

A GEOSCIENCE CAREER IN INDUSTRY: FINDING AND GETTING THE JOB

Guidance from

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As a graduate geoscientist, there are many career paths to follow in academia, industry, and government. A career with a petroleum or mineral exploration and production company, or as an environmental consultant can be very rewarding intellectually and financially; expose you to leading edge technologies; allow you to travel and perhaps live internationally; involve you in projects that cost billions of dollars to complete; and be exciting and fun. Here is my advice on in how to find a job in industry.

Building a Geoscience Foundation that Provides Career Optionality

Pursue a broad geoscience curriculum as an undergraduate with courses in stratigraphy, structure, mineralogy, paleontology, paleo-environments, hydrology and fluid flow, geochemistry, geophysics, basin modelling, environmental geology, remote sensing, and GIS. Get experience with laboratory analytical procedures and equipment. Some experience with a seismic workstation and the ability to interpret seismic data is also very helpful.

A summer field course is highly recommended. A field course helps you pull all your geoscience knowledge together and to be able to better visualize in four dimensions the subject geology in real terms. Computer models simply do not do this!

Working in industry is ultimately about pursuing projects that will make money for your company's shareholders. Take an economics class and know how to build an Excel spread sheet and read a profit and loss statement. Understand budgets. Statistics is also very important. Probability analysis is an important step in reducing exploration risk.

Learn to make, and feel comfortable, giving presentations before a group that will ask lots of questions about your assumptions and conclusions, and probably challenge them. In the mineral and petroleum exploration business, even as a young staffer, you will be making proposals to your supervisor and management that cost millions of dollars to execute. You must convince management that the expense is justified to prove why you believe there is a commercial mineral deposit or oilfield to be found as a result of your geoscience work.

Visit the websites of the American Geosciences Institute (AGI), Geological Society of America (GSA), American Geophysical Union (AGU), American Association of Petroleum Geologists (AAPG), Society of Exploration Geophysicists (SEG), Society for Mining,

Metallurgy & Exploration (SME), and other geoscience organizations, for information about geoscience workforce research. AGI “Geoscience Currents” is a good starting point.

Participate in the activities of your university geoscience club. Become an officer!

Get involved with professional societies as a student. Join GSA, AAPG, SEG, SME, or AGU, or others as appropriate; engage in original research projects as an undergraduate in fields that you might want to pursue in graduate school, and possibly as a career. Give poster presentations at the regional and national meetings of the geoscience societies. Get published by helping your professor write a paper.

Work during the summers as a laboratory research assistant; field assistant, or as an intern in a geoscience discipline that you hope to pursue as a career. As an undergrad, the job might be fairly menial – i.e. collecting and analyzing samples, but that is where one has to start, and it can be lots of fun if you are posted to some remote site in Alaska or Greenland, or on a research ship.

Develop a passion for the geosciences and be committed.

Identifying and Landing the Job You Want

Determine what geoscience discipline you are really interested in, as well as what you do not enjoy.

Define your skill sets. What do you do best? What is your competitive advantage? Where do you need additional learning and experience?

Research professional career options from webpages of the geoscience professional societies and publications of the professional societies, such as AAPG *Explorer* and SME’s *Mining Engineering*. Visit websites of professional trade groups.

Talk with your professor and college career guidance counselors.

Identify where new applied research is needed and where your skills could be applied. In petroleum exploration, for example, this presently includes: developing a better understanding of fluid flow through fractured low permeability reservoirs; evaluating unconventional reservoirs, in particular the stratigraphy, mineralogy, geochemistry and diagenesis of shales; and developing seismic processing algorithms for better imaging thin-bedded reservoirs, imaging beneath salt; and defining porosity and permeability trends in dense carbonates.

Once you have created a “short list” of what it is you want to do in the geosciences, identify the companies that do what you want to pursue. Go to company websites and read each webpage about company mission, operations, press releases, financial condition, and management. Companies that have demonstrated growth and sound finances are going to be the

best employers. Determine how you would fit into the company's geoscience workforce and hopefully add value.

Try to identify geoscience alumni from your university who work for the companies that you would like to approach. Contact them, explain your interests, and do not be shy in asking them to help you get a job. The same applies to family and friend connections. The "old boy/girl" network is very useful – take advantage of it.

Be prepared to travel and work and/or live internationally – we are a global economy! Learn a foreign language – Spanish, French, or even Arabic. The competition for jobs with the major international mining and petroleum companies is very competitive as they can select from the best and brightest from the world's top universities.

Prepare a resume that clearly lists your geoscience qualifications, special expertise, academic awards, grade point average, GRE grades, presentations and publications, job experience, competitive advantage, and career goals. If you have experience with analytical laboratory equipment, seismic workstations, or using certain geological or statistical software, mention that skill. Include extracurricular activities that demonstrate your broader interests and leadership abilities. Your future employer would like to know that you were the captain of an intramural or varsity sport, and that you were on the college debating team. If you have traveled internationally and speak a foreign language, cite that experience. The resume should demonstrate your passion and commitment to the particular geoscience discipline that you plan to pursue. Be prepared to modify the resume to suit the company that you are applying to. If it is mining company with operations in Latin America, cite your summer work in Ecuador, for example, and fluency in Spanish.

Have your resume reviewed and critiqued by your professor and a couple classmates. It must be well-written with no typos, be convincing, and set you apart for the masses of other job applicants.

Obtain letters of recommendation addressed to "Whom It May Concern" from your professors and temporary employers. The letter should cite the excellence of your work; your dedication (work ethic), and the contribution you made to whatever the task had been. If the work led to a publication, make sure that it is cited.

Identify the competition for the position, and explain why you are the best choice for the job – relevant experience, intelligence, dedication, creative, willingness to work hard, team player, and you are a nice person to work with!

Prepare a cover letter that is addressed to a key decision maker at the company to which you are applying. This might be the VP of Exploration, or the regional division exploration manager. Identify the person from the company website. You might call the company and ask who is manager of the geoscience workforce. Try to avoid being directed to "Human Resources".

The cover letter should be very specific about the job you are looking for, and cite how your skill set and research fits that job, and how your employment would benefit the perceived needs of the company (per your research). Explain why you think you are best suited (your competitive advantage) for the job. Do not just write that you are “looking for an entry level geoscientist position”. Have someone proof and critique the cover letter – no mistakes allowed!

Send the application by e-mail and follow-up with a hard copy. This will put your name before the employer’s eyes twice in a few days.

No more than ten days after you have submitted your application, follow up on job application. Contact the person to whom you have sent the application. Be persistent if you do not get a reply with a couple weeks. Tactfully let the potential employer know how interested you are in the job, and that you are confident that you will make a very positive contribution to the business and mission of the employer. Ask for a face-to-face interview. Will they cover the airfare and hotel for you to fly in for a day for an interview? Could you visit their lab and/or offices to meet some of the company geoscientists and see the work that they are doing?

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Petroleum and minerals are cyclical industries that go through periods of hiring and lay-offs. If you are a bright graduate with a demonstrated record of being committed to your chosen field in the geosciences, you will find a good job regardless of the macroeconomic factors at play.

Over the next decade there is a critical need for geoscientists to meet the ever growing demand for raw materials, energy and water to supply a global “consumer society”. Geoscientists are also needed to make sure that this demand can be met in an environmentally responsible manner. The “Baby Boomer” generation is retiring. There are tremendous opportunities for a new generation of geoscientists.

Question #1: Should I get a master’s degree? Answer – yes. But when? If you know what you want to do, and believe grad school will build on research you began as an undergraduate, then go straight to grad school. If you are still undecided as to your career path, then I recommend working for one or two years. This will help you develop a better understanding as to your future, and put a few bucks in your pocket before going to grad school.

Good Luck!

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ABOUT THE AUTHOR

G. Warfield “Skip” Hobbs is a petroleum and mining geologist and Founder and Managing Partner of Ammonite Resources, a firm of international petroleum, geothermal and mining geotechnical and business consultants. Hobbs holds a B.Sc. Degree in Geology from Yale College and a M.Sc. Degree in Petroleum Geology from the Royal School of Mines, Imperial College, London. He has served as an elected officer of the American Association of Petroleum Geologists and is an Honorary Member of the AAPG. From 2004-2012 served on the Executive Committee of the American Geological Institute, a federation of 50 geoscience professional societies representing over 250,000 members in every earth science discipline. He was AGI President in 2010-2011. Hobbs was a member of the Council of Scientific Society Presidents in Washington, D.C., from 2009-2012, where he served as Co-Chair of the Committee on Energy and the Environment. From 2000-2014 Skip was a Trustee of the New Canaan Nature Center and was president of the Nature Center from 2012-2014. He writes and lectures frequently on energy economics and energy policy, and on environmental issues.