calibration certificates.
8. All corrosion protection coating work, including hot-dip galvanising, shall be inspected before and after the application of the coating.
9. All coated surface shall be measured during the post-painting inspection to ensure the minimum film thickness is achieved.
10. Straightening or bending methods used, with or without the application of heat, shall be agreed to in writing by the Principal.
11. De-seaming may be performed by a carbon arc gouge or other approved method. Prior to subsequent welding, all previously produced dross shall be removed and the surfaces ground back 2 mm.
12. Tolerances for dimensions, orientations and other design details shall be reviewed and approved by the Principal prior to the start of fabrication. The Contractor shall propose standard tolerances for the Principal's review and acceptance.

2.6 TESTING

2.6.1 General

1. All testing methods shall receive prior approval from the Principal.
2. The Manufacturer/Supplier shall carry out a factory acceptance test for all systems and shall invite the Principal to witness these tests.
3. The factory acceptance test is intended to verify:
    a. that the system and its components function properly,
    b. that all manufacturing, assembly, software generation and configurations/databases have been implemented correctly and completely and
    c. that the system performance is, in all respects, in compliance with the criteria of the agreed procurement specifications.
4. A qualified inspector from a classification society with IACS membership shall witness all tests identified in the ITP as "hold" points. Reports of all tests shall be certified and signed by both this appointed inspector and the testing institution, and shall be submitted to Principal for review prior to delivery of the gangway system to Site.
5. The Manufacturer/Supplier shall notify the Principal in writing at least two weeks prior to testing and shall submit a CV of the representative for acceptance. The Principal reserves the right to witness the tests.
6. All testing equipment shall be calibrated in accordance with the relevant codes and standards. Current calibration certificates and calibration logs shall be available for review by the Principal.
7. A log of all testing equipment shall be maintained indicating reference/serial number, date of calibration, party implementing calibration and due date for next calibration.

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8. All nondestructive examination (NDE) shall be in accordance with the ASME Section V and the Eurocode EN 571, EN 13068 and EN 444. All persons performing NDE shall be qualified and certified to ASNT Recommended Practice SNT-TC-1A to Level II or III.
9. All testing laboratories shall be international accredited institutes, holding a valid approval of acceptance from the Principal to undertake the tests required and shall be fully equipped with all necessary testing apparatus, qualified technical personnel, supervision and transportation to perform the testing in accordance with the specification.
10. Refer to (3), (4) and (5) for additional testing requirements specific to gangways, gangways, electrical installations and hydraulic systems respectively.

2.6.2 Visual examination

1. All welds shall be visually inspected for flaws and shall be assessed for suitability against the acceptance criteria of the application code.
2. Surface texture symbols specified for flange faces and other surfaces are in accordance with those designated in ANSI Y14.36. Surface texture shall be produced and measured in accordance with ANSI B46.1
3. All defects in materials and workmanship detected as a result of shop testing shall be repaired or replaced by the Manufacturer/Supplier at the Manufacturer's/Supplier's expense.

2.7 PACKAGING, SHIPPING, HANDLING, INSTALLATION AND COMMISIONING

2.7.1 Packing, shipping and handling

1. The Contractor shall prepare a comprehensive shipping, handling, storage and installation plan, in conjunction with the selected Manufacturer. All shipping, handling, storage and installation of the gangway system shall be carried out in accordance with the plan.
2. The gangway system and all associated components shall be handled and stored in accordance with the Manufacturer's instructions.
3. The Manufacturer/Supplier shall prepare, package, ship and deliver the system, spare parts and three (3) copies of approved Installation Manual to the project site.
4. Equipment shall be assembled and wired in Manufacturer's/Supplier's shop, match-marked and dismantled to the extent required for shipment. The equipment shall be shipped as completely assembled as practicable whilst conforming to shipping practices and regulations for this type of equipment.
5. Boxes shall be numbered and clearly marked for positive identification in the field in accordance with Manufacturer's/Supplier's shipping procedure.
6. All equipment/material subjected to positive material identification (PMI) shall have a copy of the PMI certificate included in the packaging for verification at receipt on site.
7. The Manufacturer/Supplier shall provide lifting and handling instructions.
8. The Manufacturer/Supplier shall provide a description of the Manufacturer's/Supplier's normal shipping practices to Principal for review and acceptance.
9. The use of canvas slings, wood cradles, protective devices, or other appropriate means shall be used to avoid damage to the supplied components. System components shall be stored in a clean, properly drained location, out of direct contact with the ground, in a manner that will prevent distortion and other damage.
10. All equipment bases shall be firmly fixed to their structural framing. If required, the Manufacturer/Supplier shall install adequate permanent braces, struts, or lifting lugs to permit handling at the jobsite with conventional slings or hooks without causing damage to the equipment, at the factory.

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11. All equipment shall be of sufficient strength and rigidity for normal handling. This includes rail, truck, ocean ship and job site handling. Equipment that is tipped-up for lifting may require additional bracing.
12. All equipment shall be properly prepared before crating or packaging including the covering of all openings to protect them from abuse encountered during shipping, trucking, ocean freight, jobsite handling and storage.
13. Small, easily broken parts shall be removed, packed in separate containers, sealed and tagged to avoid damage and loss during shipment and storage. Reassembly instructions shall be included.
14. All machine surfaces shall be protected from rust, corrosion, and damage.
    a. Upon arrival in the field, the shipment may be stored in the field exposed to the environment, for a period of up to twelve (12) months.
    b. All interior surfaces of the reservoirs, tanks, filters, gearboxes, pumps, etc., which are normally in contact with lubricating or sealing oils shall be carefully coated with a suitable rust preventive that can be easily flushed-out by a solvent when placed into operation.
    c. All openings, flanges, etc., shall be securely covered in order to prevent the ingress of moisture as well as prevent mice or other small animals and birds of creeping into the orifices.
    d. The Manufacturer/Supplier may be requested to send a representative to the jobsite during the unloading of the gangway and optional fire monitor system and their storing on site.
    e. The Manufacturer's/Supplier's representative, if present during receiving, shall assist the field crew in identifying the assemblies and components received, any damage to the received equipment items that may have occurred during transit, and to list replacement parts that need to be ordered.
15. Purchased equipment items shall be protected in accordance with the Manufacturer's/Supplier's standard practice.
16. The Manufacturer/Supplier shall be responsible for all works necessary for preparation, inserting of sub-assemblies with nitrogen if required, handling, loading/unloading, and transportation of materials.
17. The delivery time must be stated by the Manufacturer/Supplier and on-site representation is to be coordinated.
18. Personnel of the Contractor and Sub-Contractors shall become familiar with and follow all governing regulations, including fire, traffic, and security regulations.
    a. All personnel employed on the project shall keep within the limits of the work (and avenues of ingress and egress), and shall not enter other areas unless required to do so, and authorization is obtained for each entry.
    b. The Contractor's equipment shall be conspicuously marked for identification. Floating equipment shall only be operated in compliance with local regulations.

2.7.2 Assembly, installation and commissioning

1. The Manufacturer/Supplier shall completely assemble the gangway, its accessories and its controls for shop tests.
    a. The hydraulic power unit and all control panels shall be completely assembled in the Manufacturer's /Supplier's shop.
    b. All electrical/electronic components shall be wired and tested in the Manufacturer's /Supplier's shop.
    c. After shop testing, the sub-assemblies shall be marked and dismantled only to the extent required for shipment.

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