Abhinav Sultania, EIT, MSE, MBA, PMP, PE (Aspirant)

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Work Visa: H1-B Transfer Visa
Texas Driver's License
SSN Card

Work Experience
USA: 5 Years 4 Months
India: 5 Years 6 Months

QUALIFICATIONS & PROFILE

I am a Civil cum Structural FEA engineer with business qualifications. I have **analyzed, designed, engineered (FEA based), evaluated, procured, and constructed onshore/offshore Oil and Gas, Wind, Solar, Nuclear, Transportation Infrastructure (highways, Metro, railways, Airport), and Manufacturing plant structures**. I have more than 11 years of professional experience. Key areas of analysis, design, and engineering expertise include static analysis and design, dynamic analysis of structures and components; blast and fire analysis and design, and composition of steel, and concrete structures, FEA modeling, accidental hazard analysis, and design, blast retrofitting of existing structures using either traditional methods or advanced numerical methods, finite element-based blast wall capacity design, dropped object impact assessment, facility siting studies, fire assessment, passive fire protection (PFP) optimization studies, topside analysis, and design, pipe-rack analysis and design, jacket analysis and design, joint analysis and design, Critical Equipment Foundation Analysis and Design, foundation design, nuclear reactor analysis, and design, etc. I am experienced with various finite elements, computational fluid dynamics, and structural analysis software packages. I am experienced in project management, budget control, project scheduling/planning, and other project account-related activities. Other areas of specialized expertise include seismic resistance design, probability, reliability-based analysis, and design.

A goal-oriented Double Master's and Bachelor's Degree qualified Civil/Structural Engineer-cum-Manager and Engineer in Training (EIT) qualified with international industrial exposure of working in the USA, India for clients from the UK, Norway, Dubai, Abu Dhabi, Netherlands, USA, India, Philippines, Malaysia, Japan, Korea, China – namely **BP, Chevron, Mustang, Exxon, Shell, Suncor, RedGuard, Inpex**, etc. I am focussed on targeting assignments in Civil & Structural Engineering with an organization of repute in **Energy (O&G, Renewable, Nuclear, etc.), Transportation Infrastructure, and Manufacturing Plant Industries**. Hands-on experience in large-scale projects for all phases of FEED, Engineering, Analysis & Design projects including analysis and design of RCC and Steel Structures, Technical Design Documentation (Preparation and Review), Construction Drawings, Construction Supervision, Scheduling, Bill of Quantity / Material Estimation, Technical Design Specification, Bid and Proposal Engineering, Commissioning and Handover of Project. Thorough Knowledge of International Technical and Safety Analysis and Design Codes with Local Governing Body By-Laws and Regulations.

EDUCATION

M. S. (Finance)
The University of Houston
Focussed background in most aspects of Finance like Corporate Finance, Investment Management, Portfolio Management, Energy Finance, Microeconomic Theory, Econometrics

GPA: 4.00/4.00

M. B. A. (General Management)
Xavier Labor Relations Institute (XLRI)
Broad background in most aspects of management like procurement, contracts, operations, finance, accounting, strategy, economics

GPA: 6.25/8.00

M. Sc. Eng. (Civil - Structural Engineering)
The University of Texas at Austin
Thesis supervisor: Lance Manuel, Ph.D., PE
Thesis: Reliability Analysis of a Spar Buoy-Supported Floating Offshore Wind Turbine
Thesis Objective: Study the dynamic behavior of the coupled platform-turbine system; Estimating statistics of tower and rotor loads as well as platform motions; Identify critical combinations of wind speed and wave height; Estimating long-term loads associated with a 50-year return period using statistical extrapolation
GPA: 3.86/4.00

B.Tech. Civil Engineering
Sardar Vallabhbhai National Institute of Technology (NIT Surat, India)
State Gold Medallist
Broad background in most aspects of civil engineering, structures, hydraulics, soil mechanics, railway, transportation, irrigation
Thesis: Comparative Analyses and Parametric Study of Cylindrical Roof Shell Structure
GPA: 9.47/10.00 or 3.79/4.00

PROFESSIONAL EXPERIENCE

September 2017 – March 2021 **Assistant Manager**

KPMG (KASPL)

- Led and won a Request for Proposal (RFP) project on IT implementation of the Foreign Direct Investment (FDI) Single Window platform for the State of Maharashtra
- Developed agile SDLC methodology, defined product requirement SRS (Software requirement specifications), product architecture DDS (Design Document Specification); co-ordinated various State departments, State IT department, and empanelled IT Vendor
- Established quality assurance matrix, resource-stakeholder matrix, approver authority matrix, standard approval templates, payment tracker - responsibility matrix, department/co-ordination matrix, etc.
- Monitored and evaluated the digital transformation of the existing platform to the Single Window platform
- Led a Project Management Office (PMO) for Investment Promotion and Policy Reforms, landing investments worth 5 bn USD creating employment for 50,000 people
- Strategized and formulated various sectoral policies (ESDM, Cloud, Fintech, AI, Defense, etc.) for the States of Maharashtra, Tamil Nadu, Goa, Karnataka, Haryana, Punjab, etc.
- Performed Economic Analysis and Designed "India-France bilateral trade development strategy" for the Indian embassy in France
- Felicitated by Chief Minister of Maharashtra for authoring a white paper on "Industrial Prosperity of Maharashtra"
- Co-authored white paper on "1 Trillion Dollar Manufacturing Economy by 2025" for DPIIT & Confederation of Indian Industries (CII)

July 2015 – May 2016 **Senior Engineer**

AECOM (Transportation Infrastructure)

- Managed, co-ordinated and monitored from the scratch implementation of MIS project dashboard on key performance indicators for finance, accounting, operations, budget, and resource control for Infrastructure projects worth 100 mn US

- Co-ordinated between leadership, external consultants, IT Vendors for implementation of workforce management solution package

- Structured response to Request for Proposals (RFPs) and won contracts for selection of Technical Consultant providing consultancy services for Detailed Project Report (DPR) and Feasibility Study (FS) work

September 2014 – July 2015 **Staff Specialist I**
Technip (Genesis Oil & Gas Consultants)

- Performed detailed design of 25 Blast Wall Containers for several Canadian Oil and Gas Facilities while considering several construction issues.

- Led a team of 3 engineers and functional experts – planned, executed, and monitored 25 projects on Risk, and Safety Engineering and Management worth 0.1 mn USD of global Oil & Gas clients, saved 5 mn USD for project cost of 5 bn USD

- Drafted and negotiated proposals for general and specific conditions, costing, and timelines for the above projects

- Successfully presented advanced fire engineering presentation at Offshore Technology Center (OTC) conference demonstrating Atkins fire engineering capabilities to the industry.

April 2013 – September 2014 **Consultant I**
WS Atkins PLC

- Performed detailed design of the longest blast wall for an offshore floating facility Ichthys while considering several construction issues for client Inpex/Mustang.

- Successfully completed design project for extreme environmental loading to support temporary field installationof offshore blast structure for Shell.

- Managed structural fire response and PFP optimization studyof FPSO Stones topsides and turret structure for Shell/SBM budgeted around $145,000.

- Successfully presented advanced fire engineering presentation at Offshore Technology Center (OTC) conference demonstrating Atkins fire engineering capabilities to the industry.

- Successfully completed advanced heat transfer analysis for multiple projects for clients like Talisman Energy, RedGuard, Shell etc.
- Established non-linear FEA-based risk assessment methodology for accidental loading (blast) of the reinforced concrete structure.
- Supervised an intern providing guidance on model conversion techniques, procedure writing, and report writing skills.
- Assisted project managers as task managers to learn budget management, project deadline, technical excellence, client feedback, and people management abilities.

April 2012 – April 2013 **Assistant Structural Consultant**
WS Atkins PLC

- Worked on studies focussing on fire and blast engineering; strength assessment of structures and connections etc.
- Analyzed strength of Centrica Audrey Helideck structurewhich required efficient coding in java scripts to come up with numerous load combinations in GENIE/SESAM package.
- Blast analysis and concept design of BP Mad Dog maintenance building. Suggested several design retrofit concepts while considering clearances and construction feasibility.
- Worked on a sequentially coupled thermal-stress analysis for Shell Global Solutions separator structure to estimate stresses due to pressure loading of the internal system.
- Assessed bolt connection strength during impact loading of a BHP Billiton TUTA protection structure. This type of work was not done before in Atkins.
- Worked on an offshore Sparrows crane foundation design project which was supposed to be utilized for onshore application by Chevron. Calculated load combination chart taking into account wind loading and other operational loads along with dead load of the structure to finalize a concept design among few proposed.
- Developed a script to optimize the size of BPTT immortelle platform, neoprene lined mechanical clamp. Sensitivity studies on the size of the clamp was undertaken to account for modifications in the design criteria.

- Assessed skid beam providing recommendations for BPTT Amherstia Rig readiness. Fastener modeling with contacts to distribute the earthquake loading at the base of the drilling derrick structure into the skid beam via hold-down clamp and drop-in pin clamp mechanism was undertaken in this project.
- Developed methodology for a risk-based study on nuclear reactor containment building using techniques of probabilistic/reliability analysis. Being a very complex study, with very few previous studies of such nature, this study added to Atkins capabilities in the domain of risk-based study of offshore structures and the nuclear industry.
- Wrote numerous BMS forms, CTR's, proposals, and schedules for different projects and tasks.

April 2011 – April 2012 Graduate Structural Consultant
WS Atkins PLC

- Model conversion between several FE-based softwarepackages to facilitate fire and blast analysis.
- Performed fire analysis for Chevron BigFoot Topsidesstructure for several scenarios.
- Compiled fire analysis in-house procedures utilizing the industry-approved technical standards, analysis methodologies, and current company practice.
- Crane bumper (stopper) design for under-hung and over-hung crane facility in a hangar at an airport in Saudi Arabia.
- Performed PFP (passive fire protection) optimization study on the Chevron BigFoot topsides project.
- Model conversion for Shell Mars B drilling rig derrick and substructure. The goal of the project was to do a fire analysis for the rig and recommend PFP for it.
- Executed HAZOP analysis on several platforms using industry-recommended HAZOP analysis procedures.
- Performed dropped object impact analysis for the BP Mad Dog platform.
- Conducted fire analysis for a Shell West 143C bridge for a jacket structure.
- Performed finite-element analysis to assess blast wall capacity for Shell Auger living quarter building using Abaqus.

August 2008 – March 2011 Graduate Research Assistant
Offshore Technology Centre (OTRC), The University of Texas at Austin
National Science Foundation (NSF) & DOE sponsored M.S.E. thesis "Reliability Analysis of Spar-Buoy Supported Offshore Floating Wind Turbine" involved:

- Identified long-term turbine loads for a given reliability
- Provided a systematic approach for estimating accurate long-term turbine loads; to be incorporated in design standards for industrial purposes
- Analyzed short-term response loads and dynamics using response statistics, time series, and power spectra

June 2007 – July 2008 Executive Operations
Bharat Petroleum Corporation Limited (BPCL), Mumbai

- Designed & Conducted logistics-related survey; Identified actionable steps; recommendations implemented by the company
- Planned & scheduled product delivery as per the assessment of the sales requirement
- Ensured maintenance work execution with resource optimization and efficient delivery
- Conducted day-to-day plant operations associated with petroleum products supply

December 2006 – January 2007 Research Engineer
Indian Institute of Science (IISc), Bangalore
Sponsored research project "Probabilistic Seismic Stability Analyses of Earthen Slopes" involved:

- Designed computationally effective model for earthen seismic slope reliability analysis
- Conducted probabilistic analysis for the seismic slope stability to incorporate uncertainties in the magnitude of the earthquake, groundacceleration, fault location, and soil properties explicitly
- Response surface methodology was applied for probabilistic designing of input variables

May 2006 – July 2006 Research Engineer
Indian Institute of Technology, Madras (IITM)
Sponsored research project on "Preparation of Design Manual for Connections as per new Indian Standard (IS): 800" involved:

- Provided design tables of various diameter bolts for bearing type connections against shear, bearing, and tension failures
- Showed example long hand calculations
- Tabulated design tables for tensile strength of angle sections, bolted as a single or double row with varying connection lengths, against rupture or block shear failure
- Formulated a design table for eccentrically loaded bolt groups

SELECTED PROJECTS

Chevron – BigFoot – Phase III (April 2011 – July 2011): Responsible for topside platform FEA-based fire analysis and PFP optimization. Got acquainted with piping, equipment, structural etc oil & gas platform terminologies and grasped the focus of the client's interest and solution approach methodology for fire and PFP analysis.

BP – Mad Dog (September 2011 – October 2011): Assessed dropped object impact analysis for the Mad Dog platform. Started with model conversion for the provided SACS platform model to FEA-based Abaqus model. Implemented contact algorithm and strain rate effects to capture material effects and contact forces. This project was quite a success and gained accolades both internally and externally.

Shell – Auger (October 2011– November 2011): Responsible for FEA-based blast wall capacity assessment for platform Auger's living quarter building using Abaqus. The geometry of the building was big and complicated near the blast wall; hence blast wall analysis was done in steps. In order to capture most of the impact of the wall behind the blast wall, the geometry was expanded after each analysis. Sensitivity analysis was also performed on the blast wall capacity.

Risk Based Structural Integrity Assessment of Reactor Containment Building (August 2012 – November 2012): Risk assessment of the Reactor Pressure Vessel (RPV) concrete cavity and the RPV support system for Ex-Vessel Steam Explosion (EVSE) events in Shin-Kori Nuclear Power Plant Units 3&4 (SKN 3&4) using finite element analysis (FEA) was performed. Uncertainties in material models were propagated using Latin Hypercube Samples (LHCS). By convolving the estimated fragility with the cumulative probability distribution for EVSE loadings, conditional failure probabilities of the RPV cavity and RPV support regions were individually estimated for informed risk-based decision-making. The analyses were performed using the non-linear FEA software LS-DYNA. LS-DYNA has a state-of-the-art explicit dynamics solver which can handle problems involving large deformations. It also has a broad material database for modeling concrete and steel material behaviors.

Shell FPSO Stones Topsides and Turret Fire Assessment & PFP Optimization (August 2013 – March 2014): Performed the Structural Topsides and Turret Fire Assessment and PFP Optimization for the Shell Oil Corporation (Shell) FPSO Stones Facility. Based on the results of thefire response assessment and PFP optimization analyses, a final recommended PFP scheme was developed for the FPSO Stones Topsides and Turret structure.

Shell Auger Blast Shield Wall - Temporary Field Weld Design for Blast Panel Installation (July 2013): Provided structural design of temporary field welds for individual blast panels to be connected to Truss Row 5 for Shell Auger facility based on 100-year wave loading.

Shell R&D (Oct 2013) - Supported Piping Flange Joint Leakage Analysis: Established spreadsheet utilizing analytical calculations to determine the variation in bolt forces and gasket stresses to prevent leakage of a thermally expanded/contracted pipe flange joint as a result of the restraint installed underneath the flanged joint. Furthermore, the accuracy of the results was validated using a detailed finite element analysis.

Mustang/Inpex Ichthys Blast Analysis and Design - Main Deck Blast Wall Design – Topsides Redundancy Assessment (March 2013 – Dec 2013): Performed conceptual and detailed FEA blast design work for the Main Deck blast walls and Lower Deck blast wall on Truss Row B, between Row 5a and 6 of the Ichthys Central Processing Facility (CPF) topsides structure. To effectively resist the design blast loads on such a large area, the primary wall members were located to transfer their reactions blast to the stiffer members in the topsides structure. The primary members of both walls utilized the entire available structural depth while avoiding egress routes and other non-structural objects. The detailed local analysis models (sub-models) were developed towards the final stages of the detailed design phase and were used to verify the performance of certain connections. A non-linear static analysis of the CPF Topsides structure was performed for the redundancy assessment. Redundancy assessment was considered by removal of critical members in the Topsides structure to assess any potential impact on the global collapse of the Topsides.

BP Sangachal Azerbaijan (March 2014 – April 2014): A 3-D finite element heat transfer analysis of two types of wall/roof systems was performed. The first used blown mineral fiber insulation between a corrugated metal panel on the exterior side of the walkway and a sheet of wood (OSB) on the interior. The other type consisted of a pre-manufactured rigid insulation panel.

RedGuard - Blast Assessment for Several Modules (March 2014 – May 2014): Carried out structural response assessment of the main structural components of several RedGuard modules against the target blast loading furnished and if required provided recommendations for retrofitting the building to meet the blast loading criteria. The blast resistance of structural components was investigated using the simplified Single- Degree-of-Freedom (SDOF) methodology; an industry-wide accepted simplified method used to assess the dynamic structural response (FEA-based) of blast-loaded structures and structural components.

PUBLICATIONS

Refereed Publications

Sultania, A., Manuel, L., 2011, "Long-Term Reliability Analysis of a Spar Buoy-Supported Floating Offshore Wind Turbine," Proceedings of ASME 2011, 30th International conference on Ocean, Offshore and Arctic Engineering OMAE, Rotterdam, The Netherlands, June 2011.

Sultania, A., Manuel, L., 2010, "Extreme Loads on a Spar Buoy-Supported Floating Offshore Wind Turbine," Proceedings of 51st AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference, Dallas, TX, April 2010.

Vasanwala S. A., Sultania A., "Neural Network Approaches for Axially Loaded Sloped Isolated RC Footing Design." Indian Concrete Journal.

Vasanwala S. A., Sultania A., "Design and Analysis of Double-Layer Grids using Neural Networks," ADIT Journal of Engineering, India.

Technical Presentations

Presentation in OTC (Offshore Technology Conference), Houston, TX, May 2012 – "Advanced Analysis Methods for Complex Structural Fire Assessment Problems"

Presentation in WINDPOWER (conference on Wind Energy), Orlando, FL, May 2010 – "Reliability analysis of a spar buoy-supported floating offshore wind turbine"

Paper and presentation in AIAA (conference on Structural Dynamics), Dallas, TX, April 2010 – "Extreme loads on a spar buoy-supported floating offshore wind turbine"

Plenary talk, OMAE (conference on Offshore Mechanics), Honolulu, Hawaii, June 2009 – "On the stochastic response of a spar buoy-supported floating offshore wind turbine"

Poster presentation, TREX (Texas Research Experience), Austin, TX, April 2009 – "Modelling of offshore floating wind turbine using "Hywind" concept"

Plenary talk, CIV-ERE organized by Department of Civil Engineering, IIT Kanpur, India, February 2006 – "Uses of Fly Ash and It's Environmental Impacts"

Plenary talk, TechFest, organized by Civil Engineering Department, NIRMA University Ahmedabad, India, September 2005 – "Integrated Common Hazardous Waste Management"

TRAININGS

Offshore Structures Course
Jacket Topsides Design
CAPFOS Training
Blast hazard mitigation
XFEM vs. Classical Fracture Modeling Techniques in Abaqus
SACS - Dynamic modal analysis, Hydrodynamics
METS Helicopter Underwater Egress Training
Water Survival/Swing Rope/Personnel trans. Basket
Safe Gulf
Abaqus Solid Structure modeling
GeniE - Structural Assessment
Fatigue Assessment using SESAM
Abaqus - Blast Analysis, Dropped Object Assessment
DNV - Genie Modeling
USFOS - Fire Analysis
Hypermesh Training
Introduction to Abaqus
Safety & Reliability
Bolted Joint Design, Analysis, and Code Compliance
SACS Offshore Structural Analysis Methods
Practical Modelling of Joints and Connections- NAFEMS e-Learning
HydroD, Wadam, Wasim Training
KPMG Project Management Professionals (PMP) Exam Prep Course
International Association for Six Sigma Certification (IASSC) Certified Lean Six Sigma Green Belt

SKILLS

Tools: MATLAB, Mathematica, MathCAD, SPSS

FE and Structural Analysis Software: TEKLA, USFOS, SACS, ABAQUS, GeniE, SESAM, FAST, ANSYS, FLUENT/GAMBIT, PHAST, MIDAS, NeuroSolutions, STAAD.Pro, SAP 2000 Nonlinear, TurbSim,FLEXCOM, CAPFOS, Hypermesh, LS-DYNA, HYDRO-D, REVIT, AUTOCAD, E-TABS, Navisworks, AQWA, NASTRAN, SBEDS, FEMAP, Orcaflex, Flexcom, Shear7

Codes: IEA, BIS , IBC, AISC , ASCE, DIN, OSHA, ASME, ASTM, API, ISO

Coding Languages: C, C++, Fortran, Python, R, SAS, ML, AI, Clustering

Environments: UNIX(Linux), Windows, Macintosh, MS-DOS
MS Word, MS PowerPoint, MS Excel

Languages: English, German (Level – 1), Max Muller Foundation

AWARDS

Top performer for 4 years with several mid-year review Awards

Awarded twice the fastest promotions (within 6 months) versus an industry average of 2 years

HONORS

Runners-up in Business plan competition "Smart City Design," at Indian Institute of Management (IIM), Ahmedabad, 2016

Awarded **Presidential Gold Medal** in Civil Engineering class at NIT Surat, 2007

Received **Vishwakarma Merit Award** – the highest honor for an outgoing student signifying engineering excellence - awarded by Institution of Engineers, Gujarat State Centre, 2007

Awarded **Gold Medal** by the Institute of Civil Engineers & Architects, Surat, 2007

Graduate Research Grant from The University of Texas at Austin

Awarded **Third Prize** in IMechE "Population Challenge" competition with a team formulated within Atkins (UK – Energy, Oman, US – Energy)

Indian Institute of Science, Bangalore **Young Engineering Fellow** for 2006

Indian Institute of Technology, Madras **Summer Research Fellow** for 2007

PROFESSIONAL AFFILIATIONS and SOCIETIES

American Society of Civil Engineers (ASCE)

American Concrete Institute (ACI)

American Wind Engineering Association (AWEA)

Institute of Engineers (IEI), India

REFERENCES

Ali Sari, PE, Ph.D.
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Houston, Texas
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