Paul Brett
Curriculum Vitae
30th April 2018
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NAME: Paul Brett

TITLE: Principal Riser Engineer

QUALIFICATIONS:
IMechE CEng
NAFEMS PSE
1st Class MEng (Hons) - Mechanical Engineering
In-Date BOSIET Certificate

EXPERIENCE SUMMARY:

Experienced engineer with 11 years' in the design, specification, FE analysis and project management of SURF & Naval hardware. Extensive experience using ORCAFLEX/BEND/LAY, AQWA, ABAQUS, ANSYS (ADPL), FLEXCOM, SHEAR7, MATHCAD, Solidworks and .bat/.py script, MS Project & advanced Excel. Proven technical manager, and independent thinker.

Brett Consultants Ltd – Director

Mar 2017 – Present

Client: Saipem UK Ltd – Structural Pipelay FE Consultant

Based in the Saipem Kingston office, providing specialist support in structural/hydrodynamic modelling. Projects carried out to date include:

- 48in Nord Stream 2 Pipeline German Landfall Pull-In – Design & analysis of 5off 48in pull-in heads to catenary loads, and structural analysis of landfall winch, rigging and support beams. Checking of 48in 'Californian Bonnet' head to ASME BPVC.

- BP Shah Deniz Phase II – 26off spool deployment analyses, assessing splash zone hydrodynamic loading during installation and sign-off of rigging arrangements. Provided feedback on the design guidance to be used in the Structural department for spool design, and generation of automation scripts to reduce human error and speed operations. Detailed shell modelling of the BP Caspian Region Subsea Construction Vessel (SCV), to assess the deck capacity due to in-line PLET installation.

- Statoil Johan Sverdrup 18" Gas Export & 36" Oil Export Pipeline: General design assessment of pipeline heads and PLEMs, using global and local FE models subjected to installation catenary loading. This ensured the fit-for purpose design of the installation heads, which spans many offshore codes (E3/ASME/API). A&R padeyes were assessed for extreme out-of-plane loading using non-linear (material / geometric / contact) analysis. Anti-rotation collars, pipe clamps, and other systems were designed by myself.

- Nonlinear analysis & buckling analysis of critical components relating to planned J-Lay installation systems on-board the Saipem S7000 installation vessel.

- Detailed shell element study of two cargo barge structures to be linked and used for decommissioning purposes.

Oct 2016 – June 2017

Client: CONFIDENTIAL – Principal Consultant

A flange manufacturer for the offshore oil and gas sector is developing a patented sealing arrangement and flange design. Brett Consultants were engaged to provide engineering design services to advance the design through DNV type approval qualification. This consisted of a thorough design review, Monte Carlo tolerance studies, 3D and 2D CAD (Solidwork and Inventor), plastic contact non-linear finite element analysis, and design of testing including risk assessment. The product has now successfully passed combined pressure/bending tests – obtaining DNV type approval, and a technical paper is planned to showcase the design.

Oct 2016 – Jan 2017

Client: BP/Subsea7 West Nile Delta – Contract FE Specialist

Performing finite element studies using on non-standard pressure containing umbilical parts to ASME BPVC Section VIII, Div.2. A manifold and reducer were analysed to determine their structural response to pressure and external loading.

Jan 2015 – Oct 2016
Client: AKER Solutions Front End Spectrum (FES) – Principal SURF Engineer

- Authoring of FES procedures, guidelines and work instructions in the discipline of riser engineering.

- URF technical lead conducting the Pre-FEED study of the Royal Gate Block Z license offshore Equatorial Guinea. This field is a joint FPSO/FLNG development. I was singly responsible for designing and costing the umbilical, riser and flowline (URF) portion of two optional developments (Template and Satellite layouts), including installation costing & procedure.

- Member of project management team for competitive FEED study of Ophir Fortuna deepwater FLNG project offshore Equatorial Guinea, managing technical interfaces between consortium partners (Subsea7), and client (Intecsea/Ophir). The project was in competition with another, rival engineering team conducting the same work for the client, so the work was carried out under a degree of pressure. The project won an internal award for 'Open and Direct Communication'. I was responsible for technical notes and studies which aided field architecture selection.

- Alpha Petroleum early stage FPSO feasibility studies, including flexible riser and general field architecture design, installation methodology and acting as a senior point of contact for the technical teams of the installation contractor and FPSO provider.

- Early phase SURF cost study for SOCAR Deep Gas project in the Caspian Sea. The design had to consider the particular installation vessels available in the area, and the requirements for local content.

June 2012 – Jan 2015
Client: KW (Petrofac Group) – Principal Riser/Moorings Engineer (Riser Department Lead)

Responsibility for developing a team of 4 riser engineers, conducting interviews, initiating department, and specifying necessary software and hardware for the riser analysis team.

TECHNICAL PAPER: A.Bedrossian, P.Brett, *Influence of Local Effects on Fatigue Assessments during Hold Periods of Offshore Pipeline by Reeling,* OTC Asia 2014

- Personally responsible for FEED verification of Bonga SWA Mooring & Riser disciplines. Managed an external partnership (2H Offshore) for SCR studies, whilst personally performing hydrodynamic diffraction analysis, and in-place and installation mooring analysis of the Bonga SWA FPSO to verify the FEED for a major (>$1bn) SURF package bid. Technically accountable for the following procurement packages: Mooring Chain, Spiral Strand, Buoyancy Modules, 19in Flexible Offloading Risers, VIV Strakes, Riser, Umbilical & Mooring Pull-In Systems, Wave Basin Study, Flex-Joints, Line Pipe and Ball & Taper Connectors.

- FPF1 Semisubmerible: Singly responsible for semisubmersible mooring analysis sensitivity study for the Stella Field (UKCS), using existing RAO/QTF data, and inclusion of Morison elements for cross bracing and viscous effects. Time domain vessel/mooring/riser coupled analysis was performed to investigate mooring loads and vessel offset.

- Singly responsible for mooring and flexible riser design for Ayatsil-Tekel field offshore Mexico in 120m water depth. ANSYS AQWA software was used to conduct diffraction/radiation analysis of FPSO hull to obtain vessel motion characteristics, these characteristics were combined with damping values obtained from literature to conduct a fully coupled time domain analysis of the single point moored FPSO. Design and analysis of lazy, pliant, & steep wave and steep-s flexible riser configurations using Orcaflex.

- Singly responsible for 8in bonded flexible jumper analysis for Petrofac West Desaru Malaysia topside connection, considering time history platform motion and wind. Recommendations for line length, end orientation, and header placement were made after a significant optimisation study using Orcaflex. A temporary hook-up using rigid pipe with ball joint connections was also supervised, and I acted as verification authority on the flexible manufacturers design report on behalf of Petrofac.

- 14km fuel gas line from Fixed Platform to FPSO in 70m water, 6in flexible configuration (steep wave) designed and costed.

- Southstream pipeline installation analysis to support Petrofac P6000 pipelay bid. Dynamic simulation of S-Lay and A&R operations with 32in pipe in 2200m water depth. J-Lay simulation to reduce pipeline free-spanning with seabed slopes up to 20°. Design of flood prevention system (FPS).

- Singly responsible for providing high level information on PETROFAC P6000 J-Lay vessel capabilities for various tensioner capacities using static lay analysis software ORCALAY. Benchmarked results exactly matched tier-1 installation contractor independent analysis.

April 2012 – June 2012

Client: Total CLOV - Subsea 7 (Paris) – Senior Structural Consultant

Working within the structures group in Suresnes; on the fabrication, installation and fatigue design of riser towers, specifically the upper and lower tower assemblies on the Total CLOV Block 17 development offshore Angola. This included a structural assessment of the flexible riser hang-off points, which are subjected to high fatigue stresses.

Secondary Contract

Client: 2H Offshore – Total Moho Nord TLP

Technical authoring of specifications for the Moho Nord TLP offshore Congo RFQ packages, including riser tensioning, tensioner monitoring systems, subsea tie back connector, winches and guide wire, and tension and stress joints for drilling and production risers.

May 2008 – April 2012

Subsea Riser Products Ltd – Senior Engineer

Author of Technical Papers for Conferences

K.Jan, Paul Brett, S.Luffrum, *Self-Lubricating Marine Bearing Qualification for Subsea Riser,* IOPF 2010

P.Brett, K.Jan, S.Luffrum, *Why Shrink-Fit Steel Flanges to Titanium Pipe?,* Deep Offshore Technology International 2010.
AWARDED BEST PAPER DOT 2010

J.Shield, K.Jan, P.Brett, *Ultra-High Pressure Risers for Deepwater Drilling*, Deep Offshore Technology International 2009.

SRP Product Development

One of my roles at SRP was acting as a consultant for four development projects on-going at SRP. I have been a part of the steering committee for each project, providing technical and project consultation for the project managers.

Client: BP

Project: Deepwater Horizon Incident FSR Production Systems – Structural Analysis

Engineer ultimately responsible for complete structural verification of 2off FSR lower and upper riser assemblies for the Deepwater Horizon incident containment risers. Despite a very fluid design subject to last minute changes and the most aggressive of schedules, key design documents were developed and delivered to DNV, which allowed the timely deployment of the containment risers. This required considerable interface design, and design/verification of custom installation equipment. Responsibilities included responding to technical issues thrown up by offshore installation or manufacturing, so secondment to Houston was required during this project.

Client: BP/Chevron/RPSEA

Project: Resonant Bending Fatigue Qualification of Shrink-Fit Coupling

SRP received funding from a US governmental organisation (RPSEA) in collaboration with industry partners to develop a novel connector. I was project manager solely responsible for all aspects of the >$600k project, including financial (including invoicing), reporting & communication, design, supply, assembly and testing. Most aspects of the project were carried out in Houston, so good communication from our UK office was key, aided by regular trips made at key quality points. 6off 11-3/4in pipe-coupling-pipe samples 20ft long were assembled and tested on schedule and under budget – with performance in line with expectations, seven months from project inception.

Client: Dong Energy

Project: Siri Field Remedial Tensioning System – Fatigue Analysis

Acting as a consultant tasked with undertaking fatigue analysis of a 1000mTe remedial tensioning system designed by Claxton to support a caisson, which was found to have cracks at its base. This involved client visits to gather data, followed by a finite element evaluation of weld fatigue to DNV-RP-C203, and spreadsheet based calculations to validate the design. Improvements to the design to improve fatigue performance were suggested, which were then implemented.

Client: Total Usan

Project: Cameron Completion and Workover Riser – 5in Lower Stress Joint and Case Wear Joint

One of a team of two manufacturing components of value £550k to pre-existing drawing for a Cameron completion and workover riser destined for the Usan field offshore Nigeria. Main responsibilities include managing purchasing and supply chain of forged components, pipe and centralisers. This includes welding of wear casing pipe and generally ensuring an effective interface between suppliers, sub-suppliers and client. This is achieved through the timely turnaround of technical and commercial documentation and a thorough appreciation of the technical requirements of the client.

Client: Centrica
Project: 18-3/4in Shrink-Fit High Pressure Drilling Riser
Analysis and Project Engineer, responsible for developing the world first shrink-fit flange design rated to 12.2ksi through all design phases, for designing and executing the small scale proof of concept tests and for developing and proving other bespoke flanged connections on the riser using thermal and structural FEA, and specifying bolt preload requirements for each. Was part of team developing medium scale 1200Te test rig used for proving shrink-fit connection capacity, and was single point of contact with Bureau Veritas for 3rd party accreditation. Manufacturing technical support for the £8m full riser was undertaken as required.

Client: Talisman Energy
Project: 18-3/4in, 5k Drilling Riser System
Analysis and Project Engineer, responsible for qualifying and developing riser connection design using FEA, checking gasket sealing pressures, fastener stresses API-RP-2RD stress limits and SCF values. Extensive calculation and analysis of riser spider for offshore use to API Spec 8C, and supervising the design and analysis of lift attachments to DNV design code 2.22. Also key in the design of the riser spider and spider load test rig, including stress analysis and writing of load test specification to API Spec 7K. Overseeing of production welding and manufacturing support of the £4m riser.

July 2007 – May 2008
2H Offshore Engineering Ltd – Engineer
Client: BP
Project: Faroe Islands - Installation Analysis of Riser and Conductor
Engineer responsible for analysis of the riser and conductor response during dynamic installation, including prediction of riser and conductor VIV response.

Client: Aquatic
Project: Coiled Tubing Installation Rig
Design/Analysis Engineer, responsible for proving and developing design in many areas of the rig, proving components through application of FE and providing feedback into design.

2H R&D
Link Latch Concept
Engineer responsible for the FE analysis of link latch connector test rig and full scale concept, with input into design through brainstorming sessions. FEA enabled metal fatigue analysis to be performed based on principal stress ranges obtained from simulation; these stress ranges were compared against fatigue curves to give fatigue life estimates.

Client: ADOL
Project: ABS Test Rig Centraliser Design and Buoyancy Tank Analysis
Engineer responsible for detailed design of the centraliser to be used in the Artificial Buoyant Seabed test rig, including FE analysis of the centraliser and buoyancy tank to prove design. The hardware was deployed successfully without incident.

Client: ExxonMobil
Project: Kizomba B Tieback - SLOR Aerogel Insulation Analysis
Engineer assisting analysis of an SLOR aerogel insulation system located in 1100m water depth offshore Angola. Various studies were carried out on how the system would affect riser top tension and hydrodynamics.

2002 - 2007
University of Edinburgh - Undergraduate
1st Class MEng in Mechanical Engineering, undertaking maths/engineering tutoring duties privately and within the university, active in student radio station (fundraising/presenting).

Other
- Experienced operating in 'higher risk' travel destinations (Nigeria, Mexico).
- Chair of the Finance, Risk & Audit subcommittee in local housing association (SW9), with turnover of £8m, managing a housing stock of over 1500 units.
- IMarEST MetOcean Awareness Course
- NAFEMS Non-Linear FEA Course
- Full clean UK driving license
- Learning French Language