

In the name of Allah, Most Beneficent, Most Merciful

CURRICULUM VITAE
of
DR. ABDULAZEEZ ABDULRAHEEM
Associate Professor / Research Engineer – II

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CURRICULUM VITAE

of

DR. ABDULAZEEZ ABDULRAHEEM

Associate Professor / Research Engineer – II

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1. PERSONAL BACKGROUND

1.1 PERSONAL

Date of Birth : April 5, 1961
Place of Birth : Hyderabad, India
Nationality : Indian
Linguistic skills: English, Urdu, Hindi, Arabic, and Telugu
Marital Status : Married
Children : Three

1.2 EDUCATION

1994 Ph.D. in Geotechnical Engineering, GPA 4.0/4.0, University of Oklahoma, Norman, OK, USA.

Dissertation Topic:

Constitutive Modeling and Numerical Simulation of Compacting Reservoir Rocks.

1985 Master of Engineering in Civil Engineering, Indian Institute of Science, Bangalore, India.

Thesis Topic:

Dynamic Analysis of Electric Circuit Breakers Subjected to Earthquake Ground Motions.

1983 Bachelor of Engineering in Civil Engineering, Osmania University, Hyderabad, India.

2.1 MAJOR COURSES

Advanced Rock Mechanics, Fracture Mechanics, Advanced Mechanics of Materials, Experimental Stress Analysis, Advanced Finite Element Method, Advanced Numerical Methods, Advanced Foundation Engineering, Structural Mechanics, Structural Dynamics.

1.3 PROFESSIONAL RECORD (TILL COMPLETION OF PhD)

8/90 to 1/94: Graduate Research Assistant: University of Oklahoma, Norman, OK, USA.

Responsibilities included:

- Laboratory testing on soil and rock samples (Preparation of specimens; Porosity and permeability measurements; Acoustic P-wave measurements; Tests along different stress paths on Cubical and Triaxial Cells).
- Analysis of laboratory and field data
- Development of new laboratory techniques
- Development of constitutive models
- Development of numerical simulators
- Report writing

8/89 to 5/90: Graduate Teaching Assistant: University of Oklahoma, Norman, OK, USA

Responsibilities included:

- **Conducting Tutorials** for "Mechanics of Materials"
- **Conducting Laboratory Sessions** for "Soil Mechanics"

8/87 to 8/89: **Lecturer**, Dept. of Civil Engineering, KFUPM, Dhahran, Saudi Arabia

Responsibilities included:

- **Taught a course** on "Engineering Graphics" for **seven semesters**.

8/85 to 8/87: Graduate Teaching Assistant: KFUPM

Responsibilities included:

- **Conducting Tutorial Sessions** on "Engineering Statics"
- **Conducting Tutorial Sessions** on "Mechanics of Materials"

2. R & D ACCOMPLISHMENTS

2.1 PAPERS IN REFEREED JOURNALS AND PROCEEDINGS

Journal Papers:

1. Faruque, M. O., M. Zaman, and **A. Abdulraheem** (1992). On Modeling Stress-Strain and Dilatant Behavior of Cohesionless Soil. *Indian Geotechnical Journal*, Vol. 22, No. 3, pp. 175-195.
2. **Abdulraheem, A.**, M. O. Faruque, and M. Zaman (1993). A Two Characteristic Model for Cohesionless Soil and Its Calibration Using Optimization, *International Journal of Plasticity*. Vol 10, No.3, pp. 309-326.
3. **Abdulraheem, A.**, M. Zaman, and J.-C. Roegiers (1993). A Finite Element Model for Ekofisk Field Subsidence, *Journal of Petroleum Science and Engineering*, Vol. 19, pp. 299-310.
4. Zaman, M., J.-C. Roegiers, **A. Abdulraheem**, and M. Azeemuddin (1994). Pore collapse in Weakly cemented and porous Rocks, *ASME Journal of Energy Resources Technology*, June, Vol. 116, pp. 97-103.
5. Hassan, H.M., Korvin, G., and **A. Abdulraheem** (2001). Fractal and Genetic Aspects of Khuff Reservoir Stylolites, Eastern Saudi Arabia. *Arabian Journal of Science and Engineering Journal*. **27**(2001): 29-56.
6. Korvin, G., Mohiuddin, M.A., **A. Abdulraheem** (2001). Experimental Investigation of the Fractal Dimension of the Pore Surface of Sedimentary Rocks under Pressure. *Geophysical Transactions*, **44** (2001): 3-19.
7. M.A. Mohiuddin, K. Khan, **A. Abdulraheem**, A. Al-Majed, and M.R. Awal (2007). Analysis of wellbore instability in vertical, directional, and horizontal wells using field data. *Journal of Petroleum Science and Engineering*. **55** (2007). pp. 83-92.

Conference Proceedings / Presentations:

1. Faruque, M. O., M. Zaman, and A. Abdulraheem (1991). Constitutive Model for Cohesionless Soil. Proc., Third International Conference for Constitutive Laws for Engineering Materials: Theory and Application, Tucson, AZ, pp. 123-127, Jan. 7-12.
2. Roegiers, J.-C., M. Azeemuddin, M.M. Zaman, and A. Abdulraheem (1991). A Constitutive Model for Characterizing Dilatancy in Rocks. *Rock Mechanics as a Multidisciplinary Science*, J.-C. Roegiers, ed., Proc., 32nd US Symposium on Rock Mechanics, pp. 531-538, July 10-12.

3. Zaman, M., J.-C. Roegiers, A. Abdulraheem, and M. Azeemuddin (1992). Pore collapse in Weakly cemented and porous Rocks. Presented at the Energy Technology Conference and Exposition held in Houston, TX, Composite Material Technology, ASME 1992, PD-Vol. 45, Editors: Hui, D., Kozik, T.J., Ochoa, O.O., pp. 123-132.
4. Abdulraheem, A., J.-C. Roegiers, and M. Zaman (1992). Mechanics of Pore Collapse and Compaction in Weak Porous Rocks. Presented at the 33rd US Symposium on Rock Mechanics, Santa Fe, NM, USA.
5. Abdulraheem, A., M. Zaman, and J.-C. Roegiers (1993). A FE Model for Ekofisk Field Subsidence. Presented at the Energy Technology Conference and Exposition held in Houston, TX, Composite Material Technology 1993, PD-Vol. 45, Editors: Hui, D., Kozik, T.J., Ochoa, O.O., pp. 103-110.
6. Abdulraheem, A., M. Zaman, and J.-C. Roegiers (1993). Numerical Simulation of a Compacting Reservoir. Presented at the 34th US Symposium on Rock Mechanics, held in Madison, Wisconsin, June 1993.
7. Zaman, M., M.O. Faruque, and A. Abdulraheem (1993). Characterization of Volumetric Response in Sands. Presented in the Fourth International Symposium on Plasticity and Its Current Applications.
8. Harouaka, A.S., B. Mtawaa, A. Al-Majed, A. Abdulraheem, and T. Klimentos (1995). Multistage triaxial testing of actual reservoir cores under simulated reservoir conditions, International Symposium of the Society of Core Analysis, September, San Francisco, CA.
9. Abdulraheem, A., M. Zaman, and J.-C. Roegiers (1995). End effects and Dilatancy in Rock Compression Testing. Proc., The Fourth Saudi Engineering Conference, Nov. 5-8, Vol. 2, pp. 263-269.
10. Abdulraheem, A., M.R. Awal, and S. Taher (1997). A New Numerical Simulation Model and Upscaling Technique for Scaled Model Sand Production. Proc., 10th Middle East Oil Show & Conference, 15-18th March, Bahrain, Vol. 2, pp. 99-109.
12. Korvin, G., H.M. Hassan, N.I. Khondakar and A. Abdulraheem (1998). Stylolites. 5th Meeting of the Saudi Society for Earth Sciences, Dhahran, KSA.
13. Abdulraheem, A., M. A. Mohiuddin, G. Korvin, M. R. Awal, K. Khan, M. S. Khan, and A. Al-Ghamdi (1999). Parametric Study of Ultrasonic Velocity Using Reservoir Cores for Enhancing Seismic Signatures For Improved Reserves Definition. 1999 SPE Technical Symposium. Saudi Aramco, Dhahran, KSA.
14. Awal, M.R., A. Abdulraheem, M. S. Khan, B. Mtawaa, and A. Al-Majed (1999). On the Importance Rock Mechanics Properties and In-situ Stress Field in the Khuff Formations for Gas Field Development. SPE Technical Symposium. Saudi Aramco, Dhahran, KSA.

15. Mohiuddin, M.A., G. Korvin, A. Abdulraheem, M.R.Awal, K. Khan, and M.S. Khan (2000). From Rock Physics to Rock Texture: A case study of Saudi Arabian reservoir rocks. Paper presented at GEO 2000: 4th Middle Geosciences Conference and Exhibition, March 27-29, Bahrain.
16. Mohiuddin, M. A., G. Korvin, A. Abdulraheem, M. R. Awal, K. Khan, M. S. Khan, and H. M. Hassan (2000). Stress-Dependent Porosity and Permeability of a Suit of Samples from Saudi Arabian Sandstone and Limestone Reservoirs. Paper accepted for International Symposium of the Society of Core Analysts, October 18-22, Dubai.
17. Awal, M.R., G. Korbin, M.A. Mohiuddin, A. Abdulraheem, K. Khan, and M. S. Khan (2000). Ultrasonic wave attenuation in cores: A new approach to enhance accuracy, reproducibility, and data processing. Paper accepted for International Symposium of the Society of Core Analysts, October 18-22, Dubai.
18. Mohiuddin, M.A., M.R.Awal, **A.Abdulraheem**, and K.Khan (2001). A New Diagnostic Approach to Identify the Causes of Borehole Instability Problems in an Offshore Arabian Field. Paper SPE 68095 to be presented at 2001 SPE Middle East Oil Show held in Bahrain,17–20 March 2001.
19. Awal, M.R., M.S. Khan, M.A.Mohiuddin, **A.Abdulraheem** and M.Azeemuddin (2001). A New Approach to Borehole Trajectory Optimisation for Increased Hole Stability. Paper SPE 68092 to be presented at 2001 SPE Middle East Oil Show held in Bahrain,17–20 March 2001.
20. Awal, M.R., M.Azeemuddin, M.S.Khan, **A.Abdulraheem**, and M.A.Mohiuddin (2001). A More Realistic Sand Production Prediction Using Pore Collapse Theory. Paper to be presented at the US Rock Mechanics Symposium 'DC Rocks 2001' to be held in Washington DC. July 7-10, 2001.
21. Al-Shayea, N.A., K. Khan, and **A. Abdulraheem** (2001). Fracture Toughness vs. Tensile Strength for Reservoir Rocks from Saudi Arabia. The 2001 ISRM sponsored international symposium - 2nd Asian rock mechanics symposium Sept 11-14, 2001, Beijing, China.
22. Korvin, G., Mohiuddin, M.A., **A. Abdulraheem** (2001). Changes in the Fractal Dimension of the Pore Surface of Sedimentary Rocks under Pressure. Presented at the First Saudi Science Conference, April 2000 at KFUPM, Dhahran, Saudi Arabia.
23. Mohiuddin, M. A., G. Korvin, **A. Abdulraheem** and K. Khan (2001). Attenuation Characteristics of Saudi Arabian Reservoir Sandstone and Limestone Cores. Presented at the *International Symposium of the Society of Core Analysts*, September 17 – 19, Edinburgh, U. K.
24. M. Hussain, S.A. Siddique, G. Korvin and A. Abdulrahim, "Porosity prediction of Unayzah reservoir from well log data using backpropagation neural network", *AAPG International. Conference*, Cairo, Egypt, Oct. 27-30, 2002.

25. M. A. Mohiuddin, A. Abdulraheem, D. Al-Qudaihy, M. R. Awal, and K. Khan. (2003). Wellbore Instability in a Saudi Arabian Sandstone Reservoir: Causes and Solutions. Paper No. U379. Presented at 5th International Petroleum Conference and Exhibition. New Delhi, India. Jan 9-12, 2003.
26. Khan, K., V. Aurifullah, M.A. Mohiuddin, A. Abdulraheem. (2005). Dependence of Ultrasonic Velocities and Dynamic Elastic Rock Properties on Stress and Saturation Changes. 2005 International Symposium of the Society of Core Analysts. Toronto, Canada. 21-25 August 2005.
27. Mohiuddin, M.A., K. Khan, A. Abdulraheem, A. Al-Majed, and V. Aurifullah. (2005). Field Based Criteria For The Design of Safe Mud Weight Window. SPE Saudi Arabia 2005 Technical Symposium. Dhahran, KSA. May 14-16, 2005.
28. Mohiuddin, M.A., K. Khan, A. Abdulraheem, A. Al-Majed, and M. R. Awal. (2005). Analysis of Wellbore Instability in Horizontal Wells Using Field Data. Kuwait Oil and Gas Conference and Exhibition, Kuwait. Mar/Apr. 2005.
29. A. Abdulraheem, E. Sabakhi, M. Ahmed, A. Vantala, I. Raharja, and G. Korvin (2007). Estimation of Permeability from Wireline Logs in a Middle Eastern Carbonate Reservoir Using Fuzzy Logic. SPE 105350. To be presented at the 15th SPE Middle East Oil & Gas Show and Conference held in Bahrain International Exhibition Centre, Kingdom of Bahrain, 11–14 March 2007.

2.2 TECHNICAL NOTES

1. **Abdulraheem, A.**, M. Zaman, and J.-C. Roegiers (1993). Numerical Simulation of a Compacting Reservoir, International Journal of Rock Mechanics, Mining Sciences and Geomechanics Abstracts, Vol. 30, No. 7, pp. 1299-1302.

Acknowledgements

1. In the paper by A.S. Harouaka and A.U. Al-Kaabi (1997). Petroleum Related Rock Mechanics – Impact on the Recovery of Conventional Oil from Sandstone Reservoirs. World Petroleum Congress. China. John Wiley, 1997.

2.3 BOOKS/BOOK CHAPTERS

1. Zaman, M., **A. Abdulraheem**, and J.-C. Roegiers (1995). Reservoir Compaction and Surface Subsidence in the North Sea Ekofisk Field. Chapter 8 in *Subsidence due to Fluid Withdrawal*. Eds.: G.V. Chilingarian, E.C. Donaldson, and T.F. Yen. Elsevier Science Publishers, 1995, pp. 397-447.

2.4 LIST OF SUPERVISED M.S. OR Ph.D. THESES: TITLES AND ABSTRACTS

M.S. Thesis

1. Fracture Toughness Investigation of an Indigenous Limestone Rock Formation. Mr. Khaqan Khan. Civil Engineering Department, KFUPM. 1998.
- Member
2. Reservoir Quality of the Unayzah Formation in Waqr, Tinat, and Haradh Fields. Mr. Aamir Siddiqui. Department of Earth Sciences, KFUPM. 2002.
- Member
2. Khafji Reservoir Mechanical Properties Calibration and In-Situ Stress Modeling, Zuluf Field, Eastern Saudi Arabia. Mr. Waleed Mohamed El Hassan. Department of Earth Sciences, KFUPM. 2002.
- Member

2.5 LIST OF RESEARCH PROJECTS AT KFUPM/RI - Completed or in progress

1. PN: 21111 - Rock Compressibility and Formation Strength Indices in Sandstone Reservoirs (1994-95) - **Member**
2. PN: 21148 - Rock Mechanics of Ghawar Khuff Reservoirs (1995-95) (SR. 3.7 million) - **Project Manager**
3. PN: 21140 - Rock Mechanics Consulting Services for Berri Field (1996)
- **Member**
4. PN: 21153 - In-situ Sand Consolidation by Low Temperature Oxidation (1995-1998) - **Member**
5. PN: 21171 - Ultrasonic Velocity and Wave Attenuation Measurements (1997-2000) (SR. 3.14 million) - **Project Manager**
 - Phase I: Measurement of physical, transport, and acoustic properties of rocks (1997-98)
 - Phase II: Calculation and analysis of attenuation data in rocks (1998)
 - Phase III: Prediction of Fluid Saturation Around the Borehole from Repeated Full Waveform Sonic Logs: A Feasibility Study (1999)
 - Phase IV: Measurement of acoustic properties of Khuff carbonate rocks (2000 - 2001)
6. CPM2205 - Wellbore Instability - Khafji Reservoir, Zuluf Field – Phase I (2000 - 2001) (SR 0.8 million) - **Project Manager**
7. CPM2204 - Prediction of Sanding Tendency in Pre-Khuff Gas Wells (2000 - 2001) – **Member**
8. CPM2203 - Stress Sensitivity and Response to Water Injection in Fractured Arab-D Reservoir (2000 - 2001) - **Member**
9. CPM2227 - Wellbore Instability - Khafji Reservoir, Zuluf Field – Phase II (Jun 2002 – Sep 2003) (SR 1.6 million) - **Project Manager**

10. CPM2228 - Artificial Neural Network Models for Rock Mechanical Properties (Aug 2002 – Dec. 2004) - **Member**
11. CPM2236 – Saturation Estimation from Sonic and Saturation Logs (Sep 2003 – Jan 2004) (SR 0.6 million) – **Project Manager**
12. CPM2248 – Critical assessment of key analytical methods for sanding prediction (Apr 2005 – Feb 2006) – **Member and Liason**
13. CPM2252 – Developing Fuzzy Logic Modeling Capability (Jun 2005 – May 2006) (SR 0.6 million) – **Project Manager**
14. CPM2262 - Core, drill cuttings and formation fluids/gas analysis in the area of Block “A”, Rub-Al-Khali. (Feb 2006 – May 2009). – **Member.**
15. CPM2266 - Analysis of core, drill cutting and formation fluid samples. (Apr 2006 – Apr 2009). – **Member.**

Plus several service projects involving rock mechanics work.

2.6 LIST OF RESEARCH PROJECT PROPOSALS, PRE-PROPOSALS, OR CONCEPTS - Completed or in progress

Proposals:

- | | |
|------|--|
| 1995 | <i>Rock Mechanics Study of Ghawar Khuff Reservoirs</i>
Submitted to S. Aramco - FUNDED (2 year project) |
| 1996 | <i>An Investigation into the Fracture Toughness and Tensile Strength of Indigenous Rocks (PW, E)</i> - Submitted to KACST 1996. |
| 1997 | <i>Ultrasonic Velocity and Wave Attenuation Measurements</i>
Submitted to S. Aramco - FUNDED (3 year project) |
| 2000 | <i>Wellbore Instability - Khafji Reservoir, Zuluf Field – Phase I</i>
Submitted to S. Aramco - FUNDED (approx. 1 year project) |
| 2000 | <i>Prediction of Sanding Tendency in Pre-Khuff Gas Wells.</i> Submitted to S. Aramco - FUNDED (approx. 1 year project) |
| 2000 | <i>Stress Sensitivity and Response to Water Injection in Fractured Arab-D Reservoir</i> - Submitted to S. Aramco - FUNDED (approx. 1 year project) |
| 2001 | <i>Calibration of Sonic Logs</i> - Submitted to S. Aramco - FUNDED (approx. 1 year project) |

- 2002 *Wellbore Instability - Khafji Reservoir, Zuluf Field – Phase II.*
Submitted to S. Aramco - FUNDED (approx. 1 year project)
- 2002 *Artificial Neural Network Models for Rock Mechanical Properties - Submitted to S. Aramco - FUNDED (approx. 1 year project)*
- 2003 *Saturation Estimation from Sonic and Saturation Logs - Submitted to S. Aramco - FUNDED (approx. 1 year project)*
- 2005 *Critical assessment of key analytical methods for sanding prediction - Submitted to S. Aramco - FUNDED (approx. 1 year project)*
- 2005 *Developing Fuzzy Logic Modeling Capability - Submitted to S. Aramco - FUNDED (approx. 1 year project)*
- 2006 *Development of Monitoring System for Upstream Activities for the Ministry of Petroleum AND Mineral resources - Submitted to The Ministry of Petroleum and Mineral Resources.*
- 2007 *Developing Fuzzy Logic Modeling Capability- Phase II - Submitted to S. Aramco.*
- 2007 *Permeability Modeling for HRDH/Khuff, Using Fuzzy Logic Approach - Submitted to S. Aramco.*

Concepts / Ideas:

- 1997 *Development of "ROCKBASE," A Database for Mechanical Properties and Stress Map For Saudi Arabian Petroleum Reservoirs - Submitted to S. Aramco.*
- 1999 *Increasing production from the depleting and 'uneconomic' fields susceptible to severe sand production – Phase I - Submitted to S. Aramco.*

2.7 LIST OF RESEARCH REPORTS

- 1994 Bimonthly progress report (Feb-Mar) for PN-21111.
- 1994 Bimonthly progress report (Apr-May) for PN-21111.
- 1994 Annual Task Report for PN-21111 (Mathematical modeling, numerical simulation and software development).
- 1994 Second Annual Report for PN-21111.
- 1994 Bimonthly progress report (Oct-Nov, 1994) for PN-21111.
- 1995 Bimonthly progress report (Dec-Jan, 1995) for PN-21111.

- 1995 Bimonthly progress report (Feb-Mar, 1995) for PN-21111.
- 1995 Bimonthly progress report (Apr-May, 1995) for PN-21111.
- 1995 Draft and Final Reports for PN-21111.
- 1995 First (four month) Progress Report for PN-21148.
- 1996 Second (four month) Progress Report for PN-21148.
- 1996 Annual Report for PN-21148.
- 1996 Project Report for PN-21140.
- 1997 Third (four month) Progress Report for PN-21148.
- 1997 Fourth (four month) Progress Report for PN-21148.
- 1997 Final Report for PN-21148.
- 1997 Final Report for Service Project: Rock Mech. Consulting Services for Berri Field.
- 1998 First Progress Report for PN-21171.
- 1999 First Annual Report for PN-21171.
- 1999 Report for Phase - II of PN-21171.
- 1999 Report for Phase - III of PN-21171.
- 2000 Final Report for Project on Wellbore Instability.
- 2001 Final Report for Project on Calibration of Sonic Logs.
- 2003 Final Report - Wellbore Instability - Khafji Reservoir, Zuluf Field – Phase II. Submitted to S. Aramco.
- 2004 Final Report – Saturation Estimation from Sonic and Saturation Logs Submitted to S. Aramco.
- 2006 Progress Report - Critical assessment of key analytical methods for sanding prediction.
- 2006 Final Report - Critical assessment of key analytical methods for sanding prediction.
- 2006 Final Report - Developing Fuzzy Logic Modeling Capability Submitted to S. Aramco.

Plus several small reports related to service work on rock mechanics.

Technical Reports (Before Joining The Research Institute, King Fahd University of Petroleum and Minerals):

- 1991 Numerical Simulation of Pore Collapse, Reservoir Compaction and Surface Subsidence, A Critical Review, Submitted to the Rock Mechanics Consortium Members, May 1991. .
- 1991 Annual Research Report for the Oklahoma Center for Advancement of Science and Technology (OCAST), June, 1991. .
- 1991 Mechanics of Reservoir Rocks, Submitted to the Rock Mechanics Consortium Members, October 1991..
- 1992 Annual Research Report for the Oklahoma Center for Advancement of Science and Technology (OCAST), June, 1992..
- 1993 Numerical Simulation of a Compacting Reservoir, Submitted to the Rock Mechanics Research Center, March 1993..
- 1993 Pore Collapse Mechanisms in Reservoir Rocks, Final Report to the Oklahoma Center for Advancement of Science and Technology (OCAST), with M. Azeemuddin and S. Mowar, July, 1993. .

3. PROFESSIONAL PERFORMANCE AND LEADERSHIP

3.1 RESEARCH GROUPS LED OR COORDINATED

Has coordinated the research in the area of **Petroleum Related Rock Mechanics** and **Rock Physics** for the past couple of years. He had also arranged for the visits of several consultants in this area.

3.2 RESEARCH COMMITTEES PARTICIPATION

1997-9 Member, KFUPM/Saudi Aramco Technology Meetings, (Exploration & Petroleum Engineering). In these meetings, potential projects that are of interest to Saudi Aramco and can be executed at KFUPM-RI are discussed. *I have actively participated in these meetings and gave necessary input especially for research in the new and emerging area of petroleum related rock mechanics.*

3.3 LABORATORY DEVELOPMENT RESPONSIBILITIES

*Surveyed for the instruments for the different project works and bought equipment worth almost SR 1.5 million. Items 2, 3, and 4 below were purchased under my supervision and recommendations after I personally visited the rock mechanics laboratories at Imperial college, London; French Petroleum Institute at Paris, Rock Mechanics Laboratory at SINTEF, Trondheim, Norway, and different rock mechanics laboratories in the U.S. The equipment were purchased to suit the requirements of our projects after consultation and input with the team members of the respective projects. This has led to a completion of the existing setup of **Petroleum Related Rock Mechanics** facilities at the Research Institute. The new equipment include:*

1. Wellbore simulation laboratory: Took part in the design of the laboratory. The equipment is designed to simulate the phenomenon of sand production in the laboratory.
2. Anelastic Strain Recovery (ASR): Field Equipment for estimation of in-situ stresses in the hydrocarbon reservoirs.
3. Differential Strain Curve Analysis (DSCA): Laboratory equipment for estimation of in-situ stresses in the hydrocarbon reservoirs.
4. Ultrasonic Test System for Rocks: For measuring compressional and shear wave velocities of reservoir rock samples at reservoir conditions of temperature and pressure.

5. Fracture toughness testing setup and sample preparation: Took part in the design of fracture toughness setup design and also in buying relevant equipment for creating straight and curved notches in the rock specimens, especially the Rotating Disk Saw and the Wire Saw.
6. Tensile Strength Determination setup using Brazilian Disk approach: Took a leading part in designing the experimental setup for this test.
7. Steady State Permeability Measurement Setup for highly permeable samples: Took a leading part in a team to prepare a setup for measurement of permeability at extremely high confining pressures of 10,000 psi. The whole setup was built using the available accessories in the institute and buying some spare parts.
8. Pulse Decay Permeability Measurement Setup for tight samples: Took part in a team to prepare a setup for measurement of permeability at extremely high confining pressures of 10,000 psi. The whole setup was built using the available accessories in the institute and buying some spare parts.
9. Porosity Measurement Setup (in parallel to the Steady State and Pulse Decay Permeability Measurement Setup): Took part in a team to prepare a setup for measurement of permeability at extremely high confining pressures of 12,000 psi. The whole setup was built using the available accessories in the institute and buying some spare parts. **Items 5, 6, 7, 8, and 9 have led to significant cost savings as no new equipment or accessories were ordered for these setups.**

3.4 PROFESSIONAL DEVELOPMENT (IN PARALLEL TO OTHER ASSIGNMENTS)

Attended conferences on the topics of petroleum engineering and geology in different countries including US, Norway, Dubai, KSA, Bahrain etc.

Graduate Courses Attended: Production Engineering (1996); Drilling Engineering (1997); Well Logging (1998); Subsurface Production Engineering (1998).

Short Courses attended: Waterflooding (1995); Modern Well test analysis (1995); Geology of Arabian Peninsula (1998)

3.5 MEMBERSHIP OF PROFESSIONAL SOCIETIES

Founder Member of American Rock Mechanics Association (ARMA)

Member of International Society of Rock Mechanics (ISRM)

Member of the Society of Petroleum Engineers (Saudi Arabia Section).

Member of Dhahran Geological Society

4. PROFESSIONAL AND COMMUNITY SERVICE

4.1 COURSE TEACHING ASSIGNMENTS AT KFUPM

Course teaching Assignments at KFUPM

- 2006 Petroleum Related Rock Mechanics (PETE 400) for Senior Undergraduate Students (Fall Semester).
- 2005 Petroleum Related Rock Mechanics (PETE 400) for Senior Undergraduate Students (Fall Semester).
- 1987-1989 Taught a course on "Engineering Graphics" for several semesters (During the time when I was Lecturer-B at the Civil Engineering Department, KFUPM)

Senior Project Supervision

- 1998-9 Petroleum Engineering Student (Mr. Mazen Bernawi)
- 1999-0 Petroleum Engineering Student (Mr. Saad A. Al-Dauwas).

4.2 PARTICIPATION IN SHORT COURSES

1. Coordinated and taught the short course, "Rock Mechanics for Petroleum Engineers." May, 2006.
2. Coordinated and taught the short course "Rock Mechanics for Petroleum Engineers." Phase-I in Apr, 2003 and Phase-II in Oct, 2004.
3. Coordinated and taught the short course, "Wellbore Instability." Apr, 2003.
4. Coordinated and taught the short course, "Rock Mechanics for Petroleum Engineers." Apr, 2002.
5. Gave lectures on "Rock Stabilization," in a short course, "**Stabilization of Indigenous Soils for Constructional Purposes**," held in March, 1997.

Training Students or Junior Personnel

- 1997 Co-supervisor for a 5-week training program for Undergraduate Student (Mr. Ali M. Ramady)
- 1996-8 Training two engineers (Mr. Safdar Khan & Mr. Bechir Al-Mtawaa) in the Petroleum Engineering section on different aspects of Petroleum Related Rock Mechanics related experimental and theoretical work.

4.3 COMMITTEE WORK

- 2005 The Research Institute Personnel Committee and Personnel Sub-committee
- 2004 Organizing Committee Member, KFUPM-Saudi Aramco Petroleum Engineering Research Review – Second Annual Workshop
- 2003 Organizing Committee Member, Workshop on Petroleum Engineering Research at the Center for Petroleum and Minerals
- 2002 Marketing and Industry Relations Committee of the Center for Petroleum and Minerals
- 2002 Conference and Publication Committee of The Research Institute
- 1999 Member, Technical Editing Board of The Research Institute
- 1999 Member, Equipment Selection Committee**
- 1998 Member, Technical Editing Board of The Research Institute
- 1997 Member, Promotion Committee for an Engineer (Adhoc), Division I, RI
- 1997 Member, Equipment Acceptance Committee (Adhoc) on Ultrasonic Wave Velocity Equipment
- 1996 Member, Equipment Acceptance Committee (Adhoc) on ASR equipment
- 1994 Member , Division I Adhoc Committee (Adhoc) on RI Awards

4.4 OTHER CONTRIBUTIONS

Software Development

Developed a Finite Element based software for simulating the stress-state and onset of sand production in reservoir samples.

Evaluation at The Research Institute:

Evaluation for the year 1997-2005: **Outstanding**

Evaluation for the year 1997-1995: **Excellent**

Joined RI in 1994

5. AWARDS

Special Recognition / Honors and Awards:

- 1999** Project Manager of the team awarded for **Best Research Team Award** of the Research Institute, **KFUPM** for the project, "Rock Mechanics Study of Ghawar Khuff Reservoirs" (PN 21148).
- 1999** Appreciation from the Project Coordinator from Saudi Aramco for "**excellent execution and reporting**" and "**one of the best technically study I have been personally associated with**" for the project, "Rock Mechanics Study of Ghawar Khuff Reservoirs" (PN 21148).
- 1999** Member of the team for **Best Short Course Award** by **KFUPM**.
- 1999** Appreciation plaque by **SPE Student Chapter**, KFUPM for involvement in the local SPE chapter.
- 1996** Member of the team awarded for **Best Research Team Award** of the Research Institute, **KFUPM** for the project, "Rock Compressibility and Formation Strength Indices in Sandstone Reservoirs" (PN 21111).
- 1993 Best paper award by "Indian Geotechnical Journal"
- 1992 Nominated in "**Who's Who Among Students in American Universities and Colleges**".
- 1992 Granted **Honorary Citizenship of the State of Oklahoma** by the Governor of Oklahoma for "**reposing special trust and confidence in the ability and integrity**".
- 1992 Honored as one of the "**Outstanding Student of the University of Oklahoma,**" Norman, Oklahoma
- 1991 **International Leadership Class Scholarship**, Univ. of Oklahoma, Norman,
- 1991 **Cleo Cross International Student Scholarship** for **academic accomplishments**, University of Oklahoma, Norman, Oklahoma.