

Thomas Hess

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Summary

30 years industry experience as an accomplished geoscientist, working in various roles in oil and gas exploration and in software development and support. Experience in all phases of geoscience software QA, testing, knowledge management, training, worldwide customer support and critical problem solving. Accomplished in seismic migration imaging and velocity analysis. Acknowledged for talents integrating, problem solving, conceptualizing and directing the development of team members, and finding business critical solutions to meet clients' needs. Known for having well-honed problem solving strengths necessary to meet the challenges of business economics, client needs and technical innovation.

Expertise

I have demonstrated continuous high achievement of objectives in multiple skill areas, which combined to achieve greater software performance and reliability. Some examples of my innovations are:

- Developed a method for highly refined interval velocity refinement. Improved velocity model resulted in better migration imaging.
- Refined processes for parallel processing of seismic migrations including multi processor techniques (MPI) for automatic residual velocity calculation using Paradigm's GeoDepth software.
- Developed several deconvolution techniques for noisy data in Nicaragua, Offshore GOM, Japan, and an Antarctic radar imaging project.
- Reverse engineered a complex 3D survey to work within conventional processing software.
- As a consultant, development of a unique hardware and software method to eliminate viruses and root kits from PC's.
- Improvised and refined techniques to increase software efficiency using advanced compiler options using Solaris Workshop. Showed that core libraries responsible for heaviest use, when optimally compiled, dramatically increased the speed of end user experience and program execution.
- Pioneering work as one of several technical leads on a wide-ranging performance analysis of GeoFrame operation and Oracle™ database tuning. This involved a system wide exploration and "black box" testing approach including network analysis, SQL Net tuning, hardware tuning, internal database tuning and schema implementation changes. As a result of this development, the "GeoFrame" product was significantly increased in performance and responsiveness that impacted sales and product reputation.
- Development of automated testing methods, including data driven automated tests, for the "GeoFrame" core product. Significant technical obstacles were overcome, and greatly increasing the number of tests executed.
- Trouble shooting of numerous "Business-Critical" software problems as lead tester for GeoFrame systems (core product and database). Maintained company reputation and quickly diagnosed problems.
- Domain expertise in Geology, Geophysics, Oil Exploration, GIS, and Software performance. Supplied many requirements and specifications to design team in Schlumberger worldwide about basic and advanced user needs, algorithms, design and workflow issues.
- Expediently diagnosed and repaired corrupted databases as customer support for major corporate clients (Statoil, Norsk Hydro,..) in the North Sea area. At a crucial time in the deployment of GeoQuest's software line, maintained the reputation and reliability of the StratLog product among the line of exploration software.

Experience

Jackson School of Geosciences
Research Science Associate IV

Austin, TX

2006-Present

Working primarily as application support for geoscience applications such as GeoFrame, Openworks, Seisworks, Petrel, Kingdom Suite, Hampson Russell, Paradigm's GeoDepth, Focus, Promax and open source alternatives such as OpenDtect and STK: Seismic Toolkit. Dual role as researcher in Marine Geophysics developing techniques for velocity refinement for pre-stack depth migration. Assisted graduate students in using software correctly, testing validity of data and quality control on acquired data, primarily 3 component OBS data, VSP, well logs, 2D,3D,and 4D seismic. Served as Jackson school resource for geoscience software uses and limitations. Troubleshooting and system administration as necessary.

- Processed 3D3C VSP for research project. Analysis of ray paths provided basis for grad student paper. (See Publications)
- Processed P-cable survey in the Gulf of Mexico for High Resolution sedimentary feature mapping.
- Refined Residual velocity calculation for 3D seismic survey "Kumano", tuned migration using MPI to migrate on TACC (Texas Advanced Computing Center) supercomputer clusters.
- Created Dip Steering framework to calculate coherency and similarity of 3D seismic for graduate student. Paper resulted (see Publications)
- Innovated Radar data processing for moulin interpretation in Greenland. Using Paradigm's Focus, a fine tuned image was created of internal glacial structures. Paper in submission.

Consultant

Austin, TX

2003 - 2006

Numerous projects for individuals and organizations using problem-solving techniques in technology application and strategy. Business involved solving client problems in the use of IT resources for small business. I devised several original techniques for clients including:

- Services and products for businesses and individuals including web portals using Joomla, eGroupware, Dotproject, various E-commerce and Open-Realty packages covering all phases of php, MySQL applications. Windows, Linux, Unix and Mac OS X troubleshooting and repair. Ongoing development of xmlrpc syncing of Outlook, Kontact (KDE) and eGroupware.
- Small office configuration and problem solving including merging windows with Open Source applications for optimal cost effective solutions.
- Automated LAN/WLAN intrusion detection and secure wireless methodology.
- Created a unique malware removal technique.
- System optimization including firmware, hardware, and OS tuning.

Schlumberger, Austin Technology Center

Austin, TX

1994 - 2003

GeoFrame Systems and Oracle Helpdesk Manager; Senior Engineer III

Knowledge Management helpdesk manager for system internals and Oracle. Promoted to this from being the Lead Test of GeoFrame (core system) 2.5-4.X for software flaws and performance enhancement. Test plans development, requirements analysis, data object coverage, code coverage, risk analysis, static code analysis (McCabe), and trend analysis from bug tracking database. Software and database performance testing including deployment of automated tests throughout the SDLC,

including using data driven methods for large scale testing. Applied domain expertise for coordinate system development, user interface (UI), technical specifications, workflow and algorithmic correctness. Developed hybrid test plan design from existing materials, Rational's RUP, IEEE, and influences from Edward Kit. As part of a development team contributed to defining requirements and specifications for a number of GeoFrame applications on Windows, Solaris, Linux and AIX platforms.

- As Knowledge manager, identified business process improvements, published technical papers for GeoFrame Domain knowledge.
- Innovative techniques lead to 2X increase in overall software performance from advanced compiler configurations on Solaris 8 systems.
- Designed automated regression testing techniques using QAPartner (Silk, Segue Software Inc.) including evaluation of software (Xrunner, WinRunner, Rational Robot, TestDirector...etc), test designs, baseline integration, automation of tests and remote reporting of results. Designed data driven schemes that improved test robustness and increased test coverage.
- Advised and aided multiple groups within Schlumberger with automated testing strategy and deployment. Various test frameworks were deployed based on the requirements of the projects (Xrunner, Win Runner, Rational Robot, Silk Test..etc)
- Supported and tested for GeoFrame core applications on Unix/Motif and NT platforms. Solved business critical problems in the software engineering environment. Stress, performance, and data driven testing using Geosciences' specific workflows. Integration of large datasets from disparate application groups to test product integration prior to commercial testing.
- Customer Support. World Wide support and training of StratLog II under GeoFrame. Multi product integration, problem solving and database repair. Worldwide training and support of regional offices supporting StratLog's transition into Schlumberger. Problem solving and engineering new user techniques for StratLog data integration with other applications. Pioneered database repair (for StratLog) in the Oracle environment of GeoFrame. 99% of all database problems were corrected.
- Extremely High Customer satisfaction; several oil companies reported data saved was absolutely crucial to keeping GeoQuest's products and future exploration efforts. They are, Norsk Hydro, Statoil, Amoco Mobil, Aramco, and Triton Exploration

Halliburton Energy Services ,Worldwide, Houston,TX

1989-1994

Domain Expert / Trainer

Multi-disciplinary integration of international experience, instructional skills geophysical knowledge, and software/hardware skills in a team effort to develop and deliver instructor based training for the interactive seismic processing software, ISX and related seismic programs.

- As Domain Expert within design team, creation of a large scale training course for ISX, including students guide, instructors guide, class data set, visuals and incorporation of international experience.
- Support of staff with computer technology problems, requirements and specifications for new software design (STATIX II), development of seismic processing special problems solutions, and integration of data from multivariate sources.
- Technical support for early multimedia authoring work for computer based training, (UNIX and PC). Fie formats, system stability and troubleshooting with developers for quick repair of leading edge technology.

Departmental Computer Services Manager

Planning and strategy for the Training Division's development of a Computer Based Training process. New technology assessment and testing for current and future needs of department.

- Development of new office systems design and business plan for UNIX systems. Recommendations for later systems deployment. Included disk capacities, training lab development, and solving network/server problems (UNIX)
- Efforts increased staff support in the Houston office. Assisted project management of systems tasks, monitored progress.

Project Manager

Foreign training mission planning, execution, and evaluation for companies such as the Syrian Oil Company (United Nations Development effort) and various Chinese oilfield companies.

- Projects involving integrating multiple software vendors, coordinating operations with hardware/software deployment, monitoring progress, and analyzing results.

Shell Western E. &P. Inc.

1984-1989

Reprocessing Group, Mid-Continent Division.

Specialized reprocessing of seismic data in areas undergoing scrutiny as drilling prospects. Techniques include long wavelength static, probabilistic velocity determinations specialized deconvolution, and high-resolution short wavelength static corrections.

- Processing of key seismic lines over several large prospects. One line was used to target drilling location for well site.

Interpretive Data Processing Coordinator.

- Strategic planning, and technical support for approximately one hundred geophysicists and geologists within exploration operations.
- As part of a team, development of a corporate efficiency report on Shell Oil's primary computer mapping system. Several major changes in policy, education and software were accepted resulting in significant savings (10-15%) of yearly budget.
- Deployed policy, which kept processing efficiency within the division at the highest level in all of Shell Oil's divisions for two years.

Division Seismology Group, Mid-Continent Division. Developed and deployed specialized methods for seismic data high-resolution acquisition, design and processing. Developed a gravity program design and analysis.

- Designed, directed and analyzed Michigan basin gravity survey. Authored a report on the detection of Silurian reefs using gravity, co-incident with seismic. Results expanded Shell's land acquisitions dramatically.
- Designed, supervised acquisition and processing of a 11.7 square mile 3D seismic survey over a West Texas production field. Assisted geophysical advisor in learning computer interpretation software. Successful secondary recovery resulted.

Seismic Party , Mid-Continent Division. Responsibilities included seismic data processing, design of

processing parameters, supervision of technical staff and design of acquisition parameters.

- Developed parallel processing method for batch UNISYS processing.

Atlantic Richfield Co.

Summer 1982

Summer Research Geophysicist, Velocity Research Group. Analysis of velocity determination behavior over curved interfaces. Included both theoretical and numerical analysis.

Education

M.S., Geophysics **1984**

Massachusetts Institute of Technology, Cambridge, MA

Mining and Mineral Resources Research Institute Fellowship

Thesis title "Ultrasonic Velocities and Attenuation During Pore Pressure Induced Fracture"

Advisors: Prof. Nafi Toksoz, Prof. Micheal Cleary

B.S., Earth and Planetary Sciences **1981**

Massachusetts Institute of Technology, Cambridge, MA

Minor in Psychology

Publications

Case History of Acquisition and Processing of a High Resolution Shallow Water 3D Multi-cable Seismic Survey in the Gulf of Mexico Transition Zone. Thomas Hess*, Tip Meckel, Nathan Bangs, Robert Tatham, Jackson School of Geosciences, University of Texas at Austin (In submission as an Extended Abstract to SEG Fall 2014 meeting)

Carter, R. W., K. T. Spikes, and T. Hess, 2014, Inversion of multicomponent 3D VSP data for porosity and CO2 saturation at the Cranfield injection site, Cranfield, MS: Interpretation, May 2014

Influence of growth faults on coastal fluvial systems: Examples from the late Miocene to Recent Mississippi River Delta: Christopher Armstrong, David Mohrig, Thomas Hess, Terra George, Kyle M. Straubb: Sedimentary Geology, Volume 301, 15 March 2014, Pages 120-132

3D Seismic Evaluation of Fault Control on Quaternary Subsidence Patterns, Rates, and Related Surface Morphology in Southeastern Louisiana” (Presented at GSA, Fall 2008, Poster Paper)Terra J. George , Department of Geological Sciences, University of Texas, Austin, TX(1),David Mohrig , (1),Kyle M. Straub , St. Anthony Falls Laboratory, University of Minnesota, Minneapolis, MN, Jeffrey A. Nittrouer , (1), Thomas Hess , (1)