DR. GANESH C. THAKUR

UNIVERSITY of HOUSTON, 5000 Gulf Freeway, UH Technology Bridge
Room 192E, Houston, Texas 77204, USA | e-mail: gcthakur@uh.edu; drganeshthakur38@gmail.com
Office Phone: 1-713-743-8862

RESUME HIGHLIGHTS

- World-recognized leader in reservoir engineering, simulation and management. He is an established leader in the interdisciplinary practice of waterflooding, CO2 EOR, CCS and reservoir management, as documented in several Society of Petroleum Engineers Intl. (SPE) publications and literature.
- His skills and expertise are called upon widely in the development of oil and gas projects, design and operation of reservoir management programs, mentoring technical professionals, and serving as an ambassador of technical capabilities to national oil companies and government ministries (the latter of which have included China, India, Indonesia, Thailand, Angola, Nigeria, Kazakhstan, Saudi Arabia, Kuwait, Venezuela, Colombia, Argentina, Peru, Ecuador, and Mexico, among others). He also served as the SPE Intl. President in 2012.
- Has several decades of operational, technical and administrative experience and an impressive list of publications and teaching engagements conducted around the world. He has a unique combination of operational, research/technical, and managerial skills set, and it has played a unique role in creating significant values for various companies.
- Seasoned advisor and mentor for executives and technical professionals in the areas of oil & gas E&P, reservoir management, development of oil and gas projects, IOR and EOR, reservoir engineering & simulation, heavy oil, offshore & onshore reservoirs, tight and unconventional reservoirs, surveillance & monitoring, water management, appraisal, reserves determination and review, and development & production of oil & gas fields.
- Experienced and talented leader of global multifunctional teams, communicator and speaker. Strong interpersonal skills and influencer. Leading many teams of top class scientists and engineers working in the field of energy to solve complex problems for the industry.
- Skills: Expertise in various aspects of petroleum engineering, characterization & simulation, reserves & reservoir evaluation, secondary recovery and EOR, reservoir and well productivity improvement, heavy oil and thermal recovery, horizontal well technology, water management, CCS and unconventional reservoirs.

CORPORATE, UNIVERSITY, AND SPE EXPERIENCE

August 2016 – Present

Director – Energy Industrial Partnerships and Distinguished Professor of Petroleum Engineering, University of Houston (UH)

- Leads many teams of top class scientists and engineers working in the field of energy to solve complex problems for the industry.
- Develops and grows research partnerships with the Energy Industry for UH to emerge as the Energy University.
- Promotes a high level synergy and teamwork of integrated petroleum reservoir management, involving unconventional, conventional, deep water, secondary recovery and EOR, heavy oil, tight oil and gas reservoirs, and water resources, throughout UH as well as Houston and Texas.

President & Global Advisor - Executive & Technical, Thakur Services Inc. *Houston, Texas* *July 2014 – July 2016*

- Led development of comprehensive technology strategies for a Fortune 500 national oil company (NOC) in South America in order for company to become more efficient and competitive in the market place. Technology strategies are currently being adopted across the organization.
- Developed a program on practical integrated reservoir management and taught it to over 100 senior technical professionals and executives for a $100-billion dollar national oil company in Asia.
- Served as the Chief Technical Advisor for Geo-Park, a leading independent E&P Company in South America with operations in several countries. Held seven major workshops involving multi-disciplinary teams, rigorously reviewed several key assets, and developed recommendations with action plans and milestones.
- Served as the Chief Scientific Advisor for TACHYUS, a startup company in the Bay Area specializing in developing forecasting tools and techniques as alternatives to reservoir simulation.
- Served as expert witness on complex petroleum engineering and reservoir management arbitration matters. Also, played key roles on major international negotiations involving significant reserves, production, and investment.

- Developed and offered training programs on practical aspects of integrated reservoir management and water injection management for three major NOCs in the Middle East, Far East and Latin America.

Vice President & Global Advisor, Fellow – Chevron *April 2005 – June 2014*
Houston, Texas

- Provided strategic guidance and consultation on key upstream oil and gas projects worldwide.
- Served as the highest level technical professional across the entire corporation (60,000 total no. of employees); recognized with hands on technical knowledge, ability to communicate with and influence executives within Chevron and JV partner companies, including NOCs.
- Actively worked on and/or led teams in the design of several key deep water offshore, shallow water offshore and onshore major capital projects involving billions of dollars of CAPEX, which successfully created significant value for company through hundreds of million barrels of reserves and hundreds of thousand barrels of production.
- Functioned as key technical spokesperson for the company.
- Chairman of the Corporate Reservoir Management Forum (focusing on the development of oil and gas projects and surveillance, analysis and optimization of projects) sharing best practices and lessons learned from projects around the world. Forum was typically attended by 500-800 participants, and Dr. Thakur was the longest tenured leader for 18 years.
- Actively participated in corporate reserves review for various assets around the world for 15 years (one of the longest tenured members in the company history).
- Played the key technical role in a negotiation involving Chevron and Saudi Aramco. It was for the continuation of the operatorship in the Neutral Zone between Saudi Arabia and Kuwait. The negotiation involved billions of barrels of petroleum resources.
- Served as a technical resource for the property evaluation of a major acquisition by Chevron. It resulted in a successful outcome involving over a billion barrels of oil and gas reserves and over 15 billion dollars.
- Excelled as a teacher and training expert on reservoir management, reservoir engineering and simulation, secondary recovery using gas and water injection, EOR, horizontal well technology, heavy oil and productivity improvement.

2012 President and Chairman of the Board - Society of Petroleum Engineers Intl. (2011 - President Elect & 2013 - Past President); worldwide assignment *November 2010 – October 20*

As the 2012 President:

- Served society's 120,000 members world-wide, including 425 sections and student chapters.
- Reached a milestone in membership surpassing 100,000 members.
- 200% increase in training courses over what was done a couple of years ago.
- Championed PRMS (Petroleum Resources Management System), covering various aspects of oil and gas reserves and resources estimates.
- Increased operating revenue by 25%; balance sheet dated March 31, 2012 – total assets of $97 million and operating income of $8 million.
- Led and chaired SPE's strategy steering team leading to the development of new strategies.

Other notable achievements related to SPE International (outstanding service to SPE, both professional/administrative and technical):

- Authored over 60 technical articles and presidential columns, three books, edited two SPE reprint series, and presented over 250 lectures/short courses around the world.
- Recognized as an SPE Distinguished Lecturer.
- Elected to represent the SPE on the National Petroleum Council (NPC)
- Board member of AIME and Task Force Leader.
- Chairperson-SPE Reprint Series Committee; edited reprint series on Reservoir Management and Waterflooding.
- Served on the SPE Editorial Review, Forum Series, and Annual Meetings and IPTC committees.

Principal Technical Advisor, Chevron *San Ramon, California* *August 1999 – March 2005*

- Chairman of the Corporate Reservoir Management Forum sharing best practices and lessons learned from the projects around the world.
- Training expert on reservoir management, reservoir engineering and simulation, secondary recovery using gas and water injection, EOR, horizontal well technology, heavy oil, productivity improvement, and integrated solutions.
- Actively worked on and/or led the design of several key deep water offshore major capital projects involving billions of dollars, and successfully created significant value for Chevron. Example: Led the conceptual design and development of a major deep water offshore double displacement process with miscible gas and water injection. This project involved a CAPEX of $3.5 billion and has created tremendous value for the company, producing 250,000 BOPD. Played key role in convincing the project team and the partners on the new design and development plan for this very profitable project.
- Participated in the design of an RMQFR (Reservoir Management Quality Fitness Review) and led the implementation of these reviews for over 40 assets around the company. RMQFR identified and focused on specific areas for improvement based upon (a) process guidelines and (b) technical analysis and past experience of analogous assets. Technical due diligence and process recommendations were communicated to various Business Units.

- Actively participated in the corporate reserves reviews for various assets around the world.

Senior Consultant & Technology Accounts Manager, Chevron *January 1998 – July 1999*
La Habra, California

- Actively performed Technology Accounts Manager role for several major strategic business units (BUs) in Chevron, including Mid-continent & Permian Basin BU, San Joaquin Valley BU, Indonesia BU, Asia BU, Angola and Southern Africa BU, Nigeria and Mid-Africa BU.
- Responsible for technology management and coordination and acted as the focal point for technology planning, budgeting and delivery to these BUs.

Manager - E&P Services, Division Manager – Reservoir Simulation *August 1977 –*
Chief Secondary Recovery Engineer, Director EOR (Thermal Heavy Oil and Non-Thermal) *December 1997*
Chevron/Gulf locations - *La Habra, California; Houston, Midland/Odessa, Texas*

- Championed retaining the reservoir simulation core competency within Chevron by leading a team that performed a thorough investigation, considering bids from major suppliers of technology and DA (decision analysis). Convinced all stakeholders within the company including senior management and received their strong support.
- Established, championed and led the non-thermal EOR team and developed strategies to kickoff this activity for the Corporation.
- Led and supervised all key waterflood projects and CO2 flood projects (both company operated and JV) in the Permian Basin, especially their design, development plan, surveillance and monitoring. These included: SACROC unit, McElroy, Goldsmith, North Ward Estes, Wagon Wheel Penn, Hobbs, Denver Unit (JV), Slaughter (JV), among others.
- Led the design of initial waterfloods in Congo (Mibale field) and Nigeria (Delta South and Meren fields) in late 1970's involving reservoir and production engineers and geologists. These projects over the last 30 years have added hundreds of millions of barrels of reserves. Advised on basic reservoir engineering work for fields in Angola.
- Directed all EOR applications work involving heavy oil thermal and non-thermal methods for USA, Canada and Venezuela.

Senior Research Engineer & Reservoir Simulation Development Engineer, *September 1973 –*
BP and SSI *Tulsa, Oklahoma and Denver, Colorado* *July 1977*

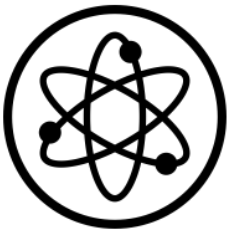
- Developed a coupled gas reservoir-wellbore-facilities simulator for BP/Amoco used for several gas fields in the USA and Canada. Conducted several reservoir simulation studies for fields worldwide.

HONORS & AWARDS

- Honorary Membership of SPE International (highest honor awarded to only 0.1% of the Society's total membership), 2019
- Treasurer, SPE International Foundation, 2017-19
- President, SPE International Foundation, 2019-21
- Board of Director and Financial Advisory Committee, The Academy of Medicine, Engineering, and Science of Texas (TAMEST)
- Received Governor of Texas University Research Initiative (GURI) Grant of $3 million for developing cutting edge technology and serving as economic catalysts to the Texas economy. As a companion of this grant, U. of Houston matches dollar for dollar for $3 million also – 2016.
- Chairman, Indian Institute of Technology (Indian School of Mines) Alumni Association of North America (ISMAANA) 2014 -2018.
- Elected a Member of the National Academy of Engineering (NAE) – USA, 2016
- IIT(Indian School of Mines) Distinguished Alumni Award, 2016
- Elected to represent SPE Intl. on the National Petroleum Council (NPC), US Department of Energy, 2013-14
- Pennsylvania State University's Outstanding Alumni Achievement Award, College of Earth and Mineral Sciences, 2006
- Reservoir Description and Dynamics Award, Society of Petroleum Engineers Intl., 2005
- Orange County, California's Outstanding Engineer of the Year Award, Orange County, 1994

EDUCATION

- Penn State University, Doctorate of Philosophy (PhD), Petroleum & Natural Gas Engineering, *1972 – 1973*
- Penn State University, Master of Arts (MA), Mathematics, *1972 – 1972*
- Penn State University, Master of Science (MS), Petroleum & Natural Gas Engineering, *1970-1971*
- Houston Baptist University, Master of Business Administration (MBA), 1978 -1979
- IIT (Indian School of Mines), BS - Honors, Petroleum Engineering, First Rank in Class, *1970*



MOST IMPORTANT CONTRIBUTIONS TO SPECIFIC PROJECTS FOR CHEVRON BY DR. GANESH THAKUR:

Practical working conditions of waterflooding and CO2 flooding in the Permian Basin, Africa (Nigeria and Angola), South America (Argentina, Venezuela, Colombia), Partition Zone (Saudi Arabia – Kuwait), Kazakhstan, Indonesia and India:

- **Project 1: Agbami Project, Nigeria:**
  - Actively worked on and/or led the design of several key deep water offshore (5000 ft. of water depth or more) major capital projects involving billions of dollars, and successfully created significant value for Chevron. Example: Led the conceptual design of a major deep water offshore double displacement process with miscible gas and water injection. This project involved a CAPEX of $3.5 billion and has created tremendous values for the company, producing 250,000 BOPD, and adding 900 + millions of barrels of oil reserves. He played the key role in convincing the project team, Chevron senior management, and the partners on the new design.

- **Project 2: Meren and Delta South Projects, Nigeria:**
  - Scope of the project and what happened: Led the design of waterfloods for the Delta South and Meren fields in Nigeria involving several reservoir and production engineers and geoscientists. These projects over the last 30 years have added hundreds of millions of barrels of reserves and hundreds of thousands barrels of oil production. The recovery factors in these fields are outstanding, approaching 55 to 60% of OOIP.

- **Project 3: Corporate Reservoir Management Forum:**
  - Scope of the project and what happened: He served as the Chairman of the Corporate Reservoir Management Forum sharing best practices and lessons learned from projects around the world. Forum was typically attended by 500-800 participants, and Dr. Thakur was the longest tenured leader for 18 years. It is considered the "flag ship" of all reservoir management activities in Chevron.

- **Project 4: Championed "Developing and Retaining Two Core Competencies in Chevron":**
  - Championed and retained the reservoir simulation core competency within Chevron by leading a team that performed a thorough investigation, considering bids from major suppliers of technology and DA (decision analysis). Convinced all stakeholders within the company including senior management and received their strong support. In addition, re-established, championed and led the non-thermal EOR team and developed strategies to kickoff this activity for the Corporation. Reservoir Simulation and EOR are

considered Chevron's core competencies now, and the company is making tens of billions of dollars of investment based upon these capabilities. Dr. Thakur led the technical part of the negotiation of the "Neutral Zone" operations JV between Saudi Arabia and Kuwait (world's major carbonate steamflood EOR project). As a result of his significant technical and business contributions over a sustained period of time, he was recognized and promoted as the "Highest Level" technical professional in the entire corporation (of about 60,000 employees).

PUBLICATIONS

Partial List of Publications by Dr. Ganesh Thakur

(Understanding of the science and art of petroleum engineering)

BOOKS

1. Author of Integrated Waterflood Asset Management, PennWell Books, 1998
2. Co-author of Integrated Petroleum Reservoir Management, PennWell Books, 1994
3. Author of Reservoir Management of Mature Fields, IHRDC, 1992

SPE REPRINT SERIES CHAIRMAN/EDITOR

1. Waterflooding, 2003
2. Reservoir Management, 2000

PAPERS/ARTICLES/PATENTS

2019

1. P. Chen, **G.C. Thakur**, S. Balasubramanian, "Miscibility Management for CO2 EOR and Storage at Depleted Oil Reservoir", presented at 2019 Carbon Management Technology Conference (AICHE) in Houston, TX, July 15-18, 2019
2. S. Bose, M. Myers, P. Chen, **G.C. Thakur**, et al. "Application of an Integrated Petrophysical Modeling to Improve Log-based Reservoir Characterization and Oil in-Place Estimate of a Fresh Water Shaly-Sand Reservoir", accepted by SPWLA 60th Annual Symposium in The Woodlands, TX, June 15-19, 2019
3. P. Chen, G.C. Thakur, S. Balasubramanian, A. Selveindran, S. Bose, "CO2-EOR and Carbon Storage in Indian Oilfields: From Laboratory Study to Pilot Design" SPE-195378-MS, the SPE Western Regional Meeting in San Jose, California, USA, on April 23-26, 2019.

4. P. Chen, G.C. Thakur, S. Balasubramanian, A. Deka, Y. Zhu, S. Bose, "A Robust Reservoir Screening Approach to Identify IOR/EOR Opportunities from Mature Oilfields", SPE-195270-MS, the SPE Western Regional Meeting in San Jose, California, USA, on April 23-26, 2019.

2018

5. G.C. Thakur, P. Chen, S. Balasubramanian, "Optimization Technique for CO2-EOR Miscibility Management in an Oil Reservoir", **US Provisional Patent Application** No. 62/740,379, Oct 2, 2018
6. P. Chen, S. Balasubramanian, S. Bose, A. Alzahabi and **G.C. Thakur**, "An Integrated Workflow of IOR/EOR Assessment in Oil Reservoirs", OTC-28726-MS, paper presented at Offshore Technology Conference held in Houston, TX, April 30-May 3, 2018
7. S. Bose, S. Balasubramanian, A. Alzahabi, P. Chen, **G.C. Thakur**, "Hybrid Grouping Of Wells Combining Geological Compartmentalization And Surface Facilities", OTC-29008-MS, paper presented at Offshore Technology Conference held in Houston, TX, April 30-May 3, 2018
8. S. Bose, A. Alzahabi, S. Balasubramanian, P. Chen, **G.C. Thakur**, "A Multi-Disciplinary Approach to Select the Optimum Infill-Well Location for Efficient Reservoir Management of a Mature Field", OTC-28626-MS, paper presented at Offshore Technology Conference held in Houston, TX, April 30-May 3, 2018
9. S. Balasubramanian, P. Chen, S. Bose, A. Alzahabi and **G.C. Thakur**, "Recent Advances in Enhanced Oil Recovery Technologies for Unconventional Oil Reservoirs", OTC-28973-MS, paper presented at Offshore Technology Conference held in Houston, TX, April 30-May 3, 2018
10. A. Deka, P. Chen, and **G.C. Thakur**, "Diagnostic Analysis Approach to Evaluate Waterflood Performance and IOR/EOR Screening in Mature Reservoirs", SPE Trinidad and Tobago Section Energy Resources Conference 2018, June 25-27. 18TTCE-P-395-SPE
11. G.M. Thomas, A. Selveindran, A. Alzahabi, S. Bose, S. Balasubramanian, **G.C Thakur**, "Improving the Recovery of a Mature Permian Basin Oil Field: An Application of Integrated Petroleum Reservoir Management", SPE-191234-MS, SPE Trinidad and Tobago Section Energy Resources Conference 2018, June 25-27.
12. A. Anand, P. Chen, S. Bose, S. Balasubramanian, **G.C. Thakur**, "Petrophysics-Driven CO2 EOR Scoping Study: A Field Case Demonstration", presentation and publication at the SPWLA 59th Annual Symposium in London, UK on June 2-6, 2018
13. A. Alzahabi, S. Bose, S. Balasubramanian, **G.C. Thakur**, "A Data-Driven Workflow for Production Optimization and Efficient Reservoir Management Using a Multi-disciplinary Approach", paper presented at 2018 GEO - the 13th Middle East Geoscience Conference and Exhibition, 5-8 March 2018.
14. Assessment and Ranking of Oil Reservoirs for Improved Oil Recovery and Enhanced Oil Recovery", US Provisional Patent Application No. 62/637,265, March 1, 2018.

2017

15. "ARMA: Horizontal Completion Fracturing Techniques Using Data Analytics - Selection and Prediction", paper presented at the 51st US Rock Mechanics/Geomechanics Symposium, San Francisco, California, USA. June 25-28, 2017
16. "SPE-186068-MS: Application of Multi-Level and High-Resolution Fracture Modeling in Field-scale Reservoir Simulation Study", prepared for presentation at the SPE Reservoir Characterization and Simulation Conference and Exhibition held in Abu Dhabi, UAE, 8 – 10 May 2017

17. "SPE-185747-MS: Cyclic Steam Injection Modeling and Optimization for Candidate Selection, Steam Volume Optimization, and SOR Minimization, Powered by Unique, Fast, Modeling and Data Assimilation Algorithms", presentation at the SPE Western Regional Meeting, 2017.
18. "SPE-185507-MS: Redistribution of Steam Injection in Heavy Oil Reservoir Management to Improve EOR Economics, Powered by a Unique Integration of Reservoir Physics and Machine Learning", presentation at the SPE Latin America and Caribbean Petroleum Engineering Conference, 2017.
19. "Advanced technique for screening EOR (Enhanced Oil Recovery) and IOR (Improved Oil Recovery) methodologies for a given petroleum reservoir". US Provisional Patent Application Serial No UHID: 2017-039, May 15, 2017.
20. "Horizontal Completion Fracturing Techniques Using Data Analytics: Selection and Prediction", US Provisional Patent Application Serial No UHID: 2017-033, March 1, 2017.

2016 and Earlier

21. "Computer-Implemented Systems and Methods for Forecasting Performance of Water Flooding of an Oil Reservoir System Using a Hybrid Analytical-Empirical Methodology", US Patent 8,805,631, August 12, 2014.
22. "Computer-Implemented Systems and Methods for Forecasting Performance of Polymer Flooding of an Oil Reservoir System", US Patent 8,510,089, August 13, 2013.
23. "Computer-Implemented Systems and Methods for Screening and Predicting the Performance of Enhanced Oil Recovery and Improved Oil Recovery Methods", US Patent 8,175,751 B2, Date of Patent – May 8, 2012.
24. "The New Conventional", The Way Ahead Magazine, SPE Journal paper, 2012.
25. "The Role of Integrated Project Teams Applying Innovative Technologies to Improve Production and Recovery", pages 5-12, Investigations in Geophysics No. 15, Methods and applications in Reservoir Geophysics, 2010.
26. "The Role of Multi-Disciplinary Teams in Innovative Reservoir Management" SPE 112921, 2008 SPE North Africa TC and Exhibition held in Marrakech, Morocco, March 12-14 2008
27. "Should a Technical Career Track/Ladder Be a Preferred Option for Young Professionals?" Pillars of the Industry, The Way Ahead, SPE, pages 20-21, Vol. 3, No. 3, 2007.
28. ***"Waterflood Surveillance and Monitoring: Putting Principles into Practice", pages 552-562, October 2007, SPE Reservoir Evaluation and Engineering.***
29. "Techbits: Workshop Addresses Reservoir Water Control and Management", 1002-0026 JPT SPE Journal Paper – 2002.
30. "The World of Technology: Emerging Technology and Implications for the Greater Caspian Region", Special Invited Session Speaker at the AAPG Conference held in Istanbul, Turkey, July 9–12, 2000.
31. "Horizontal Well Technology – A Key to Improving Reserves", published in JCPT, October 1999, Volume 38, No. 10.
32. "Emerging Technologies in Petroleum Asset Management", International Energy Agency Conference on EOR, October 4–7, 1998, Carmel, California. Special invited speaker by the United States Department of Energy, Washington, D.C.
33. ***"The Role of Reservoir Management in Carbonate Waterfloods", SPE Paper 39519 presented at the 1998 SPE India Oil and Gas Conference and Exhibition held in New Delhi, India, February 10–12.***
34. "Light Oil Steamflood and Heavy Oil Reservoir Management", Proceedings, ASCOPE Conference,

November 24–27, 1997, Jakarta, Indonesia.

35. "Heavy Oil Reservoir Management", Proceedings of the 15th World Petroleum Congress, 1997 The Executive Board of the World Petroleum Congress, published by John Wiley & Sons.
36. "Heavy Oil Reservoir Management", SPE Paper 39233 presented at the SPE Fifth Latin America and Caribbean Petroleum Engineering Conference and Exhibition held in Rio de Janeiro, Brazil, August 30 to September 3, 1997.
37. ***"What is Reservoir Management?" JPT (June 1996) 520–525, a Distinguished Author Series article.***
38. "Can Integrated Reservoir Management and Technology Enhance Performance of Water and Gas Floods?" published in JCPT and presented at the 46th Annual Technical Meeting of the Petroleum Society of CIM in Banff, Alberta, Canada, May 14–17, 1995.
39. "The Role of Technology and Decision Analysis in Reservoir Management", SPE Paper 29775 presented at the 1995 SPE Middle East Oil Show held in Bahrain, March 11–14, 1995.
40. "Does Sound Reservoir Management Provide a Competitive Edge in Applying Petroleum Technology?", paper presented at Petrotech'95, First International Petroleum Conference & Exhibition, January 9–12, 1995, New Delhi, India.
41. "Does Simulation Play an Important Economic Role in Reservoir Management?" Paper presented at the Fifth International Forum on Reservoir Simulation, Muscat, Oman, December 10–14, 1994.
42. "Integrated Reservoir Management – A Team Approach", SEG Workshop 2, October 27, 1994, Los Angeles, CA.
43. ***"Waterflood Surveillance Techniques – A Reservoir Management Approach", JPT (October 1991) 1180–88, a Distinguished Author Series article.***
44. "Design of a Major CO_2 Flood, North Ward Estes Field, Ward County, Texas", SPE Reservoir Engineering Journal, Paper No. 19654, February 1991.
45. "Implementation of a Reservoir Management Program", SPE 20748, Paper presented at the 65th Annual Technical Conference of the SPE held in New Orleans, LA, Sept. 23–26, 1990.
46. "Reservoir Management: A Synergistic Approach", SPE 20138, Paper presented at the 1990 Permian Basin Oil and Gas Recovery Conference held in Midland, Texas, March 8–9, 1990.
47. "Questions and Answers: Reservoir Management Panel Discussion" 20781 – MS SPE, 1990
48. Thakur, G. C. et al: "CO_2 Mini-Test, Little Knife Field, N.D. – A Case History", SPE Paper 12704 presented at the SPE/DOE Fourth Symposium on Enhanced Oil Recovery (April 16–18, 1984).
49. ***Thakur, G. C. et al: "Engineering Studies of G-1, G-2 and G-3 Reservoirs, Meren Field, Nigeria", (Tech. Paper SPE 10362) JPT April, 82, 721-732.***
50. Thakur, G. C. et al: "G-2 and G-3 Reservoirs, Delta South Field, Nigeria: Part 2 – Simulation of Water Injection", (Tech. Paper SPE 9514) JPT Jan., 82, 148–158.
51. Thakur, G. C. et al: "G-2 and G-3 Reservoirs, Delta South Field, Nigeria: Part 1 – An Engineering Study", (Tech. Paper SPE 9513) JPT Jan., 82, 141–147.
52. Thakur, G. C. et al: "Engineering Studies of G-1, G-2 and G-3 Reservoirs, Meren Field, Nigeria", SPE Paper presented at the Fourth Annual Meeting of SPE-Nigeria held at Lagos (August 6–8, 1980).
53. Thakur, G. C.: "Resistance Effect due to Polymer Solution Flow in Porous Media", paper presented at the 79th Annual American Institute of Chemical Engineers Meeting, Houston, Texas (March 16–20, 1975).
54. Co-author of Reservoir Simulation Manual by SSC, Prepared for the US Geological Survey, US Department of Commerce, National Technical Information Service, 1975.

55. Co-author of Reservoir Engineering Manual by SSC, Prepared for the US Geological Survey, US Department of Commerce, National Technical Information Service, 1975.
56. Thakur, G. C.: "Prediction of Resistance Effect in Porous Media", paper presented at the 49th Annual Meeting of the Society of Petroleum Engineers of AIME Fall Meeting, Houston, Texas (October 6–9, 1974).
57. Thakur, G. C. and Thachuk, A. R.: "Retardation of Water Coning Using Polymers – A Reservoir Simulation Application", paper presented at the 25th Annual Technical Petroleum Society of CIM, Calgary, Alberta (May 7–10, 1974).
58. Burcik, E. J. and Thakur, G. C.: "Some Reactions of Microgel in Polyacrylamide Solutions", JPT (May, 1974).
59. Burcik, E. J. and Thakur, G. C.: "Reactions of Polyacrylamide with Commonly Used Additives", JPT (September, 1972).

OTHER PUBLICATIONS

1. "Techbits: First SPE Workshop – Webinar Held on Waterflooding", 0214-0036-JPT SPE Journal Paper, 2014.
2. "SPE Strategic Plan Identifies Four Priorities", JPT, 0913-0042 SPE Journal Paper, 2013.
3. "Computer-Implemented Systems and Methods for Forecasting Performance of Polymer Flooding of an Oil Reservoir System", US Patent 8,510,089, August 13, 2013.
4. "Spectrum: SPE Strategic Plan – Mission Critical" 0412-0014, JPT SPE Journal Paper, 2012
5. "Spectrum: Myths and Realities about Hydraulic Fracturing" 0312-0014 JPT SPE Journal Paper, 2012
6. "Spectrum: A Look at How the SPE Board Works" 0512-0014 JPT SPE Journal Paper, 2012
7. "Spectrum: Building Our Future" 0712-0014 JPT SPE Journal Paper, 2012
8. "Spectrum: Great Rewards" 0812-0014 JPT SPE Journal Paper, 2012
9. "Moving Towards 70% Recovery Factor: Multiple Disciplines, Different Methods, One Goal", JPT, June 2012.
10. "SPE Strategic Plan – Mission Critical", JPT, April 2012.
11. "100,000 Members Milestone: It's All About Service", 0112-0014 – JPT, SPE 2012
12. "Education is the Solution to Improving Our Industry's Image", 0212-0014 – JPT SPE Journal Paper – 2012.
13. "Advances in Reservoir Management (RM) and EOR Techniques: Improving Production and Recovery in New and mature Fields", 20th World Petroleum Congress, 4-8 December, 2011.
14. "Spectrum: SPE's Efforts on Young Technology and Innovative Ideas" 11211-0012 JPE SPE Journal paper, 2011.
15. "Interview with SPE President" 1011-0012-JPT SPE Journal Paper, 2011
16. "Spectrum: Training for Your Future" 1111-0012-JPT SPE Journal Paper, 2011

OTHER PUBLICATIONS/THESES

1. Thakur, G. C.: "Investigation of Mobility Control Polymers – I. Study of Microgel Reactions, II. Prediction of Resistance Effect in Porous Media", Ph.D. Thesis (December, 1973) – Petroleum and Natural Gas Engineering, Pennsylvania State University.
2. Thakur, G. C.: "Application of Perturbation Theory in Eigenvalue Problems", M.A. Thesis (December, 1972) – Mathematics, Pennsylvania State University.

3. Thakur, G. C.: “Degradation of Polymer Solutions and its Effect on the Flow Behavior of These Solutions through Porous Media”, M.S. Thesis (March, 1972) – Petroleum and Natural Gas Engineering, Pennsylvania State University.
4. Thakur, G. C.: “Design of Hydraulic Fracture Treatment”, BS (Honors) Dissertation, 1970, IIT (Indian School of Mines*).*

EXTENSIVE EXPERIENCE IN SUPERVISING, MENTORING AND ADVISING PETROLEUM ENGINEERING TECHNICAL PROFESSIONALS OVER 45 YEARS IN CHEVRON (AUTHOR, RESEARCHER, EDUCATOR AND OPERATIONAL IMPLEMENTATION OF PROJECTS) AND OTHER COMPANIES, INCLUDING ONGC, OIL INDIA LTD., CBM & PEMEX, YPF, and GEO-PARK.

- Dr. Thakur’s experience of over 45 years of mentoring and advising hundreds of petroleum engineering technical professionals all over Chevron and other companies is being of great value in mentoring and advising PhD and MS students at the University of Houston.
- He provided petroleum engineering technical mentoring and advice in the areas of reservoir engineering and management, primary, secondary and enhanced oil recovery (EOR), surveillance and monitoring and analysis and optimization of oil and gas reservoirs.
    - Provided mentoring in various locations to over 500 professionals, including Calgary - Canada, Houston, Midland, New Orleans, Lafayette, Bakersfield, Kern River, San Ramon, Argentina, Colombia, Brazil, Venezuela, London, Aberdeen, Norway, Angola, Nigeria, Libya, Saudi Arabia, Kuwait, Bangladesh, Thailand, Indonesia, Vietnam, China, Australia, Kazakhstan, Azerbaijan, and Russia for Chevron; Mexico for CBM – Mexico, and India for ONGC and Oil India Ltd.
    - Chaired the Chevron Corporate-wide Reservoir Management (and Horizontal Well Technology and Heavy Oil) Forum involving 750 professionals (petroleum engineers, geoscientists and others) for 18 years. The annual forum was the “flag ship” of all reservoir management activities in Chevron, and it grew from 80 to over 800 participants over a period of 18 years. The forum included advancements in reservoir management technologies, best practices sharing and lessons learned from the oil and gas fields of Chevron world-wide. New research and development ideas, products and applications, along with real-live case studies of various fields were discussed in detail. The forum nurtured ideas, innovation and ingenuity, and considered company proprietary technical materials.

- He participated and/or supervised in the preparation and distribution of over 200 internal company-confidential technical reports in the following areas:

    - All reservoir simulation R&D for Chevron on topics related to upscaling of detailed geo-cellular models, linking wellbore and facilities modeling with reservoir simulator, thermal simulation, and compositional simulation.
    - Simulation of gravity stable miscible displacement process.
    - Design of major capital projects utilizing the gravity stable double displacement process and field data, including well logs, cores, well tests, MDT, PVT data and miscibility tests, geological modeling, and use of 3-D seismic data.
    - Use of 4-D seismic data for defining un-swept areas in the reservoir during waterflooding, especially in deepwater reservoirs.
    - Simulation and placement (utilizing 3-D seismic data) of horizontal wells and minimizing water coning in water drive reservoirs.
    - Design and implementation of polymer floods for heavier oil reservoirs for onshore and offshore fields.
    - Screening over 80 reservoirs for EOR applications, involving thermal methods, polymer flooding, surfactant flooding, miscible and immiscible CO2 and gas flooding.

- Heavy oil and XHO (extra heavy oil) reservoir management, including cold and thermal methods, pilots involving waterflooding in heavy oil fields like Boscan in Venezuela, cyclic steam stimulation and steamflooding, SAGD process, and use of horizontal and multilateral wells.
- Currently providing high level technical advice to Geo-Park, a leading E&P company in Latin America, in the areas of **heavy oil reservoir management, water influx and water injection management, and horizontal well technology**. Geo-park's oil and gas assets and growth platforms are in Colombia, Perú, Argentina, Brazil, Chile and Ecuador, with 180+ MMBOE of 2P reserves; OPEX in Llanos Basin of Colombia of $4/BOE and D&C cost of $3.5 million/well – world class performance; oil production increased from 10,000 to over 70,000 BOPD in the last six years.