“In Her Geophysical Shoes”

An interview with a panel of experienced women in the geophysical industry addressing questions from the younger generation of CSEG and APEGGA members.

Coordinated by Marian Hanna, P. Geoph.

Contributions from: Marian Hanna, Cheran Mangat, Doris Ross, Carmen Swalwell, Penny Colton, Flo Reynolds, Elaine Honsberger, and Annette Milbradt.

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Introduction by Marian Hanna

This article came about from a creative brainstorming (or brainstemming) session in the Denver airport after an exhausting SEG 2010 convention. Cheran Mangat and I were both tired from our SEG experience and we also served on the CSEG RECORDER Editorial committee together at the time. I have since rotated my post and Cheran still serves in the capacity of the Director of Communications. We were coming up with some very creative potential articles to write for the RECORDER in the terminal gate. Some of those ideas we will not follow through on because they were just downright silly. But the idea for a panel of experienced women geophysicists in industry was a good one. The intent was to follow up on the 2003 CSEG RECORDER article of a previous panel of women and to expand on other key elements. Following that delightful brainstorming session in Denver, the Junior Geophysicists Forum was held in November 2010 and I found myself talking to a group of young female geophysicists there. I consequently brought up the subject of the idea of an interview for the RECORDER consisting of a panel of experienced women in industry and asked if they would like to read such an article. There was an overwhelming positive response to the idea of such an article and these young ladies offered a plethora of topics to be included in the article. Thank you, ladies. I’ve done my best to include all of those ideas from the original group of young women professionals into this article. That same November JGF night, I therefore turned my inquiry to the young and experienced male geophysical professionals to see if they would also appreciate reading an article featuring an interview with a panel of women and again I received an overwhelming positive response. Curiosity made me ask what as males they would like us to share for their benefit. Both the young and experienced male colleagues said that they want to be better team players, that women are on all of their teams and they know communication styles can be improved. The experienced males indicated that they wanted to be better managers, better fathers for their daughters entering this industry and better men overall. The younger males indicated that they realize that the statistics of the female/male population in university and in the geosciences is rapidly changing and that will only impact industry in due time. In fact 60% of this year’s population in Alberta universities in the geosciences are women (source APEGGA). This article hopefully serves to benefit all geophysicists in this industry, not just women.

Our intent of this article is to do exactly as requested by sharing our insight and experiences with all of the RECORDER readership starting from questions raised by the Junior Geophysicists at the JGF. Therefore, it is passionately dedicated to all and especially to the future generation of geophysical scientists and potential executives. May you work smart, have fun and make us all proud. No one can do it alone so don’t be afraid to ask for help!

Q. How did some of the top women geophysicists manage having families while also pursuing their professional career? Did they take time off to have kids, did they feel that they were held back in their careers by having a family (i.e. – did men or women who didn’t take maternity leave advance further in their careers?) What strategies do they have for balancing both work and family and to ensure that they excel in their careers? What can employers do to encourage women to pursue their careers while also managing their family?

Cheran – My experience is from England and when I had my children I was working for a Processing Company. I was in charge of the Special Projects Group. Most of our processing projects required TLC and specialised processing therefore the project deadlines were more relaxed. I more or less took 7 years off for raising my son and daughter. I stayed at home for each of them for the first year (they are 2 years apart in age) and usually went into the office a few hours a day, two to three times a week. Being a Manager, my responsibility was to QC the projects, while time cumbersome tasks were delegated. I believe I was able to keep my hand in the workforce and be at home because I was in a more senior position within the company. To me it was important that my children were well taken care of when not at home therefore we were fortunate to have a private nursery nearby. How one raises their children is a personal matter but my advice is to be in a strong financial position so that there is flexibility in your choices.

Doris – I took 4, 3, and 2 months away for maternity leave as my husband is the stay at home parent. So I can’t really say that my career suffered any delays due to child-bearing. I do make sure I spent time with my family as this is who I am. Everyone is wired in their own way, but taking personal time is important regardless if that involves family.

Balancing personal time – with family or not – can be achieved if you understand your business goals at hand and fully grasp how to prioritize your work activities. Employers can offer options for people facing family issues from older parents to children, afford ways to work extra time and make up, set up 9/80’s (every other Friday off if you work a longer day), etc. Look to work for companies that walk the talk when it comes to work life balance. Look for companies or teams where your business objectives are clear and you can sort out success through an efficient day. I gave up working weekends a long time ago.

Marian – My response is this is a personal choice issue and there is no magic answer. Our choice on the family issue was to have our children early in our marriage and while I was paying my way through university. I had a fantastic support system with my husband, my family and the department at my university. My mother and father often came to get my children when they knew my physics finals or the like were coming up. I went to field camp in Mexico while my family and professors dealt with my husband’s emergency gall-bladder surgery and juggled the children with my sister and sister-in-law. I would not have finished university if my family
and my professors did not work together on that particular issue. No one is an island and a great support system is one of the few reasons I have succeeded. There are many policies in place for family-work balance in several corporations. If this is important to you, then seek those companies out as potential employers or suggest that your current employer offer family benefits in order to make them a preferred employer within industry.

Elaine – If I may offer some advice – while balance is important, you will do best to make some kind of choice early as to where you want to go with your career. I think it would be important to plan out whether you would like a predominantly technical role, or perhaps a technical moving into management role, or predominantly a management position. If you can identify this before or when you are having a family, I believe this will help you to focus on the key roles you want to take on whether they are part or full time, to keep you moving forward. A regret I have about my own planning was that I failed to look ahead early on where I wanted to go, and was simply happy to have a job, keep up day to day, and do my best work. This was, in part, a consequence of working through very difficult financial times, where knowing what might happen in the following week could be difficult. My advice is to have a plan, allow the plan to change, but at the very least have a direction in mind. Then do what you need to do to get there, whether you are working part of full time, or through good times or bad. Stay focused!

Q. How can one best manage career/life balance? Might one not be considered for a position because one might get married or have children? (They indicated that they know women make great employees, they’ve seen it already.)

Cheran – This question is more of a personal nature. Balance in both career and life is really dependent on the husband and wife team through the understanding and respect they have for each other. It can at times be difficult but having extra help through support from external sources, family, friends and each other is important.

Marian – I struggle with this one too because I feel I did the best I could at the time when our children were small. We must all find our own way to balance our lives. Be prepared that you must address your priorities and balance those priorities. There may be career opportunities that do not come to fruition because you may need to readjust priorities in your personal life (kids, husband’s career, parental issues, etc.) but you never know what the future holds. Again, the choices are in front of you. They can be difficult choices but the opportunities they represent are yours to make. A good network of support is key.

Flo – I was recently at a women’s networking workshop and this topic came up in all sessions. The general conscience was that the balance is different for each person. Having a good support system is really required. I would consider any company that would express such a thought is not worth working for. Being single most of my career I have never had a situation where the possibility of getting married impacted my position or opportunities. Moving to Saudi Arabia in the middle of a contract was a bit of a challenge but it did not impact keeping the contract or completing it.

Annette – Don’t be in too much of a hurry. Take the time to do what is important at that time. I left the industry for 11 years and successfully re-integrated. That 11 year break was after two seven month maternity leaves and returning to work at 50% time after each mat leave. I also know of two men who returned after 10 or 11 year absences. If you’ve left with a stellar reputation, it will be easier to open doors when you return.

Carmen – This question really made me think. I would like to say that it doesn’t make a difference, but I know that is not true. But it is a lot better than it was 25 years ago. At one job I was sent for a pregnancy test!

When I started in the industry I had no work/life balance. For the first part of my career I worked for economic evaluations firms. A typical work week was 60 to 65 or 70 hours. Now I have a husband in the same industry, so the line between our work lives and personal lives is very blurred. Most of our personal friends work in the same industry. One thing I would change is that I would have cultivated more friendships with women outside of our industry. I am lucky that I have a couple of close friends outside the industry and they help to keep me balanced. To some degree at least!

Particularly in the last seven years I have worked with and met more women in geophysics. I am continually impressed by their intellect, poise and maturity. They certainly have much more on the ball than I did at their age.

Q. Is there a ‘glass ceiling’ within our industry? Why are there so few female executives in the oil & gas industry? Is it simply a historical reflection of fewer female candidates due to lower female university graduates and more stay at home mothers from back in the 60’s and 70’s? Will this change now that female university enrolment is higher, or is male leadership dominance culturally engrained within the industry? Have they ever felt that they needed higher educational credentials and/or experience compared to men vying for the same job positions? (i.e. – would a woman require an MBA to qualify themselves for a leadership position when a man may only need a B.Sc.?)

Cheran – There are fewer women in senior executive positions and I would say this is probably due to a combination of personal choice and a glass ceiling. As one progresses in one’s career into a more senior/managerial role the stress levels can be enormous, amount of time spent at work increases and less time is available for family.

Doris – I hate to say this but until the numbers change it does appear there is a bit of glass ceiling and the more conservative the company is, the more I see it. This is not limited to gender and actually applies to diversity in general by the way.

Marian – My response is there is overwhelming literature and statistics that indicate there is still a glass ceiling in many aspects of life and work for all sorts of people not just women. The truth is that all people have talent to share and managing that with the reward and responsibility of executive positions is complex. Some people simply choose not to go down the executive avenue because of politics and sacrifices to their personal lives. Humans tend to gravitate to those like themselves as we also see represented in the animal kingdom as well. My point here is that even though a group of executives may find themselves comfortable with the management team they have in place, is there something that is missing?
Forcing ourselves to consider another viewpoint or another person unlike ourselves is uncomfortable for most but that process makes for a very thorough decision in the end. Do you see the choices in front of you and the opportunity it represents? I can't comment on whether a woman really needs an MBA vs. her potential male colleague with a BSc. Again, that is a choice which could possibly open new doors. I would suggest there are quite a few role models out there for a young woman in this industry and the time has come for more.

Elaine – I wonder about “glass ceiling” and what this really means. My perception is that we may impose our own glass ceiling, simply by taking a very different approach than most of the other people in the room. Women and men clearly think about the same subject matter differently, and we communicate differently even with all of us intending to get to the same endpoint. I find the more you can communicate in a way that is elegantly forceful and offer great ideas while doing so, the better you will do. Avoid emanating doubt in your boardroom conversations – even if you are uncertain. Being clear on the uncertainties of a situation is advisable — focusing on your own skill gaps is not. If you can get a coach (professional or otherwise) — someone to observe you and provide meaningful feedback in a way that you can digest, do it. Do what you can to get this early in your career if you wish to progress into management to ensure you have the best feedback at the right time. Good advice is great, but ineffective when it comes too late.

Q. Is there any pay disparity between men and women of equal experience and who hold equal responsibility?

Cheran – Most definitely and this applies to any industry!! The Telegraph and The Times in England published figures a few years ago comparing salaries between men and women. What can be done to change this?—women have come a long way from the 1900’s and I would say carry on as we have been and hopefully this will improve as women move into the workforce more and into higher positions.

Marian – Yes, there is still disparity in pay for not only women but minorities in general. In the U.S., for this industry and others, there was much effort in the past to equalize all pay towards skill, technical work and accomplishments. I knew the statistics and my pay fits well in the appropriate ranges. However, there are other sectors of this industry which seem to have a larger gap in pay between genders but my understanding is that this disparity is highest at the top, not in technical ranks. Is this changing or equalizing? I will also refer our readers to the SEG, AAGP and the APEGGA salary survey on this.

Penny – There are some interesting statistics we can bring to this discussion. The 2010 APEGGA Salary Survey reports the mean salaries for men and women for equal experience and responsibility. (See http://www.ipegga.org/pdf/SalarySurvey
## Average Total Cash Compensation by Gender, Designation and Responsibility Level All Industries – May 2010

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* The total number includes those respondents within each profession that did not declare gender.

The percent differences are greatest in the entry levels A and B (with a range from 1% – 10% difference from the mean for men and women, although these are based on a low number of sample statistics (total of 18 F out of 43 M+F). What is most interesting for this discussion however is that the female geophysicists in levels A to E received higher (or equivalent) salary for those that responded to the survey. More importantly for the future of geophysics, due to the industry activity and hiring levels right now, many of the new graduates in geophysics, and in geoscience, are not becoming APEGGA members, or Members in Training, primarily perhaps because many are not yet working in the industry. For the levels F and F+, with the most experience – and at managerial positions, there are only 3 female geophysicists out of 62 in the reporting sample group for these statistics. That is where our “history” and personal choice to stay in the industry has the most relevance. My experience over the last few decades is that petroleum company policies have provided compensation parity for equivalent staff positions. The different segments of the industry may however have different pay levels between different industry segments.

### Q. Any tips on what women can do to stand out in the industry?

**Cheran** – We are women and we should be proud of who we are. Women generally approach problems from a different perspective than their male counterparts and this is being recognised more and more. Be confident, work hard and grab the “bull by its horns and run with it”. We don’t need to take Women’s Liberation to the extreme in order to be visible, appreciated and successful.

**Doris** – As women we just stand out anyway. Just do the work needed to be done, show innovation, intelligence, understand and meet business goals, and just be fearless. Stand up and be counted.

**Marian** – Be reliable and trustworthy. People will count on that in this business. There is much time to shine and other times to listen and learn. Life is a marathon, not a sprint. Enjoy what there is to enjoy and suffer what there is to suffer. No one can escape struggle. But it’s how you deal with the challenges in life that defines you. Challenges always present to each of us an opportunity where we might want to consider improving. Trust yourself, work hard, play nice with others, smile often, and keep ‘em guessing! I’m still learning this too.

**Elaine** – Be smart, have good ideas, articulate well, get to the point, be confident, know your business, dress like you mean business.

**Penny** – Our vision and perception of demographic domination and choices certainly needs to be filtered based on the segment of the industry – acquisition, processing, interpretation, management, and on the age group and thus historical career choices being considered. The choice to enter or remain in the industry by long time members was based on previous industry trends, and will not change within those groups. The future is already here in the demographics of the new graduates. They are all already standing out in many of the sectors, and will make their own history: It is theirs to lead.

**Q.** They recognize the increasing number of women in university in geophysics. What are some ideas on how to promote their ideas, careers, prospects, etc. in our industry? They want to know where their time is best spent technically, professionally and perhaps personally. They don’t want special treatment, only a fair chance.

**Doris** – Figure out what it is that you like about your work. Is it business – do you want to be an asset manager or president of an oil company? Do you want to be a technical leader and be involved in research and consult or work in a research department? Do you want to develop a reputation as a hydrocarbon finder and maybe eventually have your own company developing resources? Once you figure out one of these, work it. Look around see what the successful people – researchers, asset managers, finders, etc do. What them or see if someone will take you under their wing while you learn.

**Marian** – My response includes several avenues for consideration.

a) Get an internal mentor and an internal sponsor to help you understand the organization you work in. A sponsor is someone that speaks up for you within your organization. A mentor can fulfill that role if internal to your company.

b) Make an effort to network within the organization and get some face time for the ideas you want to put forward and how best to do that. Pick the opportunities where you have something valuable to contribute. Give your boss snapshots of your performance and not just at review time. This should be about how you’ve added value to the organization. But be clear about what you want known about yourself and your performance.

c) Volunteer and give back to the community you live in. Pay it forward as the saying goes. You’d be amazed at the networking opportunities that are out there.

d) Listen to the advice you have been given and see the choices you have in
front of you. They are opportunities to make choices to be the best you can be. I’m still learning this.

e) Continue to focus on your education post university. My company offers online courses ranging from hard technical to soft skills courses. I have enjoyed the learning opportunities through the online coursework. My husband’s 97 year old aunt once told me to never stop learning because if you did, it should mean you are no longer on this Earth.

Flo – I have always felt I have had a fair chance. Rather than be focused on gender perspective I have always been focused on the technology and working as part of a team. Being both a good team member and providing valuable technical information creates respect and opens doors of opportunities.

Annette – Get involved, technically and socially. CSEG has many opportunities to either volunteer and/or attend events. Find something you like doing and offer to help – doesn’t have to be in geophysics. Network, network, network. Ask questions – lots of questions. Listen to answers.

In your career (academic or industry), let people know what you are doing. You might know you’re smart and that you’re doing interesting work, but you need to let your peers and your managers know. They can’t read your mind. Sometimes you have to toot your own horn.

Your reputation is your most valuable currency. Do good technical work, ethically and responsibly. Acknowledge others’ contributions. You want to be known as someone whose work is trusted and respected.

Stay current with technology. Even when I left the industry for 11 years, I continuously worked on enhancing business and computer skills which helped when I came back looking for work.

The biggest challenge I’ve encountered is “information hoarders”. They keep information close to their chest and don’t share with fellow team members (both genders). Men sometimes have an easier time overcoming this challenge because they are more likely to go for beers together or talk to each other at the gym. Young geophysicists will need to develop techniques to overcome this challenge. Schedule coffees for informal updates, ask for technical and/or business mentorship to promote communication.

We are lucky to be involved in such an interesting profession. Expect to be treated fairly, but don’t develop an unhealthy sense of entitlement. Don’t be a clock watcher. Sometimes you’ll need to invest some extra time and effort. It won’t only benefit the organization, but will be of personal benefit too.

Take personal responsibility for your own career. Be proactive to get to where you want to go. Re-evaluate if you are missing joy and passion in your work.

Carmen – Networking is essential in the oil and gas industry. My advice it to build a strong network, with men and women of all ages. Women do face unique challenges in this industry. When I started working there were very few other professional women. Advice from a more experienced woman would have been very beneficial. But there were no role models or more experienced women to network with. Now there is so I urge young women to take advantage of that. There are so many industry functions, take advantage of it.

Introduce yourself to someone standing beside you and start a conversation. Go to the technical luncheons and sit with people you don’t know. Volunteering is also an invaluable opportunity to build relationships. If you are not sure where your skills would fit in, phone some of the people leading committees. Ask them for coffee and get to know them.

Build strong relationships with people in the service sector. Treat people working in the service sector with the utmost respect. The people in the service sector have stronger, larger networks than some of the Chief Geophysicists and Vice Presidents. I have made a lot of sales calls in my time. The higher up the people are the more gracious they are and the majority of them take the time to return calls. Junior professionals can learn a lot from their example.

Penny – Lots of industries have had historical demographics based on previous
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cultural patterns. The future always starts now and will make its own trends. For those future technical and industry achievements, personal and team leadership will be the key.

Q. What are some of the advantages of being a woman geophysicist in the oil and gas industry?

Cheran – To be frank, I think men enjoy working with women and vice versa. In many organisations the males outnumber the females. Having a woman or two adds a bit more flavour to the whole thing because we have a different approach to solving problems and are more inclined to work as team members. I think more men are beginning to respect that, want to hear a different perspective and having different genders working together broadens our outlook to life.

Marian – The truth is that we often have to work twice as hard to get half of the recognition that our colleagues receive. The real advantages are that women in general have a tendency to be better at connecting how one idea/topic influences another. This is helpful at getting a full view approach but only if that skill is valued.

Also, women generally tend to pursue harmony in a group where as men generally tend to look for opportunities to establish a hierarchy in power or control. Just watch children in a playground to see those traits in action. The harmonizing generally leads to an integrated team approach valuing the diversity present which generally makes for better business decisions instead of a power struggle.

With that point in mind, if you need technical help then call an informal peer assistant type of meeting, comprised of technical people whose opinions you value. I did this early in my career as an interpreting geophysicist and it lead to frequent technical problem solving sessions within the G, G & E staff that all contributed to and enjoyed.

Flo – I have never looked at my career in that light.

Carmen – I am not a geophysicist, so I am not sure how relevant my answer will be. To generalize, it is sometimes easier for a woman to build relationships. Use that to your advantage in building a network.

Q. Best insignificant contribution to date to industry. Technical, personal, or whatever.

Cheran – A balance in my personal and professional life. I got married quite young and it seems like I have been married all my life. I have two wonderful children, a wonderful and understanding husband and this has enabled me to pursue my career. I have worked in a technical and managerial role on both sides of the fence ie. service sector and now in an international oil and gas company. If one gets the opportunity to work in the service sector, please take it. You will get the opportunity to really get your hands dirty with the technology and learn a lot.

Marian – Playing a significant role in teams that have contributed over 1 billion BOE of production. Identifying a 600+MMBOE discovery and successfully predicting other future discoveries (>600+MMBOE) from an outstanding integrated regional work approach (play fairway work) with a phenomenal group of motivated, talented people. Knowing and hearing from lots of folks, young and old that I’ve made a difference in this industry and in this world. Eventually recognizing when I’m wrong and where I need to change. Helping out as much as I could during post-Katrina New Orleans and emulating the strength and compassion of the women in my family. Watching other people help others after they have seen me lend a hand, makes me smile every time. Makes me smile every time. Personally – staying married to the man I love for 32 years in spite of all kinds of struggles and still being thrilled to come home each day to be with him. Okay, most days. I’m very proud of our sons who are now grown men on many levels. They are both good, caring men that value all people and they never hesitate to help another person. These are the things I think are pretty significant.

Flo – My contribution is in the diversity I am involved with. From designing collaboration rooms to working to improve and better use technical applications I contribute to numerous avenues in the industry. I am, of course, not a cookie cutter geophysicist as a result of this.

Annette – Wonderful family, satisfying technical career, rewarding volunteer efforts (Outreach).

Carmen – I did not start my career in the geophysics industry. I had a career change and joined this part of the industry in 1998. So I have not made any technical contributions to the industry. I believe my biggest contribution is in my volunteer work with the RECORDER, Junior Geophysicists Forum and as Exhibit chair and Sponsorship Chair for various conventions. I have received great satisfaction from my volunteer roles and I have certainly gotten back more than I have given.

I advise women to be flexible and open to a career change. I have had more than one career change within this industry. When I had the chance to become a recruiter I was able to use those different experiences to my advantage.

Q. How can the younger generation be better team players? Both genders.

Cheran – In order to be a good team player, we need to work at this. We need to build a strong relationship within the team and be understanding and respectful.

Marian – Be open to learning more about human nature, the people you work with and how to capture the diversity of technical and personal approaches that can capitalize on the talent pool. This goes for all team players and management. There is a tendency for technically talented people to be promoted into management as a reward for their technical accomplishments, however these promotions tend to not present opportunities to educate those new to management about the issues in handling real people. Managers have to manage both people and the work. A direct quote from Women’s Global Leadership Network article by Shari Mackey, “It is no longer enough to have superior “technical” skills – people are looking for inspiration and accountability in their leaders. In terms of responsibilities, strong leaders emphasize the importance and priority of enhancing the skills and knowledge of the people in the organization, creating a common culture of expectations around the use of skills and knowledge, facilitating the ability of the organization to align in a productive way, and holding individuals accountable for their contributions to the collective results.” Make the soft skills portion of life’s learning a priority for you. This will help in all aspects of life. Keep in mind that this industry is a business and we are here to make money. Be open to listening and learning from everyone especially if you aspire to rise through the executive ranks. All people should learn to be good at giving recognition thereby valuing what others have to contribute. Recognition is a powerful personal attribute.

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Flo – Listen and respect others. Keep your emotions out of the business context.

Annette – Be trustworthy, build excellent communication skills and ask questions, acknowledge others’ contributions.

Carmen – Remember, business is business and personal is personal. That is not easy and I still struggle with that. But I try to improve every day. One observation that I can share is the close bond between geologists and geophysicists. Usually a geophysicist will refer to “the” engineer they work with, but when they refer to the geologist they work with it is “my” geologist. I have pointed this out to both geologists and geophysicists and most have paused, agreed and said they never realized that they do this. Maybe by thinking about this bond, and applying it to other team members, we can build stronger teams.

One of my pet peeves is a comment I still hear all the time. I heard it in an elevator last week. A woman said to a group of men co-workers: “I prefer to work with men than women, they are much more difficult”. When I hear a woman say that, I wonder if she might be difficult to work with. That is not a statement that a strong team player should make. I have been guilty of this in the past. I have worked with a few difficult women but the majority of women were a pleasure to work with. Let’s focus on that. I also wonder what men think when they hear comments like that.

Penny – It helps to participate in CSEG functions, committees, and participate on committees or in team sports during university. There are many “soft skills” type courses and events that are available – through corporate training, or from technical or related societies.

Q. Mentors? They want mentors because they realize that they are sometimes sabotaging themselves, not listening to advice/suggestions and not being supportive of other women.

Marian – There are many formal mentoring programs including APEGGA and CSEG. Seek out mentors and they do not always have to be in your own company. I just read an article on mentoring and sponsoring.

A sponsor is someone internal to your organization that will speak up for you. The article suggests that men do this on a regular basis where women do not. Also, get involved in volunteering with APEGGA, CSEG, SEG, your community organizations, etc. You’d be surprised by what those opportunities present to you as a gift to expanding your outlook and experience. Learn to listen and work on understanding another’s viewpoint. It’s hard but the consequences can get you passed personal road blocks.

Flo – If they are already seeing that they are not listening to advice, what makes them think a mentor will have the magic wand to get them to listen? A lot is required that needs to come from within and this includes being open to listening and assimilating other perspectives. With this perspective everyone you work with and come in contact with becomes a mentor.

Annette – Sign up with CSEG mentorship program which runs Sept-June every year. Be an active mentee. Ask lots of questions.

Carmen – Build your network. During my career my mentors were male and I still have male mentors. But I also receive mentorship from women that are younger than me. When you find someone that you admire ask them if you can go to them for advice. Turn them into your mentor. The CSEG has a mentorship program for students. It was started by a volunteer with a vision. If you feel there is a need for mentorship for junior geophysicists, start one! And don’t discount a male mentor; some of the strongest feminists I know are men.

Penny – Ask the “old timers”. Who were their mentors? – probably the pioneers of geophysics. We were and are all keen on the geophysics and the people who have developed the solutions.

Q. Tell them our stories because in the stories are lessons to learn.
Doris – Don't be afraid of any experience! Turn everyday into another step towards where you think you want to be. Be wise enough to know when you have learned enough from a particular area of interest and work and move on.

I started in the oil industry during a big downturn in the industry – the mid 80s. There were no jobs to be had and I latched on to any experience I could get. Not all of them I could count as the most positive experiences but you do learn.

Pretty early on you need to assess yourself as I did to understand what it really is that attracts you to the energy industry.

Is it just the science? Be prepared to give the science a business meaning and be able to effectively communicate your concepts and the value that the scientific information brings to a business.

Is it technology? Again, science and technology are the pillars of our craft but you need to be able to express the business value successfully if you want your projects to go.

Is it managing or owning your own oil company? If you want to be a manager, there are certain elements of being technical you will have to let go as your focus will be on the business rather than the craft. Science is a tool but spreadsheets will take over.

Last, never be afraid to share what you know either to your peers or supervisors. Collective knowledge is the true power behind any successes you will encounter. Learn about other disciplines and teach them what you know. Amazing results will happen.

Marian – I also started in this industry in a severe industry downturn where university colleagues were posting all of their rejection letters outside their lab doors. I got hired from my first interview as an undergraduate but was already working on my master’s research and course work at the time. Let me state I was a student, a wife, a mother of 2 small boys and I worked part-time in the Chemistry and Geology departments as well as the local pub. I’m not Super Woman, it’s just what I had to do at the time to survive, eat regularly and chase after my dream of being a scientist. There was jealousy from some of my university colleagues suggesting that I was only hired because I was a woman. My professors indicated that this was not true and I was the only student with a glowing recommendation from the Geoscience, Physics and Math departments which was unprecedented at the time. Focus on the positive because no one gels with everyone all the time. There have been many times in my career that I have had to reflect on the positive when I was down.

A few years later I was involved in an integrated team presentation to our offshore production staff out in the Gulf of Mexico about what the geologic story was on a particular field and why they were doing things differently. Shortly thereafter, we had a company picnic which consisted of several of those same offshore personnel and their families. As I was chasing my small son who was running with a fishing rod and his newly caught tiny fish, I was stopped by one of those offshore workers who told me he had worked in this business for 21 years and no one had ever explained to him and his crew why we were doing what we were doing for the field’s production. He thanked me for that effort and said it couldn’t have been easy for me being the only woman on the platform other than the cook. His wife also told me how excited he was when he came home after that rotation. Consequently, I have chosen to look at my career and life, focusing on the positive. This industry is a roller coaster at times so buckle up and enjoy the ride.

Flo – When I moved to Calgary from a farm in central Alberta I joined a seismic processing company for the only reason that I knew something about seismic – Dad and brothers were currently working in the field and Mom and I visited often. I was already told by teachers that coming from a farm area school you would never make it in University. Some of the teachers did not exhibit a high level of intelligence or understanding of human nature. I decided to prove them wrong. After my first year in Education I had the fortune of a co-worker explaining what a geophysics career would get me. I switched immediately. While working through my degree I made valuable contacts and was able to work at least 8 months of the year.

After graduating I ended up being impacted by merger mania. It is difficult during those times to determine what the best direction to go is. Should one keep with the current company where there may not be much activity or see what the next opportunity holds? I changed jobs around every 3 years due either to another merger I didn’t want to ride through (I never did get a package to leave) or to being restless for more challenge. Sometimes it can take 25 years to find the right fit.

Elaine – Some random advice here. Understand organization structure! Women tend to think single level – everyone equal. Men typically think in a very hierarchical manner. Learn this, know when to work with this, and when to attempt to modify this. Title means something. If you are doing a particular job that involves higher level skills, move beyond having the title of Geophysicist. Negotiate the title with the job. Never go over or around your boss, unless you are willing to put your job on the line. And sometimes, it is appropriate to put your job on the line, depending on what is at stake for you otherwise. Know what key responsibilities you have that make money for you and the company. Focus on these, be great at these. Present your recommendations at the beginning of your presentations, don’t make the audience wait until the end. Learn who your allies are, invest in these relationships, build more. Learn to avoid energy drain in adversarial relationships.
Take soft skills and business courses regularly, along with upgrading your technical knowledge. Communication savvy will get you far greater places, than simply focusing on how to recite technical details inside and out. People often say have fun — I will suggest that your career path will not always be fun, but you can follow a path doing things you have a passion for. Passion has been a long-lasting motivator for me.

Penny – The Calgary community has made changes – including small changes many didn’t even notice. For example we can all now accept invitations for lunch at Calgary Petroleum Club. Not everyone was aware of their dress code and the men-only policy for their dining room. My supervisor in the late ’80’s was caught by surprise when the invitation from our manager for the team to join him for lunch at the Petroleum Club actually meant that one of us (yours truly) could not accept the invitation. In a similar situation, at a previous employer, the manager (a geophysicist) had graciously, and with leadership, specifically asked our client / host, to change their “thank-you” invitation from the Petroleum Club to another venue so that the entire team could attend. (That Calgary Petroleum Club policy changed maybe 10+ years ago – and now it is history).

Q. What is our vision for their future?

Cheran – I would like to see a balance of genders in Senior positions because I think having diverse opinions would be beneficial to the future of the organisations.

Marian – Our industry still does not do enough to educate the general public but we are working hard to turn that around locally through our CSEG Outreach and other programs. However, individual oil and gas companies can do more as well to represent their efforts, in my opinion. My vision is that the general public will become better educated in general and better educated to the energy options they have and vote accordingly. When our industry goes to other countries we often build schools, hospitals and/or educate the local people. This concept of helping to make folks better educated and informed should apply everywhere. Therefore, I ask the readers, what is the Canada we want for the energy sector in the future? Does the company you work for support your continuing education? The more we advance our industry the more each of us will need to learn and know.

Also, the recent graduate statistics in science and engineering suggest that the male enrollment/graduation levels are declining where the female version of the same is increasing. It could be easily concluded then that it is just a matter of time until those statistics present themselves in the workforce, swinging the pendulum to a more female dominated industry outlook. One could come to that statistical conclusion that the industry may see more female executives however there is the overwhelming historical statistic that women in the past have left industry due for various reasons including frustration. We will see where all this goes.

Women however, do need to work better with other women. We need better coordination, less gossip and more of the great effective communication that is a strong female gender quality. I am always curious of the reasoning behind any person who says they don’t like to work with any particular group of people, be it men, women, geologists, engineers, accountants, doctors, lawyers, construction workers, plumbers, different ethnic groups, or whatever. My question to that person then becomes, what is it that is driving your self-imposed segregation?

There is another encouraging blip of news in the February PEG (p.19) that quotes a story from Mechanical Engineering (New York) that girls are as good as boys and women are as good as men at math. Woohoo! I believe in the power of people and that we can do anything we set our minds to accomplish. And I believe in the power of women especially in the face of adversity.

Flo – Technology is making great strides in communication and accessibility to your workspace. This will be a great impact on the work/life balance enabling parents especially to work from home as needed – handling sick children, etc. and still being able to meet deadlines and be productive. I even take advantage of this for myself when I feel a cold coming on and I don’t want to share the bugs. I get a lot accomplished. Companies are investigating remote access more to reduce time required for commuting – do we need to be in the office every day? Applications like Skype, remote desktop access, sharing of screens all enable remote interaction.

Annette – The easy-to-find stuff has been found. Geophysics will continue to be needed in order to high grade and find remaining resources. We will all need to promote the benefits of using geophysics and be able to communicate concepts in an easy to understand, straightforward way. Earth Science literacy is important, not only for those of us in the industry, but the public so they understand how our work contributes to society.

Elaine – I see the opportunity to work in companies that have a different communication style overall, as women show up at more levels of a company and take on the running of them more frequently.

Carmen – Things have changed so much for women in the last 30 years and for the better. I hope that the efforts of women of my vintage have made things better for this generation. My vision is that this generation will make it even better for the next.

Penny – Geophysics has already played a role in development of the knowledge of the earth (continental drift, planetary exploration, digital processing, hardware advancement, (including the integrated circuits, computers, imaging), and now imaging for resource development. Perhaps the future of geophysics needs a new “discovery” and a new challenge.
Conclusion by Marian Hanna

We have questions for the young geophysicists:

1. What do you see in your future in industry? Where is it that you want this career to take you?

2. How do you see that your generation(s) will impact the energy industry for the better? Where will you potentially leave your mark?

3. Have you volunteered lately? What do you want to work on to pay it forward?

If one wants to venture down the self-education path, there is a plethora of reading material out there to help with career choices. For example, the following insert is from the November 2010 newsletter from business coach, Donna Leibham’s website, which can be found at http://www.leibhamandcompany.com/

“Here are 6 organizational markers – what you can look for in your company to see how the advancement of women is managed.”

- Ratio of Men to Women: Look at the number of women in your organization who are in senior management, on the board of directors or who are officers of the company – what is the ratio of men to women? (see the previous Leibham & Company newsletter for some interesting data on what’s happening in some organizations in Calgary).

- Career Path – Ask your manager or HR representative what the typical career path to senior management is.

- Company Champions – Look inside your organization. What senior managers support the leadership development and promotion of women? How do you know this? How verbal are these leaders in advocating for women?

- Leadership Development Program – Does your company have a leadership development program targeted for women?

- Balance – What is the company’s view on work-life balance? Are there perspectives that reflect a desire for flexible work arrangements? If so, are these captured in a policy?

- Career Building Experiences – What kind of experiences are women encouraged to include in their career repertoire? Is there a strategy to include profit and loss? The management of people? Is there a strategy to support leaders when faced with adverse conditions? How are women selected for positions of greater responsibility?"

According to executives I interviewed in 2006, there are a number of key work experiences that women had that facilitated their advancement. These experiences included assignments that required her to work outside her technical expertise, managing a project that was a success, a project that brought visibility or a challenge that was resolved successfully, to name a few. Women also reported a number of positive experiences that contributed to their leadership success. In addition to the aforementioned, these included having a large scope project, contributing to the turnaround of a department or team that was struggling, having a supportive relationship such as a mentor, and positive role models, including their boss. And finally, recognition was mentioned 16% of the time. This ranged from simply feeling valued to acknowledgement from management, being perceived as having credibility and having support from colleagues.”

In Canada, women represent half of the workforce and more than half of university graduates. However, women represent 14% of board seats, 17% of senior positions and 21% of Canadian MP’s pre-recent election positions. Harper’s previous cabinet consisted of 26% women which was down from Paul Martin’s cabinet which consisted of 30% women. However, several studies have concluded that Fortune 500 companies with women on the board saw 25% higher returns on equity, 34% higher shareholder’s return and 56% operating income increase. Why? Those boards ask the critical questions and the board is less likely to fall into a group mindset.

It is interesting to note that there have recently been many articles about women in our industry here in Calgary and in Canada. Oilweek did several articles on “Women in Industry” in their April 2011 issue including a message from the editor, Dale Lunan; Avenue did an article on “Women’s Work – Why we need more women in the boardroom” in their April 2011 issue, the Financial Post Magazine did an article on “Canada’s Most Powerful Women” in their December 2010 issue and many more. All this recent attention seems to indicate that we have not yet fully addressed our gender issues in this industry or in Canada but we are further along than our mother’s generation. Other industries do not see big differences in gender statistics and are sometimes in the reverse such as health care, education, finance, human resources, the arts, entertainment, recreation industry, etc. Statistics would indicate that the increasing numbers of women graduating in the technical fields of the oil and gas industry will only relate to more women in management and executive positions in the future.

We are very optimistic that this article provided all of the Recorder readers with some insights that will be interesting, entertaining as well as something to ponder over. There is no perfect answer, no perfect person and no perfect solution. There is neurological, biological and organizational research that indicates gender differences do exist and that those differences represent opportunities for any company to leverage those gender related strengths to everyone’s advantage. So, has your company thought outside its norm to capitalize on the potential benefit? R