

CURRICULUM VITAE

Name: Grímur Björnsson
Date of birth: June 7, 1960
Nationality: Icelandic

Education:

1966-1975 Primary education, Iceland
1975-1980 Secondary/Senior secondary education, Iceland
1980-1984 University of Iceland, B.Sc. in Geophysics
1985-1987 University of California, Berkeley, U.S.A., M.Sc. in Reservoir Physics
1999 6 months Sabbatical leave at Lawrence Berkeley Laboratory, California
2004 2 months Sabbatical leave at United States Geological Survey, Seismic Hazard team, Menlo Park, California

Languages:

Native Icelandic
Second English
Other Danish, German (read, speak a bit)

PRESENT POSITION AND PROFESSIONAL EXPERIENCE 1987-2006:

Reservoir Engineer at Orkuveita Reykjavíkur (Reykjavik Energy) since 2006. Work includes well siting, design and drilling decisions, geothermal resource assessment and characterization. In particular on the Hengill system where two large geothermal power stations are already in operation (>200 MWe) and firm plans for additional development. Member of an expert group dealing with sustainability and renewability of geothermal projects by Reykjavik Energy, through field work, numerical modeling, reporting and meetings. Member of an international expert group studying mineral CO₂ sequestration into Icelandic basalts. Member of an expert group studying impact of deep water injection to geothermal wells, where aim is to better understand coupling of stress and permeability field in the subsurface, optimally thereby increasing mean output of geothermal wells.

Senior reservoir physicist at the Geothermal Logging and Reservoir Physics Division at Orkustofnun (1987-2003) and at ISOR, the Icelandic GeoSurvey (2003-2006). Work includes numerical modeling of single- and two-phase flow in geothermal reservoirs and boreholes, well logging (~3000 km cumulative in 300 wells on 650 days), well testing, hydrological interpretation of well tests and software development. Monitoring internal changes in high-temperature reservoirs due to production. Supervising geothermal research and production monitoring for a few district heating systems in Iceland. Analyze tracer return curves to estimate thermal efficiency of long term injection. Storing and retrieving the collected data in an Oracle relational database. Summarize and draw geographical and potential field data by using various mapping tools and geographical information systems (ArcView and GMT). Develop various Unix shell scripts and Fortran programs for the data processing.

Special, on site training in California, in the use and application of the TOUGH2 and iTOUGH2 geothermal reservoir simulators. Beta tester for that same software. Parallel computing using the iTOUGH2 code on a 50 CPU unit cluster. Lead developer of a large 3-D reservoir model for the Hengill volcanic center in SW-Iceland. Member of two consultancy boards which dealt with present and possible leakages into Icelandic road tunnels during construction. Reservoir engineering consultant for Ormat Industries Ltd. in Kenya and Nicaragua. Reservoir engineering consultant for Shell International, CEL, GESAL and LAGEO in El Salvador. Group leader on the monitoring of hydrological changes associated with large earthquakes in S-Iceland in the summer 2000. Participate in the development, installment and operation of remote data logging stations, which monitor principal parameters of high and low-temperature geothermal wells. Develop software to automatically retrieve the collected data, analyze it and present on frequently updated web pages. Lead purchase of an acoustic televiewer for determining strike and dip of permeable zones in geothermal wells and correlate with regional stress fields. Member of EU supported projects Foresight and Hiti.

Tens of consultancy missions to El Salvador, Djibouti, Greece, Israel, Kenya, Nicaragua and Guatemala regarding geophysical surveys, geothermal reservoir engineering studies, drilling strategy and reservoir management.

Instructor at the United Nations Geothermal Training Program, Iceland. Part time lecturer in geothermal reservoir physics and engineering. Supervising approximately 25 students on analyzing field data and writing their final reports. Thereof is one master student who graduated from University of Iceland. Student supervision involves the following countries: Costa Rica, Guatemala, El Salvador and Nicaragua in Central America; Ethiopia and Kenya in Africa; Poland, Ukraine and Kamchatka in Central and Eastern Europe; China, the Philippines and Indonesia in Asia.

Instructor on training courses on geothermal reservoir engineering and reservoir management, held for CEL in El Salvador in 1992, for IGME in Athens, Greece in the year 2000, and for GESAL in El Salvador in 2002.

LIST OF MOST ENGLISH PUBLICATIONS

Björnsson, Grímur, 1987: A Multi-Feedzone, Geothermal Wellbore Simulator. MS thesis at University of California, Berkeley. Lawrence Berkeley Laboratory Report no. LBL-23546, 102 p.

Björnsson, Grímur and Gudmundur S. Bodvarsson, 1990: A Survey of Geothermal Reservoir properties. Geothermics, Vol 19, NO. 1, pp 17-27.

Björnsson, Grímur and Benedikt Steingrímsson, 1992: Fifteen Years of Temperature and Pressure Monitoring in the Svartsengi High-Temperature Geothermal Field in SW-Iceland. Geothermal Resources Council Transactions, vol 16, October 1992, pp. 627-633.

Björnsson, Grímur and Gudni Axelsson, 1994: Feasibility Study for the Thelamörk Low-Temperature System in N-Iceland. Nineteenth Workshop on Geothermal Reservoir Engineering, Stanford, California, 9 p.

Arason, Þordur and Grímur Björnsson, 1994: Icebox. A collection of useful PC programs in the field of geothermal work. United Nations University, Geothermal Training Programme, Reykjavik, Iceland.

Axelsson, Guðni, Grímur Björnsson, Ólafur G. Flóvenz, Hrefna Kristmannsdóttir and Guðrún Sverrisdóttir, 1995: Injection Experiments in low-temperature geothermal areas in Iceland. Proceedings of the World Geothermal Congress, 1995, Florence, Italy, Vol 3, pp. 1991-1996.

Björnsson, Grímur, 1997: Reservoir Modeling Integrating Isotope and Chemical data. Report on a expert mission to El Salvador, Jan. 30th to February 8th, 1997. International Atomic Energy Agency, Project ELS/8/005-03, Vienna, Austria.

Björnsson, Grímur, Guðmundur S. Bodvarsson and Ómar Sigurðsson, 1998: Status of the Development of the Numerical Model of the Krafla Geothermal System - May 1998. Orkustofnun report GrB/GSB/ÓS-98/02.

Björnsson, Grímur, 1999: Predicting Future Performance of a Shallow Steam-Zone in the Svartsengi Geothermal Field, Iceland. Proc., 24th Geothermal Workshop on Geothermal Reservoir Engineering, Stanford, California.

Finsterle, S., K. Pruess, G. Björnsson, and A. Battistelli, 1999: Evaluation of geothermal well behavior using inverse modeling. Proceedings, Dynamics of Fluids in Fractured Rocks, Report LBNL-42718, Lawrence Berkeley National Laboratory, Berkeley, Calif., 152-154, February 10-12, 1999.

Björnsson, Grímur, Sigvaldi Thordarson and Benedikt Steingrímsson, 2000: Temperature Distribution and Conceptual Reservoir Model for Geothermal Fields in and around the city of Reykjavik, Iceland. Proc., 25th Geothermal Workshop on Geothermal Reservoir Engineering, Stanford, California

Ólafur G. Flovenz, Ragna Karlsdóttir, Kristján Saemundsson, Omar B. Smarason, Hjalmar Eysteinnsson, Grímur Björnsson, Magnus Ólafsson and Thorsteinn Björnsson, 2000: Geothermal Exploration in Arskogsstrond, N-Iceland. Proceedings of the World Geothermal Congress 2000.

Yiheyis Amdeberhan and Grímur Björnsson, 2000: Well Testing and Reservoir Engineering Studies at the Tendaho Geothermal Field, Ethiopia. Proceeding of the World Geothermal Congress 2000.

Björnsson, Grímur, Ólafur G. Flóvenz, Kristján Saemundsson and Einar M. Einarsson, 2000: Pre- and post- hydrological pressure signals associated with two large earthquakes in S-Iceland in June 2000. Poster S11B-04, presented at the year 2000 fall meeting of AGU in San Francisco, California.

Björnsson, Grímur, Ólafur G. Flóvenz, Kristján Saemundsson and Einar M. Einarsson, 2001: Pressure changes in Icelandic Geothermal Reservoirs Associated with Two Large Earthquakes in June 2000. Proc., 26th Geothermal Workshop on Geothermal Reservoir Engineering, Stanford, California.

Björnsson, Grímur, Ólafur G. Flovenz and Kristján Saemundsson 2001: Long and Short-term Hydro-Tectonic Events in the South-Iceland Seismic Zone, Associated with Two Large Earthquakes in June 2000. AGU 2001 Fall Meeting, San Francisco.

Franzson Hjalti, Sigvaldi Thordarson, Grímur Björnsson, Steinar Th. Gudlaugsson, Bjarni Richter, Guðmundur O. Fridleifsson and Sverrir Thorhallsson, 2002: Reykjanes High-Temperature Field, SW-Iceland. Geology and Hydrothermal Alteration of Well RN-10. Proc., 27th Geothermal Workshop on Geothermal Reservoir Engineering, Stanford, California.

Björnsson, Grímur, Arnar Hjartarson, Guðmundur S. Bodvarsson and Benedikt Steingrímsson, 2003: Development of a 3-D reservoir model for the greater Hengill area in SW-Iceland. Proceedings, TOUGH symposium 2003, Lawrence Berkeley National Laboratory, Berkeley, California.

Jonsson, Sigurjon, Paul Segall, Rikke Pedersen and Grimur Bjornsson, 2003: Post-Earthquake Ground Movements Correlate to Pore-Pressure Transients. *Nature*, vol. 224, 179-183.

Arason Thordur, Grímur Björnsson, Guðni Axelsson, Jón Örn Bjarnason and Páll Helgason 2004: ICEBOX-Geothermal reservoir engineering software for Windows: A user's manual. Íslenskar orkurannsóknir ÍSOR-2004/014 80 s.

Björnsson, Grímur, 2004: Reservoir Conditions at 3-6 km Depth in the Hellisheidi Geothermal Field, SW-Iceland, Estimated by Deep Drilling, Cold Water Injection and Seismic Monitoring. Proc., 29th Geothermal Workshop on Geothermal Reservoir Engineering, Stanford, California.

Sustainable Utilization of Geothermal Resources

Axelsson Gudni, Valgardur Stefánsson and Grímur Björnsson, 2004: Sustainable Utilization of Geothermal Resources. Proc., 29th Geothermal Workshop on Geothermal Reservoir Engineering, Stanford, California.

Gudni, Grímur Björnsson and Julio E. Quijano, 2005: Reliability of Lumped Parameter Modelling of Pressure Changes in Geothermal Reservoirs. Proc. World Geothermal Congress, Antalya, Turkey.

Axelsson Gudni, Grímur Björnsson and Francisco Montalvo, 2005: Quantitative Interpretation of Tracer Test Data. Proc. World Geothermal Congress, Antalya, Turkey.

Gíslason Gestur, Gretar Ívarsson, Einar Gunnlaugsson, Arnar Hjartarson, Grimur Björnsson and Benedikt Steingrímsson, 2005: Production Monitoring as a Tool for Field Development - a Case History from the Nesjavellir Field, Iceland. Proc. World Geothermal Congress, Antalya, Turkey.

Franzson Hjalti, Bjarni Reyr Kristjánsson, Gunnar Gunnarsson, Grímur Björnsson, Arnar Hjartarson, Benedikt Steingrímsson, Einar Gunnlaugsson and Gestur Gíslason, 2005: The Hengill-Hellisheiði Geothermal Field. Development of a Conceptual Geothermal Model. Proc. World Geothermal Congress, Antalya, Turkey.

Gudni Axelsson, Valgardur Stefánsson, Grímur Björnsson and Jiurong Liu, 2005: Sustainable Management of Geothermal Resources and Utilization for 100-300 Years. Proc. World Geothermal Congress, Antalya, Turkey.

Bjornsson Grimur, Einar Gunnlaugsson and Arnar Hjartarson, 2006: Applying The Hengill Geothermal Reservoir Model In Power Plant Decision Making And Environmental Impact Studies. Proceedings, Tough Symposium 2006. Lawrence Berkeley National Laboratory, Berkeley, California, May 15–17, 2006

ICELANDIC PUBLICATIONS

Author and coauthor of > 400 reports, on the various aspects regarding research, modeling and management of many Icelandic and a few overseas geothermal systems.