

Main Types of Subsea Manifolds

In most cases, the field layout determines the type of manifold system required and these elements are normally rated for operating pressures matching the Christmas trees. Basic types of distribution elements include the following:

1- Template Manifold

It can be known as Subsea multi well templates which are steel structures with wellhead slots and guide posts which provide for receiving more than one wellhead when drilling multiple wells close together. Templates have the advantage of simplifying control systems, productivity, gas lift and water injection piping. Usually the more wells in a template the higher the cost benefit. Because of the close proximity of the wells, flowline cost can be greatly reduced.

These templates have become heavy structures which make their installation and removal very difficult and expensive. The problem has been solved by setting up single guide frames at drill sites with greater distances between them. The piping from each individual site is connected to the same manifold.

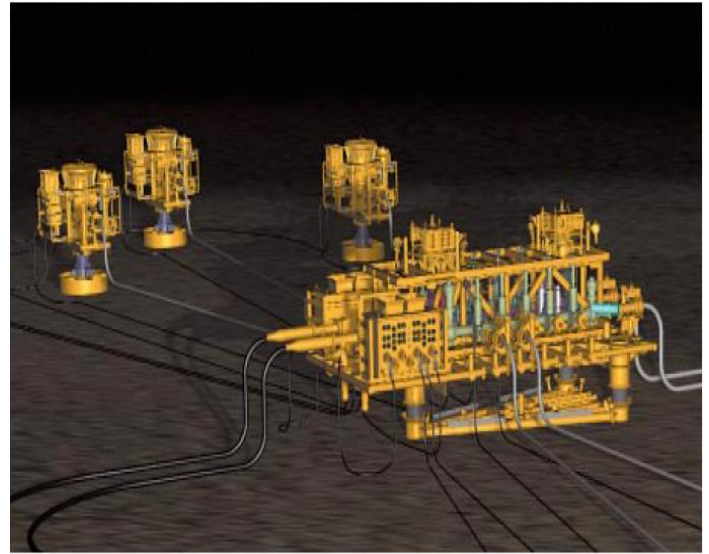
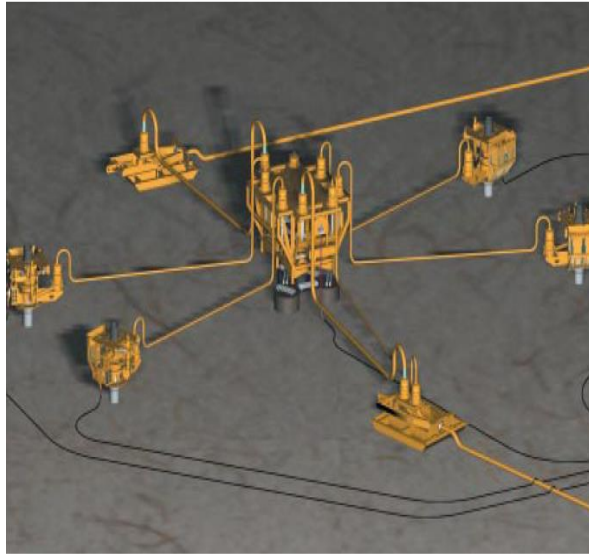
This arrangement is known as a Cluster Manifold and is commonly used. Figure below shows a template manifold



Template manifold

2- Cluster Manifold

A stand alone structure designed to direct fluids for multiple subsea Christmas trees placed around it. Manifolds are used to receive produced fluids from several wells in order to control, commingle and divert the flow to a pipeline. Figures below show Cluster manifolds are used to direct fluids for multiple satellite trees & Cluster manifolds vary from simple to complex and can incorporate control system components respectively.



Manifold for multiple satellite trees Manifold for complex control system

Satellite Wells

This term is used to describe wells which are some distance and more independent of the processing facility. They are generally located at some considerable distance from export pipelines.

Generally, Satellite Structure are designed to enable the use of equipment that can be installed, controlled and removed easily with the aid of a floating drilling rig. Control systems generally rely on electro – hydraulic control from the topsides because of the large distances.

3- Pipeline End Manifold (PLEM)

A simpler version of a cluster manifold generally designed to direct fluids for only one or two subsea Christmas trees. At some applications PLEM can gather flowlines from two or three fields and delivers the output flow through two pipelines only to onshore plant. PLEM structure also contains group of valves to control the direction of flow. Figure below shows a three-well PLEM is used to tie in subsea trees in a simple field installation

