Publication List

THESIS & DISSERTATION

1. 2019. Ph.D. Dissertation
   Title: **Effect of Fluid Dynamics in Loss of Well Control Incidents in Subsea Wells**. Experimental and numerical (CFD and mechanistic modeling) investigation of multiphase flow in pipe and annulus and consequently develop a computational tool for estimation of worst-case discharge. Implementation of Image processing and machine learning for flow regime identification. Correlation development for the sonic condition for flow in the wellbore.
2. 2014. MS Thesis
   Title: **Finite Element Analysis of Casing Drilling Smearing**. Investigation of wellbore strengthening physical mechanism in Casing while Drilling by conducting three-dimensional non-linear finite-element models using the data from filtration experiments.

JOURNAL AND PEER-REVIEWED PAPERS

3. Upadhyay, R., Kumar, R., Kumar, A., Mobarsha, G., Kiran, R. and Rajak, V.K. 2026. Coalbed methane (CBM) well performance: A new methodology combining IPR and VLP analysis. International Journal of Coal Science & Technology, 13(1), p.16. https://doi.org/10.1007/s40789-025-00844-8 Impact Factor: 8.7
4. Saif, M., Bathula, C.K., Upadhyay, R., Kiran, R. 2026. Mechanistic Investigation of CO2 Mineralization Potential in the Ultramafic Lithology of Deccan Traps. Energy & Fuels. 40(24), pp.12916-12933 https://doi.org/10.1021/acs.energyfuels.6c00030 Impact Factor: 6.0
5. Elgaddafi, R., Ahmed, R., Kiran, R. and Salehi, S., 2025. Modeling and Experimental Studies on High-Velocity Slug and Churn Gas-Liquid Upward Flows in Vertical Pipes. Geoenergy Science and Engineering, p.214210. https://doi.org/10.1016/j.geoen.2025.214210 Impact Factor: 4.4
6. Kiran, R., Saif, M., Wood, D.A., Datta Gupta, S., Kumar, A., Upadhyay, R. and Rajak, V.K., 2025. Geological Hydrogen Prospectivity of Iron Ore Deposits in India Based on Semiquantitative Analysis. ACS Omega. 10(25), pp.27332-27347 https://doi.org/10.1021/acsomega.5c02770 Impact Factor: 4.3
7. Doley, A., Rajak, V.K., Kiran, R., Mahto, V., Upadhyay, R., Eswaran, U. and Yadav, P., 2025. Enhancing the Shale Drilling Compatibility Using Hydroxyethyl Acrylate Chitosan. Arabian Journal for Science and Engineering, pp.1-15. https://doi.org/10.1007/s13369-025-10371-y Impact Factor: 2.9
8. Kiran, R., Upadhyay, R., Rajak, V.K., Kumar, A., and Gupta, S.D. 2024. Underpinnings of reservoir and techno-economic analysis for Himalayan and Son-Narmada-Tapti geothermal sites of India. Renewable Energy, 237, p. 121630. https://doi.org/10.1016/j.renene.2024.121630 Impact Factor: 9.0.
9. Kiran, R., Rajak, V.K., Upadhyay, R., and Kumar, A. 2024. Comparative techno-economic assessment of superhot rock and conventional geothermal energy feasibility for decarbonizing India. Geothermics, 122, p. 103078. https://doi.org/10.1016/j.geothermics.2024.103078 Impact Factor: 3.5
10. Saif, M., Kiran, R., Rajak, V.K. and Verma, R.K., 2024. Investigation of an Indian Site with Mafic Rock for Carbon Sequestration. ACS Omega, 9(28), pp.30270-30280. https://doi.org/10.1021/acsomega.4c00213 Impact Factor: 3.7

11. Doley A., Mahto, V., Rajak V.K., Kiran, R. and Upadhyay, R. 2024. Investigation of Filtration and Shale Inhibition Characteristics of Chitosan-N-(2-hydroxyl)-propyl trimethylammonium Chloride as Drilling Fluid Additives. ACS Omega, 9(19), pp. 21365-21377. https://doi.org/10.1021/acsomega.4c01632 Impact Factor: 3.7
12. Sekar, L.K., Kiran, R., Okoroafor, E.R. and Wood, D.A., 2023. Review of reservoir challenges associated with subsurface hydrogen storage and recovery in depleted oil and gas reservoirs. Journal of Energy Storage, 72, p.108605. https://doi.org/10.1016/j.est.2023.108605 Impact Factor: 9.4
13. Raza MA, Kiran R, Ghazal S, Kang Z, Salehi S, Cokely E, Jeon J. An eye tracking based framework for safety improvement of offshore operations. Journal of Eye Movement Research. 2023 Aug 10;16(3):14. https://doi.org/10.16910/jemr.16.3.2 Impact Factor: 2.8
14. Kiran, R., Upadhyay, R., Rajak, V.K., Gupta, S.D. and Pama, H., 2023. Comprehensive study of the underground hydrogen storage potential in the depleted offshore Tapti-gas field. International Journal of Hydrogen Energy, 48(33), pp.12396-12409. https://doi.org/10.1016/j.ijhydene.2022.12.172 Impact Factor: 7.139
15. Elgaddafi, R., Ahmed, R., Kiran, R., Salehi, S. and Fajemidupe, O., 2022. Experimental and modeling studies of gas-liquid flow in vertical pipes at high superficial gas velocities. Journal of Natural Gas Science and Engineering, 106, p.104731. https://doi.org/10.1016/j.jngse.2022.104731 Impact Factor: 5.285
16. Kiran, R., Dansena, P., Salehi, S. and Rajak, V.K., 2022. Application of machine learning and well log attributes in geothermal drilling. Geothermics, 101, p.102355. https://doi.org/10.1016/j.geothermics.2022.102355 Impact Factor: 4.566
17. Rajak, V.K., Gautam, S., Ajit, K.P., Kiran, R. and Madhumaya, A., 2022. Rheological Property Measurement and Application of Formate-Based Drilling Fluids at Elevated Temperatures: A Review. MAPAN, 37(3), pp.665-681. https://doi.org/10.1007/s12647-022-00546-5 Impact Factor: 1.446
18. Magzoub, M.I., Kiran, R., Salehi, S., Hussein, I.A. and Nasser, M.S., 2021. Assessing the relation between mud components and rheology for loss circulation prevention using polymeric gels: A machine learning approach. Energies, 14(5), p.1377. https://doi.org/10.3390/en14051377 Impact Factor: 3.252.
19. Kiran, R., Elgaddafi, R., Ahmed, R., Salehi, S., Griffith, C.A. and Fajemidupe, T., 2020. Wellbore fluid sonic conditions during blowouts. Journal of Petroleum Science and Engineering, 195, p. 107822. https://doi.org/10.1016/j.petrol.2020.107822
20. Kiran, R., Ahmed, R. and Salehi, S., 2020. Experiments and CFD modelling for two phase flow in a vertical annulus. Chemical Engineering Research and Design, 153, pp.201-211. https://doi.org/10.1016/j.cherd.2019.10.012
21. Ezeakacha, C.P., Salehi, S., and Kiran, R., 2018. Lost circulation and filter cake evolution: Impact of dynamic wellbore conditions and wellbore strengthening implications. Journal of Petroleum Science and Engineering, vol. 171, pp. 1326-1337. https://doi.org/10.1016/j.petrol.2018.08.063
22. Salehi, S., Kiran, R., Jeon, J., Kang, Z., Cokely, E.T., and Ybarra, V., 2018. Developing a cross-disciplinary, scenario-based training approach integrated with eye tracking data collection to enhance situational awareness in offshore oil and gas operations. Journal of Loss Prevention in the Process Industries, vol. 56, pp.78-94. https://doi.org/10.1016/j.jlp.2018.08.009
23. Kiran, R., Teodoriu, C., Dadmohammadi, Y., Nygaard, R., Wood, D., Mokhtari, M., and Salehi, S. (2017). Identification and evaluation of well integrity and causes of failure of well

integrity barriers (A review). Journal of Natural Gas Science and Engineering, vol. 45, pp. 511-526. https://doi.org/10.1016/j.jngse.2017.05.009
24. Salehi, S., Khattak, M.J., Rizvi, H., Karbalaei, S.F., and Kiran, R., 2017. Sensitivity analysis of fly ash geopolymer cement slurries: Implications for oil and gas wells cementing applications. Journal of Natural Gas Science and Engineering, vol. 37, pp. 116-125. https://doi.org/10.1016/j.jngse.2016.11.025
25. Kiran, R. and Salehi, S. 2017. Thermoporoelastic Modeling of Time-Dependent Wellbore Strengthening and Casing Smear. ASME Journal of Energy Resources Technology, vol. 139, no. 2, pp. 022903. https://doi.org/10.1115/1.4033591
26. Salehi, S., Madani, S.A., and Kiran, R. 2016. Characterization of drilling fluids filtration through integrated laboratory experiments and CFD modeling. Journal of Natural Gas Science and Engineering, vol. 29, pp. 462-468. https://doi.org/10.1016/j.jngse.2016.01.017
27. Salehi, S. and Kiran, R. 2016. Integrated experimental and analytical wellbore strengthening solutions by mud plastering effects. ASME Journal of Energy Resources Technology, vol. 138, no. 3, pp. 032904. https://doi.org/10.1115/1.4032236

REFERENCED CONFERENCE PROCEEDINGS

28. Wu, Y., Salehi, S., **Kiran, R.** and Ghalambor, A., 2025, June. Investigation of Wellbore Flow and Transport Dynamics during Geological Hydrogen Production. In *SPE Europe Energy Conference and Exhibition*. OnePetro.
29. Wartman, P., Ettehadi, A., **Kiran, R.**, Ostrander, C. and Mokhtari, M., 2024, September. Facilitating Carbon Capture and Storage in Louisiana: The Implications of Environmental Protection Agency's Final Rule Granting Primacy for Class VI Wells. In *SPE Annual Technical Conference and Exhibition?* (p. D011S003R005). SPE.
30. Elgaddafi, R., **Kiran, R.**, Ahmed, R., Salehi, S. and Griffith, C., 2020, October. Development of a computational tool for worst-case discharge rate. In *SPE Annual Technical Conference and Exhibition?* (p. D021S005R003). SPE.
31. **Kiran, R.** and Salehi, S., 2020, October. Assessing the relation between petrophysical and operational parameters in geothermal wells: a machine learning approach. In *Proceedings, forty-fifth workshop on geothermal reservoir engineering, Stanford University* (p. 10).
32. **Kiran, R.**, Naqavi, S.A., Salehi, S. and Teodoriu, C., 2019, September. Human factors and non-technical skills: Towards an immersive simulation-based training framework for offshore drilling operations. In *SPE Annual Technical Conference and Exhibition?* (p. D021S022R006). SPE.
33. Sinha, S., **Kiran, R.**, Tellez, J., & Marfurt, K. (2019, July 31). Identification and Quantification of Parasequences Using Expectation Maximization Filter: Defining Well Log Attributes for Reservoir Characterization. Unconventional Resources Technology Conference. doi:10.105530/urtec-2019-1023
34. **Kiran R.**, Salehi, S., Mokhtari, M., and Kumar, A. (2019, June 23-26). Effect of Irregular shape and Wellbore Breakout on Fluid Dynamics and Wellbore Stability. American Rock Mechanics Association.
35. **Kiran, R.**, Salehi, S., Jeon, J., and Kang, Z. (2018). Real-Time Eye-Tracking System to Evaluate and Enhance Situation Awareness and Process Safety in Drilling Operations. In IADC/SPE Drilling Conference and Exhibition held in Fort Worth, TX: Society of Petroleum Engineers.
36. Salehi, S., **Kiran, R.**, Jeon, J., Kang, Z., Teodoriu, C., and Cokely, E. (2018). Enhancing Situation Awareness and Process Safety in Offshore Drilling Operations: Applications of

Eye-Tracking System. In Offshore Technology Conference. Offshore Technology Conference.

37. **Kiran, R.**, and Salehi, S. (2018). Mathematical Modeling and Analysis of Riser Gas Unloading Problem. In the Proceedings of the ASME 37th International Conference on Ocean, Offshore & Arctic Engineering held in Madrid, Spain: OMAE 2018.
38. **Kiran, R.**, Salehi, S., & Teodoriu, C. (2018). Implementing Human Factors in Oil and Gas Drilling and Completion Operations: Enhancing Culture of Process Safety. In the Proceedings of the ASME 37th International Conference on Ocean, Offshore & Arctic Engineering held in Madrid, Spain: OMAE 2018.
39. **Kiran, R.**, Salehi, S., Hayatdavoudi, A., & Ezeakacha, C. P. (2018, August 21). Wellbore Strengthening Characteristics Evaluation of Sandstones Using Experimental and Analytical Studies. American Rock Mechanics Association.
40. Ezeakacha, C. P., Salehi, S., & **Kiran, R**. (2018, August 21). Pore-Scale Mud Invasion in Different Rock Samples and Wellbore Conditions: Implications for Lithology Dependent Wellbore Strengthening. American Rock Mechanics Association.
41. Ezeakacha, C. P., Salehi, S., & **Kiran, R**. (2018). Quantification of Multiple Factors and Interaction Effects on Drilling Fluid Invasion. In the Proceedings of the ASME 37th International Conference on Ocean, Offshore & Arctic Engineering held in Madrid, Spain: OMAE 2018.
42. Kang, Z., Jeon, J., **Kiran, R.**, Salehi, S., Ybarra, V.T., & Cokely, E. 2018. Situation awareness assessment using eye movements and verbal response scoring metrics. In Proceedings of the 2018 IISE Annual Conference held in Orlando, Florida: Institute of Industrial and Systems Engineers.
43. Dadmohammadi, Y., Salehi, S., **Kiran, R.**, Jeon, J., Kang, Z., Cokely, E.T. and Ybarra, V. 2017. October. Integrating Human Factors into Petroleum Engineering's Curriculum: Essential Training for Students. In SPE Annual Technical Conference and Exhibition: Society of Petroleum Engineers.
44. **Kiran, R.,** Salehi, S., Karimi, M. 2014. Finite Element Analysis of Casing Drilling Smearing Effect, SPE 170314, presented at the 2014 SPE Deepwater Drilling and Completions held 10 – 11 September 2014 in Galveston, TX, USA.
45. **Kiran, R.** and Salehi, S. 2017. Thermo-Poro-Elastic Modeling of Time-Dependent Wellbore Strengthening and Casing Smear. Presented at AADE (American Association of Drilling Engineers) National Technical Conference and Exhibition, April 11-12, Houston, Tx.
46. **Kiran, R.**, Salehi, S., and Karimi, M. 2014. Unravelling Casing Drilling Smearing : Finite Element Analysis. Presented at AADE (American Association of Drilling Engineers) National Technical Conference and Exhibition, April 15-16, Houston, Tx.

BOOK CHAPTERS

47. **Kiran, R.,** Wood, D.A. and Salehi, S., 2024. Innovations in drilling and well construction technologies in natural gas reservoir drilling. In Sustainable Natural Gas Drilling (pp. 475-503). Elsevier.
48. Saif, M., **Kiran, R.,** Dansena, P. and Tripathi, P.C., 2025. Anomaly Detection in Carbon Sequestration: Advancements, Challenges, and Future Directions. In Advanced Techniques for Anomaly Detection (pp. 1-33). CRC Press.

TECHNICAL REPORTS

49. Salehi, S. Ahmed, R., Elgaddafi, R. and **Kiran R.** 2019. WCD Literature Review - Research and Development on Critical (Sonic) Flow of Multiphase Fluids through Wellbores in Support of Worst-Case-Discharge Analysis for Offshore Wells, BOEM Report Prepared under Contract Award M16PS00059, Mewbourne School of Petroleum and Geological Engineering, University of Oklahoma, Norman, OK. https://www.boem.gov/WCD-Literature-Review/
50. Salehi, S. Ahmed, R., Elgaddafi, R. and **Kiran R.** 2019. CFD Modeling Report - Research and Development on Critical (Sonic) Flow of Multiphase Fluids through Wellbores in Support of Worst-Case-Discharge Analysis for Offshore Wells, BOEM Report Prepared under Contract Award M16PS00059, Mewbourne School of Petroleum and Geological Engineering, University of Oklahoma, Norman, OK. https://www.boem.gov/CFD-Modeling-Report/
51. Salehi, S. Ahmed, R., Elgaddafi, R., Fajemidupe, O., and **Kiran R.** 2019. Experimental Report - Research and Development on Critical (Sonic) Flow of Multiphase Fluids through Wellbores in Support of Worst-Case-Discharge Analysis for Offshore Wells, BOEM Report Prepared under Contract Award M16PS00059, Mewbourne School of Petroleum and Geological Engineering, University of Oklahoma, Norman, OK. https://www.boem.gov/Experimental-Report/