Ph.D. in Petroleum Engineering - University of California; Berkeley, CA, USA
Diploma in Management of Technology - Haas School of Business; U.C. Berkeley, CA, USA.

AMITABH GARG, PH.D.
Reservoir Engineer

HIGHLIGHTS OF QUALIFICATIONS

- 18 years reservoir engineering experience with focus on field development planning, including reservoir simulation and conducting full scope EOR evaluation.
- Involved in the field development planning of two of the biggest fields in North America and several small to medium sized fields.
- Comprehensive understanding of traditional reservoir engineering techniques including material balance calculations and well test analysis; proficient in reservoir evaluation tools including MBAL, PTA, DCA, and DSS.
- Experience working with multi-disciplinary teams, including geologists, geophysicists, drilling engineers, and co-owner representatives; worked effectively as an interface between operating asset and technology flagships for a major international oil and gas company.
- Evaluated full spectrum of EOR processes including miscible gas processes, enhanced waterflood processes including low salinity water flood and chemical EOR flood, Brightwater and thermal processes; evaluated primary projects including infill drilling and secondary projects including water flood and gas injection; screened reservoirs for EOR processes application, estimated recovery, designed laboratory studies program and created proposal/plans for pilot studies including surveillance and monitoring.
- Experienced with design of EOR experimental lab programs in support of fluid characterization.
- Experienced with using and building numerical simulation models including compositional simulation.
- Certified reserves estimator for a major international oil company; prepared annual reserves update.
- Mentored and coached less experienced engineers; created detailed coaching plans highlighting training needs and gaps; recommended training to fill the gaps.
- Experience working non operated assets and working with co-owner representatives.
- Proven expertise in presenting technical material at major symposiums including SPE, AIChE, and ACS.
- Training in: VIP, Eclipse 100, Eclipse 300, PETREL, FRONTSIM, MBAL, DSS, Crystal Ball, Chemical flooding, Miscible Gas flooding, Waterflooding.
- BP Certified Reserves Estimator
- Inducted to Tau Beta Pi (Engineering Honor Society)
- Inducted to Pi Epsilon Tau (Petroleum Engineering Honor Society)

PROFESSIONAL EXPERIENCE

WF EOR Lead (2012-2015), BP Exploration (Alaska) Inc.

- WF RM RE for Miscible Injectant Foam pilot for the largest miscible gas injection flood in the world; provided support including pilot design, pattern selection and surveillance plan.
- Conducted simulation studies to understand recovery from a thin bioturbated reservoir in Alaska with the purpose to create field development plan; conducted studies to evaluate various development scenarios including multifrac horizontal drilling, waterflooding and miscible gas flooding.
- Created development plan for part of a matured waterflood field (~23 billion barrels OOIP); worked in concert with geologists, production engineers, and petrophysicist to develop a strategy to exploit the remaining and bypassed oil via infill drilling, pattern reconfiguration, VRR management, and conformance improvement.
- Evaluated novel enriched gas EOR application for WF development including MIST (Miscible injection stimulation treatment) option.
- Alaska Bright Water SPA for a large matured Alaska field; coordinated laboratory studies via outside BP vendor; Conducted retrospective study in conjunction with EOR flagship to understand recovery from Bright Water application in Alaska including analysis of surveillance data for 70+ patterns.
- SPA for Chemical EOR processes; provide technical support to various BP operated fields and OBO fields to evaluate chemical EOR as a possible depletion option.

Alaska Technology Lead (2012-Present), BP Exploration (Alaska) Inc.

- Reviewed technology requirements for BP Alaska and completed BP Alaska Technology plan for 2014, aligning technology needs with business strategy.
- Chair monthly Alaska Technology Forum meetings to understand technology needs and gaps, establishing resourcing requirements, delivery milestone and governance.
- Alaska Interface with BP Technology Flagships.
- Technical Authority for publications approval in Alaska.

Reservoir Engineer- Viscous Renewal Technology Program (2010 to 2012), BP Exploration (Alaska) Inc.

- Responsible for management of Renewal Technology Program for the development of ~12 billion barrels of viscous oil in Alaska; created R & D portfolio with help from BP EOR flagships, academic institutions and research laboratories; designed laboratory and simulation studies and developed proposal for field pilot; tracked progression of studies via bi monthly global meetings.
- Managed one of the biggest Technology programs in BP; coordinated technical specialist studies via outside contractors (Heriot Watt University, UT Austin, Stanford University, University of California @Berkeley, University of Calgary, Alberta Research Council, other vendors) and BP Technology Flagships.
- Evaluated LoSal, Enhanced Waterflood (including chemical EOR processes), Gas EOR processes, and thermal EOR processes as possible depletion options using analytical models, numerical simulation studies, laboratory studies and field trials.
- Designed and coordinated LoSal studies at Heriot Watt (HW) University; coordinated mechanistic modeling studies for benefit evaluation; concluded EOR benefits associated with viscous LoSal EOR mechanism are not as substantial as light oil.
- Completed lab studies at Alberta Research Council for evaluation of chemical EOR; obtained optimum formulation for field application; designed a polymer field trial in conjunction with EOR Flagship; coordinated mechanistic model studies with BP EOR Flagship to evaluate benefits.
- Evaluated thermal EOR processes including In-situ Combustion via analytical, numerical simulation and laboratory studies.

Lead Reservoir Engineer (2008-2010), Outside Business Operated Field

- Evaluated MI (miscible injectant) efficiency in the target reservoir with the objective to optimize the current MI EOR program; built finely gridded compositional sector models (with EOR Flagship help) and conducted simulation studies to make decision on whether to import more NGL's; charted a forward strategy for MI utilization given the current low pressure regime in the target reservoir; evaluated (via model studies) efficiency of enrich gas injection process in the target reservoir; evaluated scenarios including injection below MMP, implementation of lean gas chase program in part of the field, optimization of gas injection with different injectant compositions e.g., lean gas in one part of the field and enriched gas injection in other part to account for pressure differences in the field.
- Evaluated immiscible, viscosity reduction WAG (VRWAG) flood in a viscous oil reservoir; created plans for the implementation of VRWAG process including surveillance plan, reserves estimation (via reservoir simulation studies), analog comparison and analytical modeling; influenced partners to conduct VRWAG pilot to gather critical information for project success including injectivity; conducted mechanistic study of VRWAG to understand benefits of early MI injection.
- Evaluated LoSal EOR in a large Alaska field (~6 billion barrel); progressed laboratory and simulation studies to reduce risk and uncertainty and identified benefits associated with implementation of a LoSal pilot via sector model studies for BP assurance; worked with partners to agree on a LoSal appraisal plan, on a source water delivery method for pilot; pilot surveillance plan; worked with facilities engineer to review facilities options for delivery of LoSal water.

Coordinator Field Restart (2005 to 2007)*, *BP Exploration (Alaska) Inc.

- Coordinated reappraisal of a turbidite field in Alaska including testing new technologies to prove reservoir depletion viability, disposition options, and creating value via satellites appraisal; one technology option studied in details included linking compartments in the turbidite reservoir to increase drainage radius via undulating horizontal well.
- Coordinated all aspects of field operations and provided quarterly and annual reserve updates; created LTP for the field.
- Conducted MBAL studies to understand reservoir recharge. Managed reservoir with help from the Subsurface Team for production optimization, production forecasting and reserves reporting.

Reservoir Engineer (2005 to 2008)*, *BP Exploration (Alaska) Inc.

- Responsible for field depletion planning and production optimization of ~1.5 billion barrel OOIP field.
- Evaluated CO2 EOR as possible future depletion mechanism given more CO2 resistant metallurgy of tubulars and facilities; coordinated PVT lab studies to estimate MMP and EOS development; built (with BP EOR Flagship support) type pattern models to evaluate range of recoverable oil, optimum flooding mechanism (gravity stable flood vs. Pattern WAG) and CO2 requirements; developed first view of field CO2 strategy.
- Conducted enriched gas (MI-miscible injectant) optimization study via analysis of surveillance data, detailed discussions with field operation staff and via TPM simulation studies; determined that MI flood is not as efficient as thought of at sanction; worked with geoscience staff to develop a better understanding of the reservoir architecture influence on sweep and trapping of MI; determined that substantial amount of MI gets trapped and along with leaning of produced gas influences reserves associated with MI EOR; reevaluated reserves associated with MI EOR given reduced MI future supply; suggested making MI more richer than the targeted composition to improve recovery.
- Represented non Prudhoe fields on both the Alaska CO2 strategy team and the Alaska major gas sales team; conducted FFM and material balance studies to determine impact of Alaska Major Gas Sales (MGS) on non-Prudhoe field production and evaluated field depletion strategy in a MGS scenario.
- Coordinated building of field FFM.

Senior Reservoir Engineer (2002 to 2005)*, *Occidental Oil and Gas Company, California

- Responsible for reserves estimation and production forecasting; waterflood management, secondary and enhanced oil recovery evaluations, reservoir development planning.

- Designed and executed an ethane rich miscible gas injection pilot and a six pattern waterflood pilot; screened various EOR/IOR processes using industry standard methods and identified possible candidates including miscible gas injection, waterflooding, ASP flooding, and cyclic steam stimulation; forecasted rates and reserves using numerical models; interacted with facilities and drilling engineers to design wells and surface facilities; completed and submitted application for gas injection permit to California Department of Oil and Gas.

- Completed depletion planning studies of a gas condensate reservoir using MBAL and numerical model tools and successfully drilled 35 wells as part of recommended field development strategy; coordinated all aspects of field development planning including management approval, facilities planning and procuring of various permits.

- Estimated reserves and presented to management; estimated proved, probable and possible reserves using numerical models, volumetrics, decline curve, and material balance.

- Supported primary recovery and field development planning; identified opportunities for infill and step-out drilling and submitted more than 30 AFE's; conducted special studies on projects including horizontal wells program and energized fracs.

Field-wide Optimization Reservoir Engineer, (1998-2002), ***BP Exploration (Alaska) Inc.***

- Responsible for field development planning, reserves estimation and production forecasting.
- Technical Lead for a field-wide EOR project on miscible WAG injection; estimated potential reserves of 150 MMBO with the project being commended for the distinguished regional BP Helios Award in 2001; created a field-wide program for the project; conducted a comprehensive field-wide study to identify and rank possible candidates; submitted a comprehensive report to the unit on pattern ranking and reviewing with partners.
- Prepared a field development plan for a ~23 billion OOIP field; conducted numerical simulation studies to evaluate development scenarios including waterflooding, gas cap cycling, drilling extended reach horizontal wells, and well stimulations; recommended miscible WAG process that could potentially recover 40 MMBO.

Researcher, (1994-1998), Lawrence Berkeley National Laboratory, Berkeley, California

- Conducted research on estimating hydrocarbon recovery from naturally fractured reservoir under waterflooding and water drive; developed novel experimental techniques to visualize fluids flow in cores using Computer Tomography; matched experimental results with numerical simulations and developed analytical models to quantify total recovery from naturally fractured reservoir.

PUBLICATIONS AND PRESENTATIONS

- Six presentations in major symposiums including SPE, AIChe, and ACS (Papers available upon request).