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## **Selected Publications and Papers for Neal B. Nagel, Ph.D.**

1. Nagel, N.B., D. Gokaraju, A. Mitra, and M. Sanchez-Nagel, 2017, "**Consideration of Stress Shadows in Stacked Plays**", Paper ARMA 17-884 presented at 51st US Rock Mechanics/Geomechanics Symposium, San Francisco, CA, USA, 25-28 June.
2. Sanchez-Nagel, M., N.B. Nagel, A.A. Rodriguez, and N. Nieto, 2017, "**Evaluating Stresses Along Horizontal Wells in Unconventional Plays**", SPE Paper 184875 presented at the SPE Hydraulic Fracturing Technology Conference, The Woodlands, Texas, USA, 24-28 January.
3. Nagel, N.B., Sanchez-Nagel, M.A., 2015, "**On the Importance and Impact of Key Geomechanical Parameters in Unconventional Play Developments**", ARMA 15-514 presented at the 49th US Rock Mechanics / Geomechanics Symposium held in San Francisco, CA, USA, 28 June-1 July 2015.
4. Nagel, N.B., Sheibani, F., Lee, B.T., Agharazi, A., Zhang, F., 2014, "**Fully-Coupled Numerical Evaluations of Multistage Completion Schemes: The Critical Role of In-Situ Pressure Changes and Well Configuration**", SPE Paper 168581 presented at the SPE Hydraulic Fracturing Technology Conference, The Woodlands, Texas, USA, 4-6 February.
5. Agharazi, A., Lee, B.T., Nagel, N.B., Zhang, F., and Sanchez-Nagel, M., 2013 "**Tip-Effect Microseismicity – Numerically Evaluating the Geomechanical Causes for Focal Mechanisms and Microseismicity Magnitude at the Tip of a Propagating Hydraulic Fracture**", SPE Paper 167129 presented at the SPE Unconventional Resources Conference-Canada, Calgary, Alberta, 5-7 November.
6. Zhang, F., Nagel, N.B., Sanchez-Nagel, M., Lee, B.T., Agharazi, A., 2013, "**The Critical Role of In-Situ Pressure on Natural Fracture Shear and Hydraulic Fracturing-Induced Microseismicity Generation**", SPE Paper 167130 presented at the SPE Unconventional Resources Conference-Canada, Calgary, Alberta, 5-7 November.
7. Nagel, N.B., Zhang, F., Sanchez-Nagel, M., Lee, B.T., Agharazi, A., 2013, "**Stress Shadow Evaluations for Completion Design in Unconventional Plays**", SPE Paper 167128 presented at the SPE Unconventional Resources Conference-Canada, Calgary, Alberta, 5-7 November.
8. Nagel, N.B., F. Zhang, M. Sanchez-Nagel and B. Lee, 2013, "**Evaluation of Stress Changes Due to Multi-Stage Hydraulic Fracturing - Consideration of Field Results**", presented at Rock Mechanics for Resources, Energy and Environment, Eurock13, the ISRM International Symposium, Wroclaw, Poland, 21-26 September.
9. Garcia, X., N.B. Nagel, F. Zhang, M. Sanchez-Nagel and B. Lee, 2013, "**Revisiting Vertical Hydraulic Fracture Propagation Through Layered Formations - A Numerical Evaluation**", Paper ARMA 13-203 presented at 47th US Rock Mechanics/Geomechanics Symposium, San Francisco, CA, USA, 23-26 June.
10. Rios, A.M., G. Gutierrez, N.B. Nagel, F. Zhang, M. Sanchez-Nagel and B. Lee, 2013, "**Stress Shadow Evaluations for Chicotepec - Evaluating New Completion Options**", Paper ARMA 13-200 presented at 47th US Rock Mechanics/Geomechanics Symposium, San Francisco, CA, USA, 23-26 June.

11. Zhang, F., N.B. Nagel, B. Lee and M. Sanchez-Nagel, 2013, "**The Influence of Fracture Network Connectivity on Hydraulic Fracture Effectiveness and Microseismicity Generation**", Paper ARMA 13-199 presented at 47th US Rock Mechanics/Geomechanics Symposium, San Francisco, CA, USA, 23-26 June.
12. Zhang, F., N.B. Nagel, X. Garcia, B. Lee and M. Sanchez-Nagel, 2013, "**Fracture Network Connectivity - A Key To Hydraulic Fracturing Effectiveness and Microseismicity Generation**", presented at ISRM International Conference for Effective and Sustainable Hydraulic Fracturing, Brisbane, Australia, 20-22 May.
13. Nagel, N.B., F. Zhang, M. Sanchez-Nagel, X. Garcia, and B. Lee, 2013, "**Quantitative Evaluation of Completion Techniques on Influencing Shale Fracture Complexity**", presented at ISRM International Conference for Effective and Sustainable Hydraulic Fracturing, Brisbane, Australia, 20-22 May.
14. Savitski, A. A., M. Lin, A. Riahi, B. Damjanac and N.B. Nagel, 2013, "**Explicit Modeling of Hydraulic Fracture Propagation in Fractured Shales**," in International Petroleum Technology Conference, Beijing, China.
15. Nagel, N.B., M. Sanchez-Nagel, F. Zhang, X. Garcia, and B. Lee, 2013, "**Coupled Numerical Evaluations of the Geomechanical Interactions Between a Hydraulic Fracture Stimulation and a Natural Fracture System in Shale Formations**", Rock Mechanics and Rock Engineering, DOI 10.1007/s00603-013-0391-x
16. Pettitt, W.S., M. Pierce, B. Damjanac, J. Hazzard, L. Lorig, C. Fairhurst, M. Sanchez-Nagel, N.B. Nagel, J. Reyes-Montes, J. Andrews and R.P. Young, 2012, "**Combining Microseismic Imaging and Hydrofractur Numerial Simulations**", Paper ARMA 12-554 presented at the 46th U.S. Rock Mechanics Symposium, Chicago, Illinois, USA.
17. Pettitt, W.S., B. Damjanac, J. Hazzard, Y. Han, M. Sanchez-Nagel, N.B. Nagel, J. Reyes-Montes and R.P. Young, 2012, "**Engineering Hydraulic Treatment of Existing Fracture Networks**", Paper SPE 160019 presented at the SPE Annual Technical Conference and Exhibition, San Antonio, Texas, USA.
18. Nagel, N.B., M. Sanchez-Nagel, X. Garcia, and B. Lee, 2012, "**Understanding "SRV": A Numerical Investigation of "Wet" vs. "Dry" Microseismicity During Hydraulic Fracturing**", Paper SPE 159791 presented the SPE Annual Technical Conference and Exhibition held in San Antonio, Texas, USA, 8-10 October.
19. Nagel, N.B., M. Sanchez-Nagel, X. Garcia, and B. Lee, 2012, "**A Numerical Evaluation of the Geomechanical Interactions Between a Hydraulic Fracture Stimulation and a Natural Fracture System**", ARMA 12-287 presented at the 46th Rock Mechanics / Geomechanics Symposium, Chicago, Illinois, 24-27 June.
20. Nagel, N.B., X. Garcia, B. Lee, and M. Sanchez-Nagel, 2012, "**Hydraulic Fracturing Optimization for Unconventional Reservoirs - The Critical Role of the Mechanical Properties of the Natural Fracture Network**", Paper SPE 161934 presented at the SPE Canadian Unconventional Resources Conference, Calgary, Alberta, Canada, 30 October - 1 November.
21. Nagel, N., M. Sanchez-Nagel, and BT Lee, 2012, "**Gas Shale Hydraulic Fracturing: A Numerical Evaluation of the Effect of Geomechanical Parameters**", Paper SPE 152192 presented at the SPE Hydraulic Fracturing Technology Conference and Exhibition, The Woodlands, Texas, USA, 6-8 February.
22. Pettitt, W.S., M. Pierce, B. Damjanac, J. Hazzard, L. Lorig, C. Fairhurst, I. Gil, M. Sanchez-Nagel, N.B. Nagel, J. Reyes-Montes R.P. Young, 2011, "**Fracture Network Engineering for Hydraulic**

- Fracturing"**, The Leading Edge, 30(8), pp844-853.
23. Nagel, N., I. Gil, M. Sanchez-Nagel, and B. Damjanac, 2011, "**Simulating Hydraulic Fracturing in Real Fractured Rock – Overcoming the Limits of Pseudo3D Models**", Paper SPE 140480 presented at the SPE Hydraulic Fracturing Technology Conference and Exhibition, The Woodlands, Texas, USA, 24-26 January.
  24. Nagel, N., B. Damjanac, X. Garcia, and M. Sanchez-Nagel, 2011, "**Discrete Element Hydraulic Fracture Modeling - Evaluating Changes in Natural Fracture Aperture and Transmissivity**", Paper SPE 148957 presented at the Canadian Unconventional Resources Conference, Calgary, Alberta, Canada, 15-17 November.
  25. Nagel, N. and M. Sanchez-Nagel, 2011, "**Stress Shadowing and Microseismic Events: A Numerical Evaluation**", Paper SPE 147363 presented at the SPE Annual Technical Conference and Exhibition, Denver, Colorado, USA, 30 October-2 November.
  26. Gil, I., N.B. Nagel, M. Sanchez-Nagel, and B. Damjanac, 2011, "The Effect of Operational Parameters on Hydraulic Fracture Propagation in Naturally Fractured Reservoirs - Getting Control of the Fracture Optimization Process", Paper ARMA 11-391 presented at ARMA 45th U.S. Rock Mechanics/Geomechanics Symposium, San Francisco, California, USA.
  27. Omdal, E., M. V., T. G. Kristiansen N. B. Nagel, R. I. Korsnes and A. Hiorth, 2010, "Deformation Behavior of Chalk Studied Close to In Situ Reservoir Conditions," Rock Mech. Rock Eng., 43, pp557-580.
  28. Gil, I., B. Damjanac, N.B. Nagel and Q. Guo, 2010, "Geomechanical Evaluation of Solids Injection", Paper ARMA 10-399 presented at 44th U.S. Rock Mechanics Symposium/5th U.S.-Canada Rock Mechanics Symposium, Salt Lake City, Utah, USA.
  29. Nagel, N. B., and F. Meng, 2009, "Wellbore Strengthening: The Effect of the Permeable Case", Paper AADE-09-NTCE presented at Unlocking the Potential: Sustaining Drilling Performance, American Association of Drilling Engineers (AADE) National Technical Conference & Exhibition, New Orleans, Louisiana, USA.
  30. Guo, G., and N. B. Nagel, 2009, "Cuttings Reinjection Case Histories", paper presented at Unlocking the Potential: Sustaining Drilling Performance, American Association of Drilling Engineers (AADE) 2009 National Technical Conference & Exhibition, New Orleans, Louisiana, USA.
  31. Nagel, N. B., and F. Meng, 2007, "What Does the Rock Mechanics Say: A Numerical Investigation of Wellbore Strengthening", Paper AADE-07-NTCE-65 presented at the American Association of Drilling Engineers (AADE) National Technical Conference & Exhibition, Houston, USA.
  32. Nagel, N. B., 2006, "On the Importance of Cuttings Reinjection", Schlumberger Oilfield Rev., 18(4), 1 (Winter 2006).
  33. Doomhof, D., T. G. Kristiansen, N. B. Nagel, P. D. Patillo and C. Sayers, 2006, "Compaction and Subsidence", Schlumberger Oilfield Rev., 18(3), pp50-68 (Autumn 2006).
  34. Nagel, N. B., 2005, "4,000,000 Barrels and Counting: Experience with Cuttings Reinjection in North Sea Shales Ekofisk", Paper ARMA/USRMS 05-782 presented at Alaska Rocks 2005 - Rock Mechanics for Energy, Mineral and Infrastructure Development in the Northern Regions, University of Alaska-Anchorage, Anchorage, USA.
  35. Nagel, N. B., 2004, "Oilfield Subsidence: The Five W's (What? Why? 2xWhere? & What!)", SPE Distinguished Lecture Series, 2003-2004.
  36. Chin, L. Y., and N. B. Nagel, 2004, "Modeling of Subsidence and Reservoir Compaction under

- Waterflood Operations", *Int. J. Geomech.*, 4(1), 28-34.
37. Gauer, P. R., J. E. Sylte and N. B. Nagel, 2002, "Ekofisk Field Well Log Decompression", Paper SPE 78177-MS presented at Oil Rock 2002, SPE/ISRM Rock Mechanics Conference, Irving, Texas, USA.
  38. Nagel, N. B., 2001, "Ekofisk Geomechanics Monitoring," presented at the Workshop on Geomechanics in Reservoir Simulation, IFP, Rueil-Malmaison, France.
  39. Nagel, N. B., 2001, "Compaction and Subsidence Issues within the Petroleum Industry: From Wilmington to Ekofisk and Beyond", *Phys. Chem. Earth A*, 26(1-2), pp3-14.
  40. Chin, L. Y., and N. B. Nagel, 2001, "Modeling of the Effect of Well Treatment on Horizontal Well Casing Deformation", paper presented at Rock Mechanics in the National Interest, 38th U.S. Rock Mechanics Symposium, Washington, D.C., USA, Vol. 1, pp. 133-139.
  41. Chin, L. Y., and N. B. Nagel, 2001, "**Computer Modeling of Subsidence and Reservoir Compaction under Fieldwide Water Injection Operations**", paper presented at Computer Methods and Advances in Geomechanics, 10th IACMAG, Tucson, Arizona, USA.
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  43. Pemper, R., N. B. Nagel and R. Gold, 1998, "**Monitoring Formation Compaction,**" *Baker Hughes in-Depth*, 4(2).
  44. Nagel, N. B., and K. J. Strachan, 1998, "**Implementation of Cuttings Reinjection at the Ekofisk Field**", paper presented at EUROCK 98, SPE/ISRM Conference on Rock Mechanics in Petroleum Engineering, Trondheim, Norway.
  45. Nagel, N. B., 1998, "**Ekofisk Field Overburden Modelling**", paper presented at EUROCK 98, SPE/ISRM Conference on Rock Mechanics in Petroleum Engineering, Trondheim, Norway.
  46. Broughton, P., T. R. Aldridge and N. B. Nagel, 1997, "**Geotechnical Aspects of Subsidence Related to the Foundation Design of Ekofisk Platforms**", *Proc. ICE - Geotech. Eng.*, 125(3), p129-140.
  47. Hansteen, H., K. Høeg, M. Gutierrez and N. B. Nagel, 1996, "**Numerical Modelling of Overburden Deformation and Subsidence**", 5th North Sea Chalk Symposium, Reims, France.
  48. Gutierrez, M., T. Berre, K. Høeg, N. B. Nagel and F. Engstrøm, 1996, "**Laboratory Testing and Modelling of Scale Effects on Chalk**", 5th North Sea Chalk Symposium, Reims, France.
  49. Gutierrez, M., K. Høeg and N. B. Nagel, 1996, "**Modeling of the Compaction Behavior of Intact and Fractured Chalk**", 5th North Sea Chalk Symposium, Reims, France.
  50. Eiksund, G., G. Savnø and N. B. Nagel, 1996, "**Creep Related Subsidence Caused by Oil and Gas Extraction**", *Int. J. Rock Mech. Min. Sci.*, 33(8), 378A-379A(2).
  51. Berre, T., M. Gutierrez, K. Høeg, N. B. Nagel and T. Kristiansen, 1996, "**Laboratory Testing of an Overburden Shale**", 5th North Sea Chalk Symposium, Reims, France.
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  53. Nagel, N. B., W. T. Arnold III, S. L. Scott, T. S. Thrasher and M. W. McCoy, 1994, "**Completion Task Force Improves Well Stimulation Performance**", *World Oil*, 215(11).
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55. Nagel, N. B., W. T. Arnold III, M. W. McCoy, S. L. Scott and T. S. Thrasher, 1993, "**An Integrated Team Approach for Improving Company-Wide Stimulation Design and Quality Control**", Paper SPE 26142-MS presented at the SPE Gas Technology Symposium, Calgary, Alberta