DEP SPECIFICATION

SITING OF ONSHORE OCCUPIED PORTABLE BUILDINGS

DEP 34.17.10.35-Gen.

February 2011

DESIGN AND ENGINEERING PRACTICE

DEM1

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1. INTRODUCTION

1.1 SCOPE

1.1.1 Coverage

This DEP specifies requirements and gives recommendations for the siting of occupied portable buildings at onshore sites, whether used on a temporary basis or on a permanent basis. The term onshore includes all land based operations and jetties, but not marine vessels, FPSOs, rigs or other structures located in offshore waters or inshore port waters. This DEP applies to existing portable building installations, future portable building installations and inflatable temporary structures sited onshore. This DEP covers only the siting of portable buildings and not how to design or construct these buildings. Blast Resistant Modules (BRMs) that are installed as portable buildings are within the scope of this DEP.

Permanent buildings which are not constructed from a portable building type are outside the scope of this DEP. For these other building types consult DEP 80.00.10.11. For the design of Blast Resistant Modules (BRMs) reference should be made to DEP 34.17.10.33.

Portable buildings that are used to house mechanical equipment, electrical equipment, analysers or instrumentation but are not designed for people to occupy on a regular frequency are excluded from this DEP if the portable building does not meet the “occupied building” definition. Cabins located on heavy machinery are not considered to be portable ‘buildings’ and therefore are excluded from this DEP.

Hazards from flammable hydrocarbon fuel storage and hydrocarbon supply lines that are not part of the normal site processing or storage facilities (e.g. fuel supply used to heat the portable building) are not covered by this DEP.

This DEP contains mandatory requirements to mitigate process safety risks in accordance with Design Engineering Manual DEM 1 – Application of Technical Standards.

This is a revision of the DEP of the same number dated January 2010; see (1.5) regarding the changes.

1.1.2 Use of this DEP

Hydrocarbon sites should not have occupied portable buildings unless it can be shown that they are located at positions where the major hazard risks are tolerable and ALARP.

There are two options given in this DEP for achieving this; using the Shepherd Process Risk Tool or equivalent; or defaulting to prescriptive distances. Simple checklists are provided in this DEP to cover both of these options, they are designed to be pragmatic and have been applied successfully in existing onshore sites.

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 authorized access to DEPs does not for that reason constitute an authorization to any documents, data or information to which the DEPs may refer.

This DEP is intended for use in facilities related to oil refineries, chemical plants, gas plants, LNG facilities, import terminals, XtL plants, exploration and production facilities and supply/distribution installations. This DEP may also be applied in other similar facilities.

When DEPs are applied, a Management of Change (MOC) process should 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 may 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 regard 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

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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 materials, equipment and services to perform the duties specified by the Contractor.

The **Principal** is the party that initiates the project and ultimately pays for its design and construction. The Principal will generally specify the technical requirements. The Principal may also include an agent or consultant authorised to act for, and on behalf of, the Principal.

The lower-case word **shall** indicates a requirement.

The capitalised term **SHALL [PS]** indicates a process safety requirement.

The word **should** indicates a recommendation.

1.3.2 Specific definitions and abbreviations

Term	Definition
Above ground piping	Piping that is either above grade or is below grade but exposed to atmosphere (e.g. piping in a trench that is not purposely buried by earth is considered to be aboveground).
ALARP	As Low As Reasonably Practicable.
Blast Resistant Module (BRM)	An engineered onshore portable building that is specifically built to a blast rating of ≥ 55 kPa (8 psi). B9 building type in the Shepherd Process Risk tool.
BLEVE	Boiling Liquid Expanding Vapour Explosion (for pressurised liquids stored above their normal boiling point).
building risk	The 'explosion risk' to a hypothetical individual in the building, if occupied by the person 40 hours/week (taken as a nominal 100 % occupancy), as calculated by a risk assessment tool.
BC-IR	Building Contribution to the Individual risk. The annual frequency that an identifiable individual might be killed from an explosion whilst occupying a specific building. It is calculated by multiplying the building risk with the fraction of 40/hrs/week the individual is occupying the specific building. The BC-IR for the most exposed person is the BC-IR for the person that spends the most number of hours per week in the building.
Facility Siting Study	A risk assessment using a model approved by the Principal
FPSO	Floating Production Storage Offtake (facility).
Inflatable Shelter	Inflatable blast resistant shelter
LOPA	Layers Of Protection Analysis.
LOPC	Loss of Primary Containment.

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Term	Definition
building construction (type labels)	The following building designations are used in this document for ease of reference to differentiate between building construction types for portable buildings, (other standard building designations are not applicable to this DEP). The building categories listed below are generic. B1 – Trailers, modular building and porta-cabins. B2 – Pre-engineered building (steel frame corrugated metal cladding). B9 – Specific building design information inputted into the Shepherd Process Risk Tool for BRMs.
occupied portable building	A portable building that personnel occupy while doing a major part of their work, such as control rooms, laboratories, office buildings, maintenance work areas, outside operator buildings, zone shops, training rooms, etc.; or a portable building with a primary purpose that necessitates people to occupy it, such as field labs, lunch rooms, locker facilities used to change clothes, showers, restrooms or toilets. Lightweight plastic porta-toilets and weather shelters are excluded from this definition. Other portable buildings that have a primary purpose to house or store equipment or materials are considered an “occupied building” if any of the following conditions apply: • An individual spends on average 10 hours or more a week inside the building, or • 10 or more people are in the building at any given time, or • A group spends an average of 200 exposure hours or more a week inside the building, or • The building is used for accommodation or sleeping. Particular attention is required for situations where building occupation is more than transient (e.g. basic monitoring of equipment) for instance if there is a work station or chair present, or other evidence of a building acting as a base, or to which workers routinely return and are 'static' for a period.
portable building	Any building of a B1, B2 or B9 construction type as defined above. Portable buildings include: office trailers, porta-cabins, shipping containers, modular buildings, truck trailers or lorry trailers, tool rooms, mobile homes, personnel shelters, etc..
process area	A location that contains materials having the potential for a significant explosion, fire or toxic release. Distances from a 'process area' refer to the nearest boundary edge of the process area's congested areas. For sites without a facility siting study, distances from a 'process area' refer to the nearest boundary edge of the process area where process equipment and/or support structure is present and includes the width of adjoining pipe racks that run along the edge of the area if present. Sites having a facility siting study should use the distance from the units congested areas as shown in the Process Risk Tool." This includes areas on onshore well sites that fit with this description.
PRT	Shepherd, Process Risk Tool
QRA	Quantitative Risk Assessment.

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Term	Definition
unoccupied portable building	A portable building that is not intended for human occupancy on a regular basis (i.e. no personnel are stationed to work in the building) and is normally unoccupied except during periodic use by personnel to perform brief tasks, obtain material, perform maintenance or to monitor the process. Examples include electrical substations, analyser sheds, motor control centres (MCC), material warehouses, buildings to pick up work uniforms, etc. that do not meet the "occupied building" definition. For most sites these buildings are not 'portable'.
weather shelter	A structure whose primary role is to protect people from environmental conditions, (rain, hot or cold temperatures, etc.). The structure is designed with shatter resistant windows so the person inside can observe the surroundings in all directions, the structure is of lightweight construction, and it is relatively small. These can also be small three-sided structures. These are normally shelters for truck drivers at loading racks or operator shelters on loading docks and racks.

1.4 CROSS-REFERENCES

Where cross-references to other parts of this DEP are made, the referenced section number is shown in brackets. Other documents referenced by this DEP are listed in (7).

1.5 SUMMARY OF MAIN CHANGES

This DEP is a revision of the DEP of the same number dated January 2010. This has been a major revision; it is therefore impractical to summarise the changes here.

1.6 COMMENTS ON THIS DEP

Comments on this DEP may be sent to the Administrator at standards@shell.com, using the DEP Feedback Form. The DEP Feedback Form can be found on the main page of "DEPs on the Web", available through the Global Technical Standards web portal http://sww.shell.com/standards and on the main page of the DEPs DVD-ROM.

1.7 DUAL UNITS

In this DEP, the International System of units (SI) shall be understood to prevail over US Customary (USC) units. USC units are provided in brackets following the SI units for information.

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