Curriculum Vitae

Summary

Ph.D. in Petroleum Engineering from the University of Oklahoma in Norman. Diverse and extensive industry field operations, research and management experience in petroleum engineering, geomechanics and chemical engineering with Amoco, British Petroleum Plc., Conoco Phillips, Crystaltek and Schela Productie Gaze Naturale (SPGN) and teaching at the University of Oklahoma, BP - Chevron and SPGN. Recognized for excellence on research projects involving, rock mechanics, well completions and sand control, sand management, reservoir stimulation, enhanced oil recovery, well test analysis, and production optimization for which practical applications were developed and implemented. Managed rock mechanics, hydraulic fracturing, and reservoir characterization labs developing lab testing protocols for routine and specialized testing programs to address a wide range of petroleum engineering and geomechanics projects and applications. Most recent work has focused on optimized gas production from shales, hydraulic fracturing of unconsolidated and unconventional reservoirs, formation characterization, fluid - rock interactions, in-situ stress and rock mechanics properties measurements, compaction – subsidence, wellbore and casing stability, enhanced oil recovery and high pressure high temperature rock testing.

Education

Ph.D. Petroleum Engineering, University of Oklahoma, Norman, OK, 1999
M.S. Petroleum Engineering, University of Oklahoma, Norman, OK, 1996
B.S. Petroleum Engineering, Oil & Gas Petroleum Institute, Ploiesti, 1984

Professional Membership & Contribution to the Scientific Community:

- Society of Petroleum Engineers (SPE)
- American Rock Mechanics Association (ARMA)
- International Society of Rock Mechanics (ISRM)
- Society of Petrophysicists and Well Log Analysts (SPWLA)
- Romanian Society of Petroleum Engineers (RSPE)
- Pi Epsilon Tau (PET)

Reviewed papers and chaired/co-chaired sessions for ARMA, RSPE and SPE:

- 1st Workshop on Petroleum Geomechanics Testing, June 23rd, 2012 Chicago, Illinois
- 43rd US Rock Mechanics Symposium, June 28-July 1, 2011, Asheville, North Carolina

- 44th US Rock Mechanics Symposium and 5th US-Canada Rock Mechanics Symposium 27-30 June 2010, Salt Lake City, Utah, USA.
- SPE Forum on Reservoir Geomechanics June 1-6, 2008, Colorado Springs
- SPE Forum - From Casing Design to Well Life Prediction, 10-15 September 2006, Dubrovnik, Croatia
- SPE Annual Technical Conference and Exhibition, Oct. 9-12, 2005, Dallas, Texas
- US Rock Mechanics Symposium, June 5 to 8, 2005, Anchorage, Alaska
- SPE Annual Technical Conference and Exhibition, Oct. 5–8, 2003 Denver, Colorado
- Workshop on Rock Mechanics Laboratory Practices, Oct. 2-4, 2003, Colorado School of Mines Campus, Golden, Colorado
- SPE International Symposium and Exhibition on Formation Damage Control, February 20-21, 2002, Lafayette, Louisiana
- Rock Mechanics Workshop, 2002 San Antonio, Texas

Other Contributions and Membership

- President of the *SPE Student Chapter* - University of Oklahoma in Norman, 1998 - 1999
- Vice-president *Pi Epsilon Tau* - University of Oklahoma in Norman, 1997 – 1998
- Dean's Student Liaison Committee – University of Oklahoma in Norman, 1995-1996
- Senator, representing the Petroleum Engineering Department - University of Oklahoma in Norman, 1995-1996

Honors and Awards

- **ConocoPhillips Reservoir Engineering Fellow Rock Mechanics –** 2014, Bartlesville, OK
- **BP Technical Advisor** Nomination **–** 2013, Houston, TX
- **BP – Chevron Alliance Teaching Award –** 2011, Houston, TX
  In recognition for more than nine years of dedicated and quality teaching
- **BP Paul Martin Helios Award –** 2008, Houston
  In recognition for the development of new sand management techniques
- **Pi Epsilon Tau Award** - Norman, 1997
  In recognition for outstanding scholarship, leadership and sociability
- **Honorary Award Recognition – US National Dean's List,** Norman, 1995 - 1996

- **CGM Innovation & Modernization Program Award** - Medias, & 1988 -1989
  Sibiu, Romania
  In recognition for leadership toward development and implementation of modern technologies and organizational capabilities
- **CCPM Award -** 1985 Medias, Romania
  In recognition for the development of new technology to optimize production of gas condensate wells
- **Leading EOR Researcher** - National Engineering Technology Symposiums 1983, and 1984, Cimpina and Ploiesti, Romania
  In recognition for the development and implementation of new EOR lab capabilities and field applications

Industrial and Academic Experience

Reservoir Engineering Fellow Rock Mechanics, ConocoPhillips, Bartlesville, OK, 2014 - 2016

Management of the rock mechanics and hydraulic fracturing labs. Design and supervise upgrade of laboratory testing and analysis capabilities. Research and development project coordination. Make recommendations for exploitation strategies, reservoir characterization, stimulation, production optimization, flow assurance, well completions and sand control. Technical support for shale gas pilots.

- Fundamental research on:
  - geomechanics: reservoir yielding, compaction/subsidence, compaction drive, permeability loss with depletion, wellbore stability, casing deformation, and solids production
  - hydraulic fracturing of shales
  - fracture conductivity
  - improved recovery from unconventional formations
  - reservoir characterization
  - formation damage and return permeability in coals
  - chalks behavior during water injection
- Design of large-scale laboratory poly-axial testing for the assessment of deviated wellbore fracturing, hydraulic fracturing and in-situ stress measurements
- Development of technology for production prediction from deviated and horizontal wellbores
- Technical review of multidisciplinary research efforts
- Coordination of field operations to identify and acquire suitable core material to be used in the lab for special core analysis
- Technical participation in and coordination of industry consortiums in cooperation with academic institutions

- Active participation in Excellence Networks and Knowledge Sharing Groups within the company

Research and Development Project Manager, 2008 – 2014
Geomechanics and Hydraulic Fracturing Technical Advisor nomination, 2013
Planning and execution of research and development projects focused on the technology of geomechanics, well completions and sand control, well stimulation, reservoir characterization, production optimization and exploitation strategies. Coordination of research and development projects in collaboration with specialized labs and universities.

- Fundamental research on:
  - well completions and sand control
  - perforation of poorly consolidated and shale formations
  - fracpack geomechanics
  - development of hydraulic fracturing simulator
  - fracture toughness of poorly consolidated formations
  - formation failure evaluation and fracture initiation/propagation in soft sands and shale gas reservoirs
  - static - dynamic mechanical and elastic properties correlations with application to stress prediction
  - brittle versus ductile behavior of shales
  - onset of sanding, transient and continuous sanding modules
  - development of new tools for multi-phase flow analysis, particles transport and sand detection capabilities
  - development of analytical and numerical tools for sanding prediction
  - measurement of pore pressure and in-situ stress
  - formation consolidation
  - water injection in soft formations
  - water flow back in shale gas formations
  - enhanced oil and gas recovery

Senior Rock Mechanics Specialist, BP Plc. Houston, TX, 2000 – 2014

Coordination of technical service work for the business units and consortium projects. Make recommendations and provide field support for well completions and sand control, hydraulic fracturing, sand management, and production optimization strategies.

- Design, management, and quality control of routine and specialized geomechanics, hydraulic fracturing and reservoir characterization lab testing programs
- Developed an interactive comprehensive geomechanics database
- Geomechanics analysis, interpretation, evaluation and predictions for: onset of sanding, transient and continuous sanding, compaction-subsidence, compaction-

drive, permeability loss with depletion, reservoir yielding, fault activation, casing stability, and fracture propagation from deviated boreholes
- Central participant in technology group strategy to consolidate numerical and analytical tools, experience, correlations and risk analysis in overall knowledge based packages for completing, stimulating and managing reservoirs
- Key member of multi-discipline project teams, working closely with both internal and external resources
- Core analysis, estimation of mechanical and elastic properties in a reservoir, and prediction of geomechanical effects due to drawdown and depletion.
- Predict the background stable level of sanding and make recommendations in order to plan and manage wells and facilities so they can safely and effectively deal with continuous sand production.
- Design lab testing protocols and implement field injection solutions for formation consolidation
- Evaluation of Expandable Sand Screen Systems
- Teaching of technical modules at the BP-Chevron Drilling Training Alliance Program (2002-2011)
- Recruiting and mentoring of junior engineers
- Technical participation and coordination of high profile industry consortiums in cooperation with academic institutions
- Active participation in Excellence Networks and Knowledge Sharing Groups within the company

Research Engineer, Amoco Technology Center, Tulsa, OK, 1996 - 2000

- Fundamental hydraulic fracturing research and specialized rock mechanics lab testing
- Development of closure and after closure analysis modules for hydraulic fracturing simulators
- Technical review of research efforts on poroelasticity and fundamental fracture mechanics. Fracture design, back-analysis and trouble-shooting for high-profile field operations
- Evaluation of the influence and optimization of perforations on hydraulic fracture initiation
- Development of new techniques for formation evaluation, treatment design, and production optimizations for soft and tight gas formations

Research & Teaching Assistant, University of Oklahoma., Norman, OK, 1994 - 1999

- *Research:* redesigned and automatized a computerized system for Steam/Chemical Injection in the EOR Lab; involved in high profile research activities

- *Teaching:* petrophysics and reservoir fluid mechanics labs, engineering intro, natural gas engineering, well testing analysis, and computer programing

Technical Center Manager, Crystaltech, Clinton, MA, 1989 -1994

- Manager of lab operations
- Developed lab capabilities and operations techniques that led to significant productivity growth

Program Manager, SPGN – Medias, Romania, 1987 - 1989

- Manager of lab and field operations
- Developed and implemented modern technologies and organizational capabilities

Production Assistant Manager, SPGN - Medias, Romania, 1986 – 1987

- Developed and implemented production optimization techniques for the Central Transylvania and North Moldova Natural Gas Fields
- Coordination and monitoring of field operations

Production & Research Engineer, SPGN – Medias, Romania, 1984 - 1986

- Field support, production optimization, well completions and stimulation, monitoring of gas compression and treatment facilities
- Developed and implemented new technology for production and stimulation optimization (hydraulic fracturing, acidizing and thermal)
- Designed protocols and coordinated routine and specialized lab testing programs

Research Assistant, Oil & Gas Institute, Ploiesti, Romania, 1981 - 1984

Fundamental research for EOR - Developed lab testing capabilities and chemical solutions for miscible displacement in oil reservoirs

Publications - Samples

- **Ion Ispas**, Robin A. Eve, Randall J. Hickman, Richard G. Keck, BP, Stephen M. Willson, BP now with Apache, Karen E. Olson, BP now with Southwestern Energy,: "*Laboratory Testing and Numerical Modeling of Fracture Propagation from Deviated Wells in Poorly Consolidated Formations*," SPE Annual Technical Conference and Exhibition, San Antonio, Texas, USA, 8-10 October 2012

- Leonid N. Germanovich, Robert S. Hurt, Georgia Tech, Joseph A. Ayoub, Eduard Siebrits, Schlumberger, David W. Norman, Chevron, **Ion Ispas**, BP, Carl Montgomery, NSI,: "*Experimental Study of Hydraulic Fracturing in Unconsolidated Materials*" SPE International Symposium and Exhibition on Formation Damage Control, Lafayette, Louisiana, 15-17 February 2012

- M. Paulson (URI), K. Moran (URI), C. Baxter(URI), M. O'Regan(URI), **I. Ispas**(BP), H. Vaziri(BP), R. Sharma(URI),: "*Characterizing weak and poorly consolidated marine sediments using neural networks*," ATCE Houston, 2009

- Ian Palmer and Nigel Higgs (Higgs Technologies), **Ion Ispas**, Kirk Baksh, and Kim Krieger (BP),: "*Prediction of Sanding using Oriented Perforations in a Deviated Well, and Validation in the Field*," SPE International Symposium on Formation Damage Control, Lafayette, 15-17 February 2006

- Jason E. Ressler, (GZA, Christopher D. P. Baxter, M.ASCE, (University of Rhode Island, Kathryn Moran, (University of Rhode Island), Meghan Paulson, (University of Rhode Island), **Ion Ispas**, (BP North America), , and Hans Vaziri, (BP North America),: "*Assessment of Formation Strength from Geophysical Well Logs Using Neural Networks*, Geo Congress - Geotechnical Engineering in the Information Technology Age, Renton, Virginia, 2006

- Ressler, J., Baxter, C., Moran, K., Paulson, M., **Ispas, I**., and Vaziri, H.: "*Assessment of Compressive and Shear strength in Sandstones Using Neural Networks*," ASCE Proceedings P129, Atlanta, Georgia, February 26 – March 1st, 2006

- **I. Ispas, A.R. Bray,** and **I.D. Palmer,** BP America Inc., and **N.G. Higgs,** Higgs Technologies,: "*Prediction and Evaluation of Sanding and Casing Deformation in a GOM-Shelf Well*," Journal Petroleum Technology, February 2005

- Ian Palmer (BP), Hans Vaziri (BP), Stephen Willson (BP), Zissis Moschovidis (PCM), John Cameron (PCM), **Ion Ispas** (BP),: "*Predicting and Managing Sand*

Production: A New Strategy," SPE Annual Technical Conference and Exhibition, Denver, Colorado, 5-8 October, 2003

- Palmer, BP; **I. Ispas**, BP; N. Higgs, Higgs Technologies; Z. Moschovidis, PCM Technical; P. Patillo, BP; B. Smith, and W. Beecroft, BP.: "*Stressman Website to Screen for Potential Geomechanical Problems due to Depletion*" SPE International Symposium and Exhibition on Formation Damage Control held in Lafayette, Louisiana, 20–21 February 2002

- **I, Ispas**, R. A. Bray & I.D. Palmer (BP America Inc.), N. G. Higgs (Higgs Technologies),: "*Prediction and Evaluation of Sanding and Casing Deformation in a GOM Shelf Well*," SPE/ISRM Rock Mechanics Conference held in Irving, Texas, 20-23 October 2002

- Hans Vaziri, Ian Palmer and **Ion Ispas**: "*Critical Assessment of Several Sand Prediction Models with Particular Reference to HPHT Wells*," UTG Wellbore Completions & Sand Control BP, March 23, 2001, Houston

- **Ispas I**. ; Palmer I.: "*To gravel pack or not to gravel pack*," Well Completions Conference, Yorkshire, UK April 12, 2001

- **Ispas I**. ; Palmer I.; Vaziri H.: "*Sand Prediction - Recent BP Experience*," SPE Sand Management Workshop San Antonio Nov. 14-16, 2001

- Kutas M.; Palmer. I.; **Ispas I**.: "*Cavity Completions in Soft Formations*," Sand Management Workshop, Houston September 11, 2001

- **I. Ispas,** D. Tiab,: "*Pressure Derivative Analysis for Minifrac Tests*," SPE/AAPG Western Regional Meeting, June 19-22, 2000 in Long Beach

- **I. Ispas**, D. Tiab,: "*Prediction of Fluid and Reservoir Properties from Minifrac Tests*," SPE 62537, SPE/AAPG Western Regional Meeting, June 19-22, 2000 in Long Beach

- Joe Hagan, Steve Willson**, Ion Ispas**, Ian Palmer,: "*Historical Perspective on Sand Prediction Using BP-Amoco Model*," 2001 SPE Annual Technical Conference, November 27, 2000

- D. Tiab, and **I. Ispas**, U. of Oklahoma; A. Mongi, and A. Berkat, Sonatrach – PED,: *"Interpretation of Multirate Tests by the Pressure Derivative – I. Oil Reser-*

voirs," SPE Latin American and Caribbean Petroleum Engineering Conference in Caracas, Venezuela, April 21-23, 1999

- **I. Ispas**, L.K. Britt, G. Turk,: "*Determination of Reservoir Permeability form Calibration Treatments*," Tulsa, January 20 1999

- **I. Ispas**, Djebbar Tiab (University of Oklahoma),: "*New Method of Analyzing the Pressure behavior of a Well Near Multiple Boundary Systems*," Latin American and Caribbean Petroleum Engineering Conference, 21-23 April, 1999, Caracas, Venezuela

- **Ion Ispas**, Ian D. Palmer, Alan R. Bray, and Hans Vaziri,: "*Importance of Rock Strength In Considering Repair Methods*," BP, Houston SPE Sand Management Workshop San Antonio Nov. 14-16, 2001

- **I. Ispas**, L.K. Britt, D. Tiab, P. Valko, M.J. Economides,: "*Methodology of Fluid Leakoff Analysis in High-Permeability Fracturing*," SPE International Symposium on Formation Damage Control, Lafayette, Louisiana, 18-19 February, 1998

- **I. Ispas**,: "*Multi-Rate Tests Analysis Using Pressure Derivative and Direct Synthesis Methods for Oil Reservoirs*," Rocky Mountain SPE Student Paper Contest Butte, Montana; April 17, 1998

- F.H. Escobar, F. Civan, **I. Ispas**, E.F. Blick,: "*Simulation of Cutting Transport, Cleaning and Stacking in Wells*," Journal of Canadian Petroleum Technology, May 10, 1996.

- **I. Ispas**, G. Bojan, A. Dobrescu,: "*Research and Identification of Compatible Surfactants and Co-Surfactants Used for Miscible Solutions*," National Engineering Technology Symposium, Ploiesti, Romania, May 1984

- **I. Ispas**, G. Bojan, A. Dobrescu,*: "Contributions in the Study of Tensioactive Solutions Behavior for Miscible Displacement*," National Engineering Technology Symposium, Ploiesti, Romania, April 1983