



ULTRA DEEP LLC
VIV ANALYSIS - General
Presentation

- Ultra deep performs VIV (Vortex Induced Vibrations) analysis by means of the Shear7 software.
- Shear7 is the offshore industry's leading software tool for prediction of Vortex Induced Vibrations. It is originally developed by MIT.
- It is a joint development (JIP) by Shell, BP, Chevron, ExxonMobile, Technip, Statoil and Petrobras.
- Given current data, Shear7 will calculate the vibration frequency, amplitude and curvature. This results is used by Shear7 for two different type of calculations.
 - VIV Fatigue
 - Calculate the fatigue of umbilical components due to vortex induced vibrations.
 - VIV Drag Amplification
 - VIV increased the effective drag. Shear7 will calculated a drag amplification factor due to VIV.
 - The VIV amplified drag coefficients can be used in both extreme analysis of umbilicals (loads due to extreme environmental conditions) and for interference analysis.
- Shear7 needs the umbilical modal shapes and current data as an input. Ultra Deep uses Orcaflex in order to calculate the modal shapes

