



STRESS ENGINEERING SERVICES, INC.

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Off-Shore Production Well Systems: Design, Analysis & Testing From A Single Source

SES Bridges the Gap Between Operations and Analysis

The complexity of floating production systems, combined with the possible consequences of failures has put an awesome level of responsibility on well systems engineers. There is no substitute for experience when it comes to designing, analyzing and testing critical equipment like well heads, production tubes, casing and risers...and experience is especially important in understanding how these components will work together.

For more than two decades Stress Engineering Services (SES) has specialized in bridging the gap between what well systems engineers want to accomplish, and what analysis work needs to be done to meet production expectations. Our expertise in this area has been proven on projects like Conoco Jolliet, Conoco Heidrun, Shell Auger, Shell Ram/Powell platform, Oryx Neptune, and BP Troika, to name a few.



Strain Gage Results of Connector Test

SES is the Team With the Tools

SES has assembled, under one roof, a multi-disciplinary team with broad experience in floating production systems. Using specialized programs to translate operational requirements into loading spectrums and component stresses, we are uniquely positioned to provide well systems engineers with a full range of services.

These services begin with riser analysis that includes the evaluation of riser system response and the interaction between tubing and casing strings. The analyses take into account pressure, temperature, vessel motions, and environmental loadings. The resulting data is used to design stress joints, connectors, centralizers and other riser components.

For subsea wellheads tied back with a production riser, SES has performed fatigue and fracture mechanics analyses to predict the lives of wellhead components. We also have the ability to look at nonlinear interactions between soil and conductor casings.

SES Has the Experience

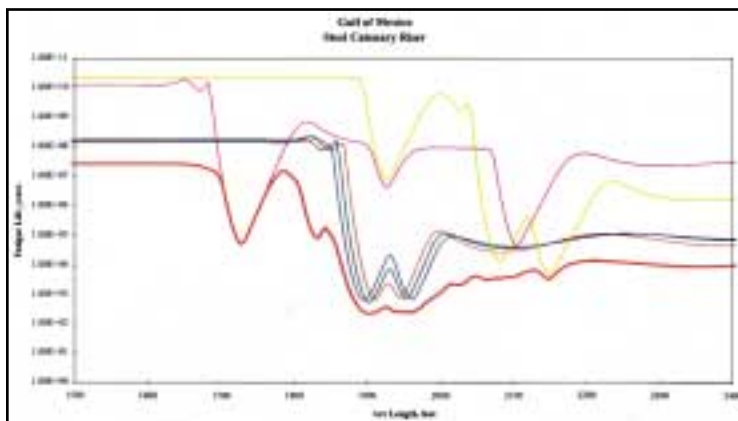
With over 100 man-years of experience in riser design experience, SES engineers have been involved in numerous deep water floating and subsea projects. These projects include production and export systems of TLP's and Spars, as well as Floating Production Systems (FPS) and Offloading Production Systems (FPSO). As oil and gas production moves rapidly into deeper water, this experience can be drawn upon to provide practical and timely solutions to the new challenges that deep water provides.



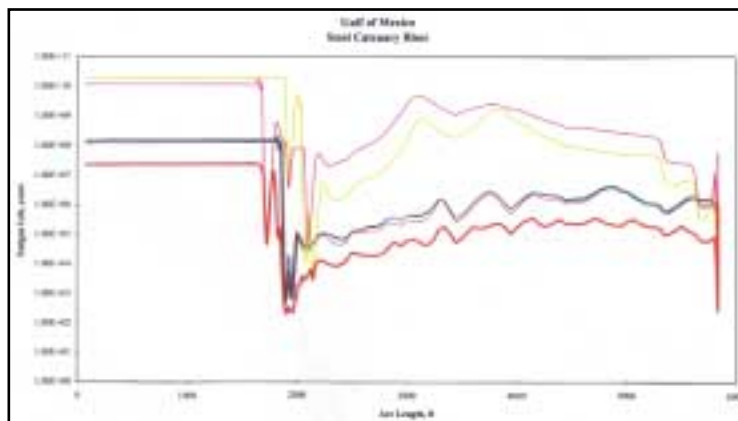
Fatigue Testing of Riser Connector

SES Has the Testing Capabilities

SES offers full scale testing of riser components, including static testing for strength evaluation and dynamic testing for fatigue. Static testing can incorporate combinations of tension, bending and pressure. SES can perform tension only tests up to 10,000 kips. Cyclic testing capabilities include 4,000 kips tension at 1.33 seconds per cycle, rotary fatigue up to 80,000 ft.-lbs., and bending at 250 RPM.



SCR Lower Portion Fatigue Life Distribution



SCR Fatigue Life Distribution

SES has the off-shore production well system experience you've been looking for. For more information call our Houston office today at 281-955-2900.

...or to learn more about SES, visit our web site at <http://stresseng.com>

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