

Guidance Note : Umbilical Storage Guidelines

UMF – GN06

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Umbilical Manufacturers' Federation
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1.0 PURPOSE

To provide guidelines for umbilical storage.

2.0 GENERAL

Following definition are used in this document:

- 1) Short term storage: < 6 months after FAT
- 2) Long term storage: > 6 months after FAT
- 3) Seabed storage (Wet parking). Not covered by this GN because it is project specific and dealt with on a case by case basis.

3.0 DEFINITIONS

FAT Factory Acceptance Test
UV Ultra Violet
FO Fibre Optic

4.0 STORAGE PRIOR TO INSTALLATION

4.1 Storage area

The umbilicals are typically stored at a dedicated area on a reel, carousel or storage tank. The storage area shall be suitable to avoid damage from other activities in close vicinity or above. A separate assessment is required if there are activities that take place in close vicinity that could potentially cause damage to the stored umbilical.

4.2 General considerations for storage

In case of storage on a reel, the reel, grounds and storage cradle must all be sufficient for the total weight.

The foundation (or grounds) must be sufficient to take the calculated load per unit area (kg/m²) based on the total weight of the reel and cradle and the footprint area of both cradles. Other points requiring consideration are :

- Flatness and gradient
- Load bearing properties of ground

The following considerations need to be taken into account when planning the storage:

- Environmental condition
 - o Temperature conditions (hot and cold)
 - o UV exposure (protection of umbilical jacket and other UV sensitive components via tarpaulin or similar solution)
 - o Potential frost effect on umbilical and terminations
 - o Humidity
 - o Airborne contaminants
- Accessibility of hardware for inspection and testing
- Suitability of hardware fixings and support
- Suitability of the fluids for the storage period

4.3 Storage of a non-terminated umbilical system

All the umbilical fluid lines, cables and FO shall be capped with suitable end sealing to prevent debris ingress and for environmental protection. Fluid lines could be fitted with sealing end caps or with pressure retaining fittings to allow for fluid or nitrogen filling and sealed off at a low pressure. The selection of end sealing option will be dependent upon duration of storage and environmental conditions. The content of the lines should ensure protection against bacterial growth.

If the lines are fluid filled and sealed then volumetric expansion must be considered.

4.4 Storage of a terminated umbilical system

All the umbilical fluid lines are terminated with fittings and delivery termination equipment. Electrical and FO cables terminated with connectors or capped for protection. All the umbilical fluid lines will be fluid filled to a defined pressure. In case of large temperature variation and risk of high pressure the umbilical shall either be monitored and/or be equipped with pressure relief or an accumulating system.

4.5 Exclusions

The following topics are considered as project specific and not covered in this document:

- Sea fastening
- Clearance to outer reel flange for both umbilical and terminations
- Required back tension during spooling

4.6 Short term storage

Typical scenarios for short term storage of umbilicals could be:

- a. On turntable/reel after FAT and prior to load out at the umbilical manufacturers' site.
- b. After transit to field or storage location
- c. Short intermediate storage at a third party location before installation
- d. Storage of spare umbilicals as back-up during installation

4.7 Long term storage

Typical scenarios for long term storage of umbilicals could be:

- a. On turntable/reel after FAT and prior to load out at the umbilical manufacturers' site.
- b. Long term storage at a third party location before installation
- c. Storage of spare umbilicals

4.8 Testing

Scope for testing must be agreed with purchaser. Typical scenario is described below.

Pre-load out test is required by ISO 13628-5 if the umbilical has been stored for more than three months after FAT. If the umbilical has been subjected to extreme temperatures outside fluid specification limits a pre-load-out pressure test and cleanliness check should be evaluated.