

## **“Offshore Pipe Laying from Operation Point of View”**

**Company: Iranian Offshore Engineering & Construction Company**

FAX: 021- 88812184 TEL: 021-88832990

Babak Baghdadi & Kamal paydar Ardekani

[BAGHDADI@IOEC.COM](mailto:BAGHDADI@IOEC.COM) [ARDEKANI@IOEC.COM](mailto:ARDEKANI@IOEC.COM)

### **1. Summary:**

With the discovery of offshore oil fields in the shallow waters of the Gulf of Mexico during the late 1940s, offshore pipeline installation was invented. The first “offshore” pipeline in the Gulf of Mexico was constructed in 1954. Now, offshore fields are being discovered in water depths of 10,000 feet and the pipeline installation technology is keeping up.

### **2. Introduction:**

The most common methods of pipeline installation lay methods are:

- . S-lay (Shallow to Intermediate)
- . J-lay (Intermediate to Deep)
- . Reel lay (Intermediate to Deep)

Shallow water depth ranges from shore to 500 feet. Intermediate water depth is assumed to be 500 feet to 1000 feet. Deepwater is water depths greater than 1000 feet. Other methods that have been used for pipeline installation are tow methods consisting of:

- . Bottom tow
- . Off-bottom tow
- . Mid depth tow
- . Surface tow

Tow methods can be used for installing pipelines from shallow water depths to deepwater depths depending on the design requirements.

### **3. Lay Methods:**

#### **3.1) S-Lay:**

The most common method of pipeline installation in shallow water is the S-lay method. In the S-lay method, the welded pipeline is supported on the rollers of the vessel and the stinger, forming the over-bend.

Then it is suspended in the water all the way to the seabed, forming the sag-bend. The over-bend and sag-bend form the shape of an “S.” In the S-lay method, tensioners on the vessel/barge pull on the pipeline, keeping the whole section to the seabed in tension. The reaction of this pull is taken up by anchors installed ahead of the barge or, in the case of a dynamically positioned (DP) vessel, by thrusters. These barges/vessels are fitted with tension machines, abandonment and recovery (A&R) winches, and pipe handling cranes. The firing line for welding the pipe may be placed in the center of the barge or to one side. The firing line consists of a number of stations for welding, NDE, and