



***Disclaimer:** Some of the dates and schedules published in the 2019 Annual Report were forward-looking statements before COVID-19 was declared a global pandemic on March 11, 2020. Since then, many of the events such as Symposium, GeoConvention, and other social and technical events have gone virtual and been rescheduled. Readers are encouraged to check the CSEG website, read the bi-weekly member enewsletter and check the CSEG social media posts for the latest updates.*

2019 Board of Directors

Neda Boroumand, President

Geoff Fraser, Vice President

Pavlo Cholach, Director Educational Services

John Fernando, Assistant Director Educational Services

Moriah Rempel, Director Member Services

Eric Rops, Assistant Director Member Services

Cathy Martin, Director Finance

Doug Colvin, Assistant Director Finance

Andy Williams, Director Communications

Marie Hong, Assistant Director Communications

Ronald Newman, Past President

Jim Racette, Managing Director

President's Report 2019

As I reflect on 2019, I see a year where the CSEG took important steps toward satisfying our mission and fulfilling our strategic objectives. In light of global, social, political, and economic issues, the CSEG has been confronted with many challenges. Though less severe in 2019 than in the previous 4 years, we continued to see a decline in our membership, a reduction in sponsorship and advertisement and attendance to various events due to the financial downturn. Despite these ongoing issues, we remained financially prudent and closed the year off with an \$18K surplus. In the following sections, categorized into our four strategic themes from 2016, I present a summary of the various goals we set for the 2019 year and how we measured up against them.

1. Financial health

Since the 2019 year continued to pose financial and economic uncertainty, we budgeted conservatively with the expectation that we improve upon the budgeted deficit of \$119K.

There were two main cost cutting measures taken this year: 1) a switch to a new company, Constant Contact, for mass emails and newsletters; and 2) the use of the same company for administering our annual election. These cost saving opportunities were only possible once Alyssa, our Support Services Coordinator, returned to work full-time, freeing up Jim, our Managing Director, to pursue these alternative options. This reduced our annual deficit by over \$8,000.

Another financial highlight was the completion of Doodleship, which returned a profit of over \$10K and created a Canada-wide reach featuring in St. John's, Newfoundland. This was the second year the program had operated and the second time it performed successfully, both from an educational and financial perspective. A big thank you was given to John Fernando, Dave Emery and John Townsley for having organized this event, Rainer Tonn who provided the lecture and TGS for sponsoring the event.

APEGA committed to \$10K in sponsorship funds toward DoodleTrain, Symposium and the Foundation programs. Contributions from APEGA are always welcome because the funds go toward creating educational, outreach and professional development opportunities for our membership and beyond.

As with past years, financial focus was placed on our top three member-valued programs, 1) GeoConvention, 2) Technical Luncheons and 3) RECORDER as well as DoodleTrain and Symposium. All of these programs performed better than expected, each returning a profit, except for the RECORDER, which due to the economic climate and digital transformation, has seen a reduction in advertising dollars. However, the RECORDER's deficit has remained low in 2019 compared to the recent past years. This was due to the elimination of print costs, reducing

the number of issues per published year and launching a limited-time sales effort, led by Ruth Peach, who targeted online advertisements and successfully sold all expected online ads.

Despite closing the year with only a small surplus and in spite of our continued financial prudence, we remain in excellent financial shape with \$1.29 million in member's equity.

2. Member value

In 2019, the member value strategic theme was focused on our digital transformation, delivering technical and educational programs and encouraging attendance to the various social events for networking and fellowship opportunities.

A number of decisions were made in 2019 with the digital age in mind. The RECORDER and Digital Media Committee (DMC) merged to become "Communications". This was a move made to consolidate overlapping efforts and duplication, to improve website usability and searchability and streamline communication between our multiple communication platforms through the newsletter, social media posts, our website and the RECORDER.

An attempt was made to create a webcast of the Canadian Distinguished Lecturer (CDL), David Gray, by recording his talk at the technical luncheon. This trial webcast was handled entirely by volunteers, but proved to be a challenge. We learned that it is an intensive process requiring several steps to produce a high quality audio, video, and edited product for publication to the website. It might require hiring a professional service, but funds are limited, so alternative options will be evaluated in 2020 in order to make available these kinds of on-demand online educational courses for our membership.

On September 4, 2019, we launched a modern looking email newsletter. The Constant Contact platform provided unlimited email sending and a new user-friendly display for those members who consume most of their CSEG information via the e-newsletter. This is a work in progress so the feedback we've received and will continue to receive has been and will be essential to improving this service.

To maintain our digital efforts, a number of initiatives were taken and resources were directed at the following: 1) tabs were created on the home page for easy navigation among the CSEGRRecorder.com, CSEG.ca and CSEGJournal.com websites; 2) the RECORDER and communication team continued to change the online RECORDER publication format to HTML; 3) the online calendar was made a central go-to place to get event updates; 4) a continued social media presence via LinkedIn, Twitter and Facebook for the membership to communicate and share posts; and 5) started the process of building a webpage for volunteer positions to be posted and an online form for event submissions.

Social events remain a hit among our members in 2019. Our "Let's Get Geophysical" GeoConvention lunch social sold out for the second year in a row, the Stampede lunch event

sold out, and we added a new holiday event, “New Year’s Kick off Social” held in February 2019 to mark the winter season. The holiday season party was a top three new social event idea from the member survey results issued in late 2018.

All other annual social events, i.e. Doodlebug Golf, DoodleSpeil (curling), SkiSpree, Road Race and Fun Run, T-Wave Golf and WiSE Golf continued to operate successfully in 2019 and offered additional networking and variety in the kind of events our membership could engage in.

Lastly, 2019 marked CSEG’s 70th anniversary. Though it was not marked by a big bang, it was a major milestone in the life of the CSEG. The RECORDER marked it by publishing articles themed by geographic locations across Canada.

3. Promotion of profession

In the 2018 member survey, we asked if the membership would be interested in advocacy. The response was 65% in favor of educational seminars provided to the Canadian public to highlight the value of geophysics and to dispel misconceptions regarding Earth science and 59% wanting educational seminars provided to Canadian trade bodies to highlight contributions of geophysics.

We formed two initiatives to help tackle this effort. First, we formed a small group comprised of members from the CSEG and CSPG, to prepare a geoscience talk to present at the Partnership Group for Science and Engineering flagship breakfast series, Bacon and Eggheads. Though still a work in progress, the group has aimed to submit a proposal for nomination to the Canadian Federation of Earth Sciences and select two speakers, one from the CSEG and another from the CSPG to deliver the talk. We hope to have this proposal ready by Q2 of 2020.

The second initiative was more substantive and is the inaugural joint SEG/CSEG Destination Learning Series Canada (DLSC). This initiative checks many of our strategic objectives. It was a collaborative effort sought out by both societies to satisfy both our mission to promote the (geo)sciences and provide a new educational experience for members and non-members on applied geoscience, innovation and business involving science. It is a 10-day event which includes site visits to the oil sands, underground potash mine, CO₂ storage and sequestration operations, in-classroom sessions, networking and ends with a tour of the Rockies in the Banff area. The event is scheduled for June 14-25.

4. Position of society

The strategic objective of “position of society” was set to focus on collaborating and engaging with other society’s and stakeholders and making efforts to become a truly Canada-wide society. The CSEG Foundation has and continues to do a great job in serving members across the country, through its work with Earth Science for Society (ESfS), issuing scholarships to students across the provinces, inviting students to attend the GeoConvention and much more.

The CSEG is working closely to collaborate with the CSPG since both our memberships have expressed interest in doing so. We have formed an inter-society collaborative working group, made up of members from the CSEG, CSPG and CWLS with a preliminary objective to come up with three collaborative programs/events in 2020. The group had a kick-off meeting on February 13, so keep a look out for these new activities.

As you can see, we have accomplished a lot in 2019 and I am happy to celebrate these milestones with you. In this age of complex changes, it is important to stick together and maintain dialogue wherever possible. I spent some of my time in 2019 attending the various CSEG events and the thing that stuck out to me the most was the strong support for one another and togetherness. As we all try to navigate through these difficult times, whether it be managing personal or professional choices, the economic uncertainties, and social and political changes, especially in light of the climate change phenomena, it is important to stick together and stay connected.

In 2020, the CSEG will be in the capable hands of Geoff Fraser at the helm as President. He is a wealth of knowledge and has many great ideas. I look forward to continue working with the 2020 board: Director of Finance, Doug Colvin; Director of Education, John Fernando, who has served on the board previously; Director of Communications, Marie Hong, and Director of Member Services, Eric Rops; and the incoming board members: Vice President, Nanna Eliuk; Assistant Director of Finance, Lona Gregory-Brown; Assistant Director of Communications, Marian Lee; Assistant Director of Member Services, Daniel Perez; and Assistant Director of Education, Andy Williams, who will be transitioning into this new role from wrapping up his term as Director of Communication.

It was my pleasure to work with all of the current members of the board, our amazing staff, Jim and Alyssa, and volunteers. Ron Newman, as Past President, was of great assistance and council to me in navigating the tough times, and in helping me to start our DLSC learning initiative in collaboration with the SEG.

I am passionate about geophysics and feel even more encouraged, through my travels and in meeting many new faces, by the impressive work everyone has done to advocate for and promote the profession. I will continue to practise geophysics in my own work and will do the same for the science wherever I can.

As always, I want to send a heartfelt thank you to our members, member associations, volunteers, donors, partners, staff, and allies. Your dedication, enthusiasm and engagement has enriched the CSEG's mission and the health of our community.

NEDA BOROUMAND

CSEG PRESIDENT 2019

Vice President

I had the opportunity this year to take on the role of CSEG Vice President, working with our President, Neda Boroumand, and the rest of our talented executive committee. Over the course of the year, I have had the chance to engage with the Chief Geophysicists Forum, CSEG Foundation, and other CSEG groups and activities. I hope to deepen that engagement during my upcoming term as President in 2020.

In both my current role as Vice President, and in the previous year as Director, Education, I have been tremendously impressed with the unending energy, enthusiasm and talent of our many volunteers. Despite the ongoing difficulties our industry and profession are facing, our volunteers have made a success of numerous education and social opportunities too numerous to list, although you can read the other Director's reports for details!

I have also had the opportunity to get involved with several exciting new initiatives that will help shape the CSEG in the future. These include the new Destination Learning Series Canada (DLSC), a joint venture with the SEG and an exciting addition to our more traditional continuing education offerings. The Destination Learning concept was spearheaded by SEG past president Rob Stewart, and Canada has the opportunity to host the inaugural session in 2020. I have also been part of a developing dialogue with our GeoConvention partners on improving that event in the future. I anticipate spending significant energy on these initiatives in the coming year.

I'd also like to recognize the tremendous leadership that Neda and Marian Hanna have provided to the DLSC initiative so far. New programs require a lot of heavy lifting, and Neda and Marian, along with Ron Newman and the rest of the organizing committee, have moved mountains to get DLSC off the ground.

Overall, 2019 has been a successful year for the CSEG with a balanced budget, robust ongoing education and social events, and some new initiatives coming. I look forward to continuing this momentum in 2020, and to continue to be amazed at what we can do together.

GEOFFREY FRASER

CSEG VICE PRESIDENT, 2019

Past President

The past year has been a special time for the CSEG. Led by our President, Neda Boroumand, we find the CSEG in an outstanding financial position.

Our problem is that we continue to lose members, as the economic downturn in Calgary worsens. Unemployment among geophysicists continues to increase, as oil and gas companies continue to cut administration costs in an attempt to survive. Now the world has been hit with the Coronavirus, and it will surely have a deep economic effect on Calgary and the oil and gas business.

Our focus continues to be education, move into the digital world, and to try to expand the CSEG focus from Calgary to more of a Canadian organization.

We have been very successful in our new educational adventure called Doodleship in Newfoundland. We continue to have a successful Symposium in the spring and our DoodleTrain event in the fall continues to lead our education efforts. We continue to participate in Earth Science for Society, which gives us an opportunity to advertise and explain our profession to hundreds of schoolkids, who might think that geophysics is a cool career.

This year we are planning the first Destination Learning Series, which is a tour of Alberta and Saskatchewan, exploring oil sands, potash and CO₂ sequestration in the field and in the classroom. The Coronavirus may cause us to delay this for a year, as we are hoping that the attendees will be primarily international clients.

Our other focus has been trying to drag the CSEG into the digital world. Led by our incoming President Geoff Fraser, we have made great progress, but more investment of time and money still needs our attention.

This will be my last term on the CSEG Board. It has been a pleasure. I hope I have left the CSEG in a better place than when I came. I should note the CSEG would not survive without the passion and drive of our executive director Jim Racette. He has been an unbelievable support for me during the past three years. In closing, I am confident the CSEG will continue to survive and thrive.

RON NEWMAN

CSEG PAST PRESIDENT, 2019

Education Services

The year 2019 was a remarkable one of sustainable growth and expansion for CSEG Educational services, despite a multitude of headwinds. It is a story of the Society's resilience facing low membership base and industry's economic challenges. Continuing education is one of the core CSEG services that is key for members' professional development. CSEG provides access to world class lecturers as well as top local expertise through a variety of educational programs. This excellent result foremost reflects on the effort and dedications of tireless volunteers who run a variety of Educational Committees. Their effort and dedication made a difference again last year. Please look up each committee report on the CSEG website for further details and acknowledge our contributing volunteers. I will highlight a few of them here.

DoodleTrain had a tremendous year and the entire committee, led by John Fernando, should be proud of an excellent year and strong contribution to the Society's bottom line. In addition to the excellent selection of offered classes and high level of participation in Calgary, CSEG extended the program to the East coast with DoodleShip as a new initiative. This successful undertaking delivered expected Education services to our members on the East Coast. I am strongly encouraged by this success and anticipate that DoodleShip will continue to thrive under John Townsley's leadership in 2020, despite the recent COVID-19 challenge.

The 2019 Symposium led by Laurie Weston Bellman was a great full day event with over 180 participants and an exciting roster of presenters. I am certain that members are looking forward to seeing the story continue this year under the leadership of Nanna Eliuk.

2019 was a year packed with excellent Luncheon talks and robust participation. Seward Pon was instrumental in delivering the technical component of the Luncheon announcements and talks. This great selection of talks continues in 2020. If you have an interest to participate as a Volunteer on the Luncheon Committee please contact myself, Seward, or the incoming Director of Educational Services, John Fernando. The Luncheon Sponsorship fee was also reduced in 2020 to \$1000. It is an excellent opportunity to highlight your company's technical achievements in front of over a hundred of active geophysical professionals and support the CSEG.

Both MUG, under Paige Mamer, and Lunchbox had a great year with a variety of talks. Lunchbox is fully re-vitalized under the new leadership of Sinead Tracy, Luis Valencia and Sarah Grant. It was demonstrated by great talks and steady increase of attendees in 2019. In addition, I anticipate a new initiative of Rock Physics and Inversion (RIG) Group to be added to the selection of talk offerings in 2020. These events are *free of charge* and allow members with constrained budgets to get educational information on a variety of topics. Talks are announced by CSEG on social platforms, through the CSEG Newsletter, and posted on CSEG's website calendar.

As I mentioned in the beginning, 2019 was a year when CSEG managed to deliver all these vital educational services and a positive bottom line for the Society. It was my privilege to serve CSEG as a Director of Educational Services. These Educational programs have a strong foundation through the support of actively participating members and are underpinned by a group of excellent volunteers. I have every confidence that under the leadership of John Fernando, 2020 will be a great year despite unprecedented COVID-19 pandemic challenges.

PAVLO CHOLACH

DIRECTOR, EDUCATION SERVICES

Communications

2019 saw the CSEG continue its transition from paper-based communications towards digital communications. This evolutionary change has demanded we all think differently about the value the CSEG brings to both our own membership and interested parties worldwide. For years the CSEG has delivered relevant and interesting content through our dedicated team of volunteers. Our focus in 2019 was to monetize that content through advertising, while still delivering content efficiently to both our local and global audience.

There are three committees contained under the Communications umbrella: RECORDER, Digital Media Committee (DMC), and the peer reviewed publication – CSEG Journal. The RECORDER Committee, led by Brian Schulte as Chief Editor, is primarily responsible for content (technical and general interest to members). 2019 saw the transition of the RECORDER to a full HTML online publication. The DMC, led by Jason Schweigert, is focused on content delivery methods and played an important role in the RECORDER's digital transformation. Finally, the peer reviewed technical publication, CSEG Journal, co-edited by Satinder Chopra and Larry Lines, is positioning itself to publish as an online entity in 2020. Sadly, the geophysical community lost one of its greats, with Larry's passing in 2019. The CSEG community extends its deepest sympathies to Larry's family and wishes to acknowledge his fearless support of the CSEG, the Journal and geophysics in Canada.

Recognizing the limitations imposed by geography of being part of our local audience we've attempted to deliver the best services we can, no matter where you live and consume CSEG content. Monetizing technical content is easier said than done, particularly when the primary members' market has been decimated via a prolonged economic downturn. The CSEG understands the market we're serving is both local and global and that we can, with appealing content, entice geophysical service providers to promote their wares and services to that same local and global audience base.

Many minds, abundant patience, a challenging multi-year focus on society financial health, volunteers going above and beyond, loyal advertisers, a wealth of good ideas, and unwavering determination was necessary to bring the CSEG through 2019 and position it for the next decade. Thanks are owed to many, especially the tireless efforts of the volunteers of the Digital Media Committee (DMC), RECORDER and Journal Committees. 2019 also saw a significant volunteer effort focused on attracting advertisers to the new and improved CSEGreorder.com, CSEG.ca and CSEJournal.com, plus revamping the bi-weekly CSEG newsletter (which also offers ad space).

A concerted effort to transition from a paper publication or even a PDF'd version of online articles to a full HTML compliant digital RECORDER was the primary focus of Communications in 2019. The digital transformation team, part of the CSEG's Communications group, was

fortunate to possess the tireless volunteer efforts of a very committed crew led by: Elizabeth Atkinson (past Director of Communications and current Digital Format Editor for RECORDER / Journal), Brian Schulte (Chief Editor, RECORDER), Jason Schweigert (Head of Digital Media Committee), Andy Williams (Director of Communications), Marie Hong (Associate Director of Communications), a very supportive CSEG Board of Directors, and both Jim Racette and Alyssa Middleton (CSEG office staff).

Elizabeth was instrumental in revising and publishing the CSEG's new Advertising Kit. This kit tells potential advertisers everything they need to know about placing an ad with the CSEG online or in the glossy magazine. The new media kits can be found here:

<https://csegrecorder.com/about/media-kit>.

But the key ingredient was securing a dedicated volunteer to pursue advertising. With “page views” and “time on site” statistics in hand, Ruth Peach took the reins of marketing the CSEG to advertisers with a local Calgary presence. Ruth was extraordinarily effective in not only enticing support for the new digital RECORDER and the single glossy magazine print edition (GeoConvention edition) but also in establishing a process for promoting the CSEG, its technical and general interest content, and its membership, a process that has now been successfully transferred to Alyssa's very capable hands. Ruth engaged some 50 organizations with a presence in Calgary. Four companies were signed up for 1-year online advertising spaces (CSEGRecorder.com) and 7 advertisers supported the print edition. Details on the RECORDER's digital transformation can be found in Brian Schulte's 2019 RECORDER Annual Report. With this advertising financial support, the RECORDER was able to complete the desired digital transformation.

Special thanks are due to the RECORDER Committee's dedicated technical editors and Chief Editor. RECORDER content (current and digitally archived on the CSEGRecorder.com website) drives our customers to our website and social media platforms. Without visitors we cannot hope to attract advertisers to support the substantial financial effort required to keep the CSEG's content disseminated properly. In keeping with our desires to see the RECORDER's appeal grow across Canada (and the world), 2019 saw the 5 digital publications focus on different geographical regions of Canada. And acknowledging a common challenge we all face, the 2019 GeoConvention edition focused on data management and maximizing data value.

The Digital Media Committee (DMC), led by Jason Schweigert, continued to work on improving how we use digital platforms, including social media. We've improved the RECORDER website experience by looking for small, attainable, “wins” that don't cost much but make for a significantly better visitor experience. Simple things like advertising with direct links to the organizations supporting us, easy to find tabs for the CSEG.ca homepage or the CSEJournal.com site. LinkedIn continues to be a priority and group members and posts continue to expand.

The volunteer members of both the RECORDER and Digital Media Committee (DMC) groups deserve our thanks. These individuals, led by Brian Schulte and Jason Schweigert respectively, took on the critical tasks of delivering high quality content in a new digital format, initiating social media promotion of the CSEG via LinkedIn, Twitter, and our own CSEG blog, promoting technical and social CSEG events for the benefit of the membership, updating our database, website and digital information management capabilities and broadening the appeal of the CSEG to a diminishing membership. Not an easy task! I heartily congratulate and thank you for your efforts.

Even the Journal has started to experience some buzz as Elizabeth Atkinson and Satinder Chopra work to resurrect this fine publication in its new digital format. Check out the December 2019 issue for an article on Quantum Computing and a heartfelt tribute to Larry Lines from Satinder. Stay tuned for more good things from the Journal in 2020.

Thank you to the CSEG Board and membership, our advertisers and authors, our supporters including logistical, administrative, IT, accounting etc., for your continued patience while we transform the CSEG. Volunteers make this success possible. More volunteers are always appreciated. We look forward to improving the user experience in 2020 and beyond.

ANDY WILLIAMS

DIRECTOR, COMMUNICATIONS

Member Services

The CSEG would not be able to provide the large number of events, programs, and educational material without our members, volunteers, and sponsors and their continued support and dedication. Thank you! Despite 2019 being another tough economic year, the CSEG has been able to remain in good standing and has been able to continue to provide value for its members although it hasn't been without challenges. One such challenge is overcoming the loss of 1000 active members since 2013 which correlates to the economic state of the industry. This loss has really placed an emphasis on the questions 'How can we provide continued/more value to our current members?' and 'How can we provide value for those we want to be members?'. New initiatives have been introduced to address this, such as beginning our transition to the digital world and extending our presence to eastern Canada through programs like the Doodleship. If there are programs or events you would like to see put on by the CSEG, we would love to hear your feedback.

Committees

This year the CSEG social committees have been responsible for putting on some great events for our members. Those events included the Doodlespiel, the Ski Spree, the Doodlebug, the T-Wave golf tournament, the WiSe golf tournament, and the EPP's Junior Geophysicists forum. Their annual reports can be found in the Committee Reports section.

Events

Every year we hold a Volunteer Appreciation event after the Annual General Meeting to celebrate our volunteers and all the hard work they've contributed to the CSEG. The accomplishments our volunteers have been able to achieve is quite amazing!

As in previous years, our 'Let's Get Geophysical' GeoConvention lunch and Stampede Party lunch were very successful thanks to the attendees and our sponsors. This year, due to the high demand, we increased the capacity for the Stampede Party so that more of our members would have a chance to attend. Keep an eye out for these event announcements in 2020 so that you don't miss out! We also introduced a new event in 2019, the CSEG New Year Kick-off social.

Social events play an important role to help create a better sense of community within the CSEG as well as provide numerous networking opportunities for members in all stages of their careers. These events are also fun!

MORIAH REMPEL AND ERIC ROPS

DIRECTOR & ASSISTANT DIRECTOR, MEMBER SERVICES

Finance

This year once again, your board representatives and committees have managed to turn a budgeted deficit into an actual profit for the 2019 calendar year. We started the year projecting a deficit of over \$119 thousand and two major factors contributed to turning that projection into a profit of \$28,420:

1. A very successful DoodleTrain that netted over \$42k more than our budgeted net income, while still offering reduced tuition for underemployed and student members.
2. A new initiative offering training in St. John's, Nfld that netted the society over \$13k.

The GeoConvention is still our major source of revenue, providing the society with nearly \$140k this year, or approximately 26% of our total revenues. We are also grateful to our event sponsors and advertisers who are the backbone of our financial survival, especially in these uncertain times.

Figure 1 shows your society's revenues, expenses and net income for the last 13 years, and the budgeted amounts for 2020. Previous boards have successfully pared down the society's expenses and after the largest deficit of our history in 2016 of over \$271k, our budgets have been pessimistic in nature. It appears we are projecting higher operating income and expenses in 2020 than in the last 3 years. However, this is due mostly to the inaugural joint SEG/CSEG destination learning course that is budgeted to break even with expenses and income both equalling \$123,000.

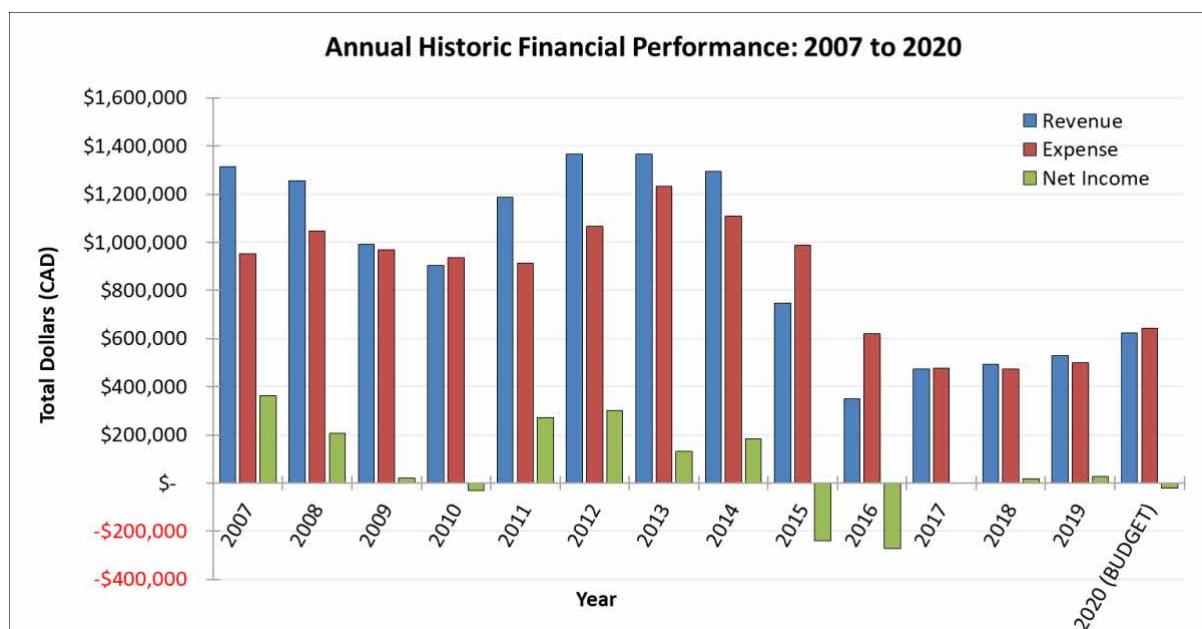


Figure 1: CSEG's yearly historic financial performance showing revenue, expenses and net income for the years from 2007 to budget 2020.

Figure 2 shows the budgeted and actual net income for the society over the same time period. From 2011 to 2014, the budgeted net income was zero, and until 2015, the society's actual net income was generally substantially greater than the budgeted amount. The losses in 2015 and 2016 prompted severe budget curtailments, but since 2017 the yearly budgets for the CSEG have been pessimistic ones, forecasting much bigger losses than were realized. After 5 years of the "new reality" in the oil patch, your board felt that we had a good understanding of the economic climate and therefore passed the 2020 budget in December 2019 predicting a modest loss of nearly \$21k. However, the recent market, health and oil price turmoil throws our predictions out of the window and while we await the settling and recovery of the economy, we expect that our actual deficit will be much higher.

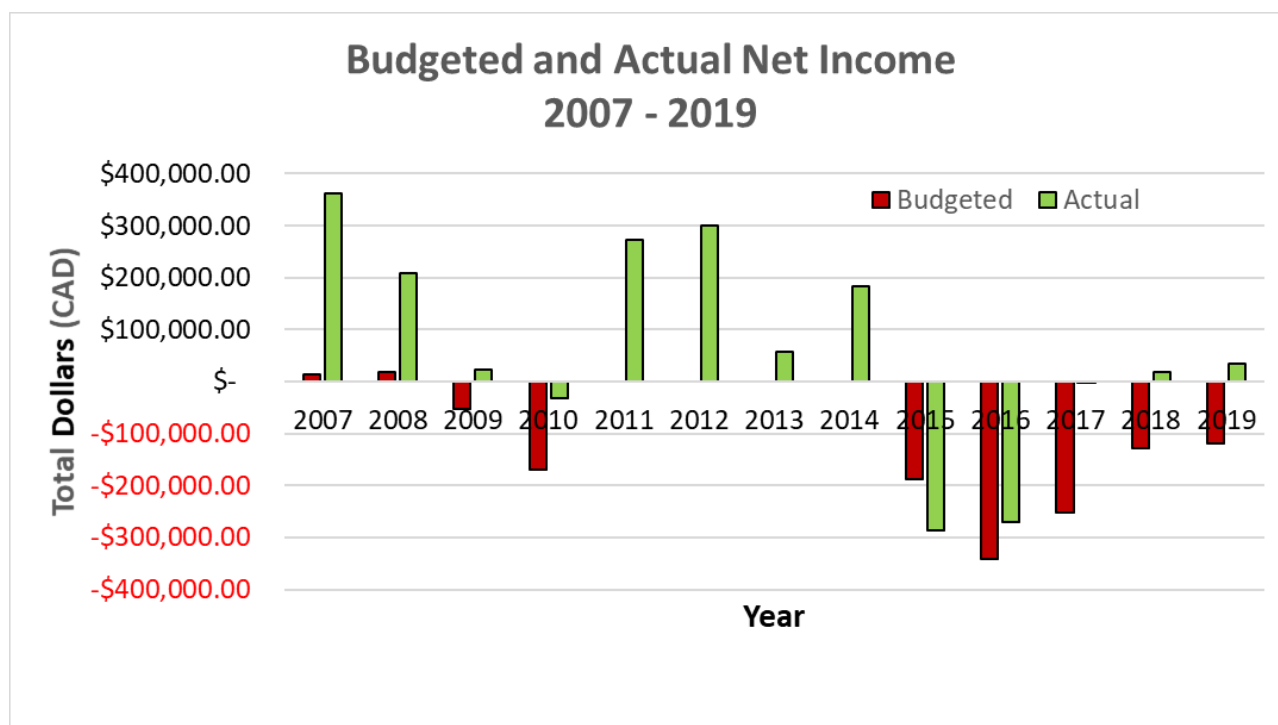


Figure 2: Budgeted vs. actual net income from 2007 to 2019. Note – from 2011 to 2014, the budgeted net income was 0.

All this talk of losses begs the question of how much the CSEG has in reserve. I'm happy to report that we still have a healthy net equity position that has grown slightly in the last two years. Figure 3 shows the net assets of the society since 2007 and despite the losses in 2015 and 2016, we still have \$1.3 million in cash reserves with which to weather any future storms.

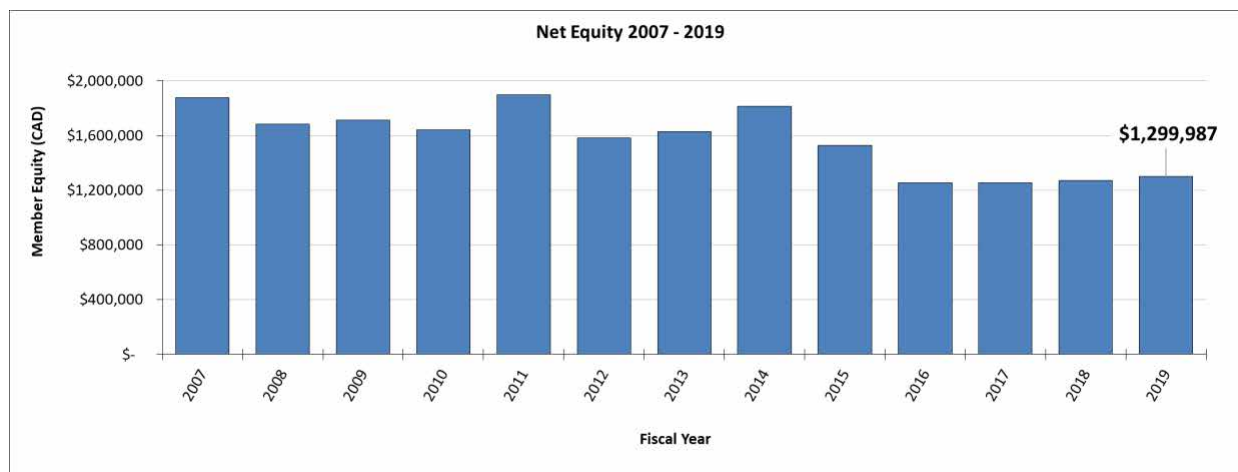


Figure 3: Net equity from 2007 to 2019

In summary, your society is in a healthy financial position and the board has continued to closely monitor expenditures to continue to provide member value especially in education. My thanks to Neda Boroumand for her leadership and to both Jim Racette and Alyssa Middleton for their support and expertise. Your finances will be in good hands with Doug Colvin at the helm in 2020.

CATHY MARTIN

DIRECTOR, FINANCE

DOUG COLVIN

ASSISTANT DIRECTOR, FINANCE

Managing Director

After three years (2015-'17) of enduring significant financial losses the CSEG has now had two consecutive breakeven, or slightly better, years. We are still experiencing a drop in membership numbers, though it has basically leveled off from 2018. Unfortunately, there has been no significant growth financially for the past five years; however the bleeding has been controlled for now, which is very good since the society has experienced a 50% loss in membership and 2/3 decline in revenue since 2014.

- Our 18th Annual DoodleTrain was able to attract roughly 220 registrants (down slightly for 2018), though was a significant financial contributor to the CSEG again. This was largely in part of our corporate community taking advantage of group discounts and sending a number of their employees to courses. Approximately 50% of the registrants were from the corporate group program. I have always said sponsorship is nice but having individuals attend courses makes it sustainable. So our hats are off to those companies.
- Our Technical Luncheons also showed a modest surplus thanks to our event sponsors, attendees and a good working relationship with our venue.
- The GeoConvention also returned important funds back to the society and this went a long way to assist our organization.

These modest returns have given other non-revenue generating committees an opportunity to actually look ahead and plan a bit more into the future. We are careful to call this an upward trend yet; however, it is definitely looking somewhat promising.

We continue to strategically plan and this helps us stay the course and look into what the future might hold for the CSEG. Since 2016, planning has been at the forefront as the CSEG continues to balance meeting the needs of our membership while working hard to capitalize on revenue generating opportunities and keeping our expenditures in check. Believe me, nothing is taken for granted. This is a constant battle and will continue to be just that for the foreseeable future.

Looking ahead in 2020, the Board of Directors has no choice but to plan again for the same or slightly lesser results. Budgeting conservatively is very important in these times. In saying that, our 2020 budget reflects more of a balanced outlook as the board is optimistic those revenue generating programs will continue to yield important funds to the CSEG operations. We have not been able to ratify a balanced budget since 2014, so this again is promising. Having said that, the CSEG Board of Directors is very aware things can turn downward very quickly. So adjustments will be made as required if those numbers are not looking as favorable as predicted. However if our programs match the results of 2019 we should see no less than a

modest deficit or a slight surplus, without dipping further into our financial reserve. We have been able to maintain our financial reserve balance over the past three years (2017-19) after having to use one-third of it in 2015 and 2016 to keep the CSEG solvent. We are not sure we will be able to start contributing back to the reserve and replenish the nearly 600K we were forced to use, any time soon. Right now it is important to keep the amount we have stable as we are still experiencing a volatile economy.

We will plan to continue offering a similar program as in the past, however it will begin to look a bit different. We continue to try and become more of digital society, but it takes important funds to keep implementing these initiatives so the results are slower than we would like. There are a number of low-cost initiatives underway but we also feel at some point we will have to spend some of our reserve to make other potential projects materialize. Keeping a solid reserve is very important. I know firsthand, as I mentioned earlier, as we lost one third of it in two years. Very scary. However, in saying that you have to spend a few dollars to encourage growth and bring the society up to speed technically. That is what we are currently managing right now. Change is coming fast and quick and we are doing our best to plan for this. So your support of our core programs will hopefully provide us with more resources to achieve some of these goals. One major initiative we have taken on for 2020 is offering a very global event in conjunction with the SEG. Our Destination Learning Course, scheduled for June of 2020 is a very aggressive approach to attract leaders and decision makers from outside Alberta and Canada to see first hand our operations in the oil sands and potash mines while viewing the reclamation processes associated with these operations. We have received very good corporate support to date but now hope to get 30 people paying \$5000.00 US for a 10-day learning experience that is likely the first of its kind to be offered. If successful it will shine a new image on these operations, plus funnel important revenue back into the CSEG. It should be noted no significant funds will be spent until we have assurances that the program will go ahead based on registration.

Finally, March 1, 2020 will mark my 20th anniversary as Managing Director of your CSEG. (I know it is hard to believe!). It has been an interesting ride to say the least, and a huge privilege to serve such a dynamic society like the CSEG. I have had a new President, who is simply my direct report, each of those 20 years. Basically, a new boss every year for 20 years. Not an easy task as each of those individuals want to leave a positive mark on the year they are President. In some cases, it is a 180 to 360 degree turn from one year to the next while still trying to follow a consistent plan and course. I would say 90% of these individuals have understood and appreciated the complexities of trying to manage this unique situation and have been fairly easy to work with. Some of been simply fantastic and an extreme pleasure to work with, while others have been a little more difficult and challenging to connect with and to move agendas forward. Really it is no different from most people's working lives. Diplomacy has definitely been the hallmark of my time at the CSEG and a skillset I am most proud of. I am very proud of being

able to survive all those different personalities, good or bad, while still keeping the CSEG ship sailing and moving forward. I recognize it will most likely be my last major career position before I hang up my briefcase and keyboard.

I must recognize the two boards I work for: the CSEG Board and the CSEG Foundation Board. Every member has worked hard to make the society viable and relevant. All are very committed, and along with the many volunteers serving on our committees, is the lifeblood of the CSEG. Our volunteer base is unique among technical and professional societies in today's world. As well, my co-worker Alyssa Middleton has been strength of support for me and works extremely hard for both the CSEG and Foundation. She is a very committed and dedicated employee who is willing to tackle anything. As our industry and the financial environment continue to change it is our commitment to the membership to provide the best service and information possible, while always seeking new initiatives to benefit our membership. In the meantime, keep renewing your memberships and keep attending our programs... And volunteer where and when you can.

JIM RACETTE

CSEG MANAGING DIRECTOR

CSEG Foundation 2019

A registered Canadian charitable organization, the CSEG Foundation (CSEGF) is the charitable operating arm of the Canadian Society of Exploration Geophysicists (CSEG). Initiated in 2006, it is managed by an independent Board of Directors and is closely aligned and controlled by the CSEG. The mission of the CSEGF is ***‘to encourage and support scientific, educational and charitable activities that benefit geophysicists through the solicitation of contributions aimed at promoting the development of geophysical knowledge, education and public awareness’.***

The 2019 Board of Directors are: **Kathleen Dorey** (Chair), **John Parkin** (Vice-Chair), **Nancy Shaw*** (Secretary), **David Cho** (Treasurer), **Tammy Willmer** (Assistant Treasurer), **Neda Boroumand** (CSEG President and Representative to the Foundation), **Adrian Smith** (Outreach Chair), **Allan Chatenay** (Fund Development Chair), **Darren Kondrat** (Fund Development Vice-Chair), **Rob McGrory** (Scholarships Chair), **Kristy Manchul** (Communications and Travel Grant and Learning Subsidy Chair), **Neil Rutherford*** (Director-at-Large), **Marissa Whitakker** (Earth Science for Society Chair), **Cec Keeping** (Governance), **Richard Smith** (CSEG Distinguished Lecturer Chair), **Jim Racette** (CSEG Managing Director), **Alyssa Middleton** (CSEG staff). The names in **bold** are Directors; *designates a CSEG past-President in that position. Each Director’s term is nominally three years and candidates are nominated through the Foundation Board nominating committee.

In 2019 the stock market bounced back relative to the financial losses incurred in the fourth quarter of 2018. This gain by the Foundation market funds, however, was offset by reduced fund development in 2019 compared to donations received in the more profitable years leading up to 2017. The Foundation continues to deal with reduced donations in face of a contracted oil and gas industry as well as reduced CSEG membership. As a result, the Foundation Board approved a deficit budget in 2019 of \$90,005 with expenses of \$364,128 and income of \$274,123. By year end 2019 the actual deficit (unaudited year end financials) was expected to be about \$64,248. This was obtainable due to the hard work and cost conscious efforts of the Board, committees and hundreds of volunteers executing the Foundation’s yearly programs. The Board will continue to monitor program costs into 2020 as well as the growth and gains of the CSEGF endowment investments. This analysis will help the Board to continue funding the programs that the Foundation supports in a prudent and cost effective manner.

Due to some of these challenges a new fund raising initiative will include a Foundation Social, to be held in the first quarter of 2020. The intention of the Social is to thank past CSEGF donors in person as well as to encourage additional and new donations for 2020 in a fun and sociable setting.

Additional new initiatives supported by the Foundation are the Destination Learning Series as well as a Bacon and Eggheads presentation to Parliamentarians in the first quarter of 2020. These new programs, with a geophysical advocacy focus, intend to convey to industry influencers a highly educated workforce within the CSEG whose expertise can be applied not only in the oil and gas industry but also in the mining, environmental, and engineering industries as well.

2019 Highlights

- The **Earth Science for Society (ESfS)** program hosted over 3100 attendees in 2019 including students from schools and youth groups as well as those from the general public. The CSEG Foundation “adopted” ESfS in 2016 as our primary ‘public’ outreach initiative, and became the long-term parent organization for this self-funding event. The overall cost of putting on the exhibition was less than previous years because the committee managed to cut costs to proceed with only the highest priority items due to funding constraints. This event included 136 volunteers working for over 500 hours. The 2019 committee is working hard again to coordinate and budget for this year’s upcoming event in March 2020.
- **Outreach / University Student Outreach (USO) / Schools and Public Outreach** continued to support students in universities and K-12 schools, and to inform educators and the public at large about geophysics. Some of these programs are:
 - Junior Geophysicists Forum (JGF) is a fall event held in Calgary where university students, new graduate geophysicists and senior industry and academic mentors participate in an educational workshop and networking event. At the 2019 event over 80 participants worked in teams to develop innovative solutions to problems facing Alberta's oil and gas companies.
 - The Canadian Finals of the Challenge Bowl competition for post-secondary students was held again this year in Calgary at the 2019 GeoConvention. We hosted several regional preliminary contests and in 2019 we were able to expand that number to four regions including Atlantic Canada, Quebec, Ontario and Western Canada. The Foundation also sponsored the Canadian winners' attendance at the International Challenge Bowl Final.
 - The CSEG Foundation has several initiatives directly supporting Canadian university geoscience students. In 2019 we sponsored and attended three university conferences; the Western Inter-Universities Geoscience Conference (WIUGC) in Western Canada, the Advances in Earth Science Research Conference (AESRC) in Ontario and the Atlantic Universities Geoscience Conference (AUGC) in Atlantic Canada. Our mentorship program paired over 35 students and young professionals with professional

Geoscientists in 2019 and hosted several events throughout the year designed to bring mentees and mentors together and foster relationships. We also directly provided financial support to student geoscience chapters at universities across Canada on an as-needed basis. This allowed students to run programming and/or events that they would otherwise be unable to do without the Foundation's support.

- The Geophysical Industry Field Trip (GIFT) brought together more than 35 geoscience university students and new graduates from across Canada for a 3.5-day Calgary-based course in oil and gas industry geophysics. It included a live demonstration of modern seismic acquisition equipment, industry software training sessions and workshops on seismic processing and interpretation as well as a guided geological hike of the Western Canadian Sedimentary Basin.
- **Scholarships.** We continue to support post-secondary geoscience education and students through our Scholarship Committee's efforts. The awarded scholarships totaled \$13,000 this year. From 12 applications for university scholarships, the Foundation awarded 6 scholarships to students at 4 universities across Canada in 2019. In addition, two scholarships were awarded in the fall of 2019 to high school students entering university.
- **Travel grants and learning subsidies** continues to be supported by the Foundation. The program helps Canadian undergraduate and post graduate students take courses and attend conferences, seminars and geoscience field trips including the Geoconvention, CSEG Symposium and the Doodletrain.
- **Communications:** In 2019 we saw continued improvements in the Foundation's web presence and ongoing communications support provided by the Communications Committee. The Foundation is also working with the CSEG's Digital Media Committee to develop webcasts of the CSEG luncheons and eventually CDL events.
- **Canadian Distinguished Lecture Tour** is one of the Foundation's keystone programs. Our 2019/2020 Distinguished Lecturer is David Eaton who is giving his talk to universities and institutions across Canada. In the fall of 2019 David gave 5 lectures in Atlantic Canada and is planning an additional 13 lectures for winter 2020 throughout the rest of Canada. The title of his talk is 'Crustal Fluids, Friction and Faults: What can we learn from injection-induced earthquakes?'

Despite the recent challenges the Board and its committees face, the long term Foundation's success is attributable to the initial vision of the Foundation and having a strong Board of Directors in place to carry out that vision. The Board consists of Directors with various levels of experience and backgrounds as well as a good set of Governance procedures to guide the direction of the Foundation.

The Board, staff and advisors are looking forward to another successful year providing the programs that are at the core of the Foundation and at the heart of the CSEG membership. Due to recent economic conditions the task of providing these programs in a cost efficient manner without substantial cuts has been a particular challenge for all those involved. I'd like to thank this hard-working and dedicated group of volunteers who have contributed their time in order to make this an ongoing program which benefits the Canadian geophysical community. The 2020/2021 incoming Board Chair will be John Parkin. John will bring his unique and considerable organizational talents to the Board next year and will continue on with the good work of former Chairs and Directors.

KATHLEEN DOREY

CSEG FOUNDATION CHAIR (2019), BOARD OF DIRECTORS

Chief Geophysicists Forum (CGF)

The Chief Geophysicists Forum has been a standing committee of the CSEG since 1999 with ~30 of the over 65 members of the Forum continuing to meet quarterly in 2019 with the mission to *“Promote discussion that invites members to advocate for the evolution of the geophysicist that drives measurable business benefits”*.

The focus in 2019 was a continuation of the focus on the future of geophysics, with an emphasis on leveraging the CGF as a think tank for the CSEG. The three themes focusing the discussions within each meeting included:

1. **Innovation in Geophysics** (inspire members and enable discussion on business opportunities and challenges)
2. **Strengthening the CGF membership** (focus on broadening diversity, and getting a range of companies at the table)
3. **Promoting the CSEG & ties to Affiliations** (APEGA, CAPP, CAGC)

To inform our discussions, we invited several guest speakers through the course of the year to speak to the Forum. The meeting in March was centered on the CAGC White paper regarding “Repositioning Seismic Technologies”. Jen Russel-Houston, incoming president of the CSPG, also presented at that meeting. In June, a discussion was held regarding Geophysical Innovation. As well, Nathan Fester and Ryan Segstro gave us a presentation on developing a desktop reference for geophysics. The September meeting brought a presentation from David Yager on the state of Canada’s Oil and Gas industry. To round out the year in November, the Forum members were actively engaged in discussions intended to draw out member insights in three key areas:

- 1) Roles and Responsibilities of the Modern Geophysicist in E&P.
- 2) New, non-traditional opportunities for geophysicists.
- 3) New skills and training to be successful.

There were lively discussions and thoughtful exchanges of ideas. Highly condensed views from the three discussions include:

- 1) The Modern Geophysicist must be well-versed in regional geology, operations geology, surface/mineral land, finance, economics, and all engineering disciplines (production, completions, drilling facilities, reservoir). Modern Geophysicists must get to know the challenges that the above-mentioned disciplines face and strive to apply geophysical solutions to these challenges. The successful Modern Geophysicist builds trust and

credibility with other disciplines through incremental wins; relentlessly applying acquired technical and soft skills, tactics, visualization tools and applications of seismic data.

- 2) Applying subsurface understanding through regional geology, regional structure and well outcomes, the Modern Geophysicist must manage, quantify and effectively communicate subsurface risk to reduce uncertainty in capital projects.
- 3) The Modern Geophysicist is open to change and constantly improving, evolving and embracing technology.
- 4) New, non-traditional opportunities can be grouped into different themes. One of the opportunities within Oil and Gas is for cross training in other disciplines such as completions engineering and reservoir engineering. The training of a geophysicist is not that dissimilar to that of an engineer so transitioning to those roles should not be that difficult. Another opportunity that was highlighted was within Information Systems, and specifically within Data Science. The computer training of some geophysicists is on par with some computer science grads.
- 5) The latter opportunity in Data Science aligned with the major theme of the New Skills and Training discussion. A large majority of the members felt that training in Data Science and coding would be very useful. The coding skill is primarily around scripting and using programming language like Python. This would allow geophysicists to take the lead in companies and be the integrator between disciplines.

My tenure as the Chair of the CGF in 2019 was enjoyable and rewarding. Many thanks to the 2018 CGF Chair, Elaine Honsberger, for further refining the structure and thrust of the CGF and positioning it so well for 2019. As well, the 2018 Co-Chair, Matt Ng, was invaluable with his ideas and enthusiasm. I know the CGF continues to be in good hands with Matt Ng as Chair for 2020, and Nathan Fester as Vice-Chair. All the best to them in 2020!

EDMOND CHOW, P. GEO.

CHAIR, CHIEF GEOPHYSICISTS FORUM

Digital Media Committee (DMC)

Developing a social media presence for the CSEG is critical for the long-term sustainability of the CSEG. Online advertising revenue from the CSEG, and CSEG RECORDER websites are an important component of achieving that sustainability. Since online advertising revenue comes directly from the number of hits on the CSEG websites, the DMC has been tasked to help to use social media to drive more traffic to our websites.

In 2019, the DMC continued to work on the social media presence of CSEG. Our primary platform has been LinkedIn due to its professional nature that synchronizes well with the CSEG. By the end of 2019, the CSEG LinkedIn page had reached ~1300 followers, which is up significantly from 2018 (~500 followers). This increase in followers is largely due to regular posting on the CSEG page, and increased sharing by our followers.

We continue to work on growing additional social media channels such as Instagram and LinkedIn. Growth on these platforms is slow, due to limited content availability, and is something we will work to address in 2020.

The 'Blog' on the www.csegrecorder.com started its first technical articles created to entice discussion in our community (December 2019). The articles were announced on LinkedIn, and we are hoping to get some good technical discussions going that will lead more people to our website.

Our most important update to our www.cseg.ca website was the addition of 'tabs' at the top of our website to link the CSEG, RECORDER, and Journal websites together to create a more united feel to our 3 CSEG websites.

One other challenge we have taken on is communicating to all CSEG committees that the DMC is here to support them in increasing their exposure on social media through the CSEG social media channels. Whether education, social, or outreach – the DMC is there to help get all committees' messages out to their target audiences. Continuing to reach out to all committees is something the DMC will continue to work on in 2020.

Special thanks to all our members of the DMC for their hard work in growing the CSEG brand through social media:

- **Jocelyn Frankow**
- **Corey Hooge**
- **Chelsea Squires**
- **Rebecca Bryant**

- **Kathleen McLean**
- **Jeremy Sherry** (Web and social media expert)
- **Brian Schulte** (RECORDER representative)
- **Elizabeth Atkinson** (Board representative)
- **Andy Williams** (Board representative)
- **Marie Hong** (Board representative)

JASON SCHWEIGERT

CHAIR, DIGITAL MEDIA COMMITTEE

2019 Canadian Journal of Exploration Geophysics (CJEG)

The Canadian Journal of Exploration Geophysics (CJEG) is the peer-reviewed publication of the Canadian Society Geophysicists (CSEG). CJEG has a citation rating and has been in existence since 1965. The journal is available to all CSEG members through the CSEG web site, and after 3 years of initial publication, CJEG issues are open to the non-members of CSEG. Publication of peer-reviewed scientific papers is in line with the SEG goal “to promote the science of geophysics”. In the past there have been 1-2 CJEG issues per year containing a total of 6-12 peer-reviewed scientific papers.

Readers of CJEG will notice that the 2019 edition has only 1 paper. The reason for this is primarily a slow down in the number of papers submitted for publication in CJEG. Out of a handful of papers submitted, only one was found worthy of publication after the review process. We hope that more prospective authors will make contributions to the CJEG which will bring it back to its publication of 1-2 issues per year.

LARRY LINES AND SATINDER CHOPRA

CO-EDITORS, CANADIAN JOURNAL OF EXPLORATION GEOPHYSICS

Special Note from CSEG’s Digital Format Editor

We in the CSEG community are deeply saddened by the very recent loss of Larry Lines, the long-time co-editor of the Journal, to cancer. Larry contributed many great things to the CSEG, and a key one was his enthusiasm for restarting and maintaining the Journal. Satinder has written a tribute to Larry in this edition and the CSEG plans further tributes.

I’ve known Larry for quite a few years, and always found him so kind and generous. I had the pleasure of working with him in my recent role of Director of Communications for the CSEG. He was always a delight to meet with, and his love for our science was palpable.

Larry and I worked through a transition to the format of the CJEG, to one of online contents with pdf and html formatted individual papers attached. Papers are still formally peer reviewed. This format reduces the monetary cost of production greatly and allows the CSEG to support the Journal’s continuation. We are no longer so constrained by page counts and can afford to publish figures in larger format. I hope that this format change opens opportunities for many more papers to be published in this forum.

ELIZABETH ATKINSON

FORMAT EDITOR, CANADIAN JOURNAL OF EXPLORATION GEOPHYSICS AND CSEG RECORDER

Canadian Federation of Earth Sciences (CFES)

CFES is an umbrella organization that represents a federation of Earth Science societies and associations across Canada, bringing together 13 organizations of Earth scientists in industry, government and academia. We advocate on behalf of the Canadian Earth Science community with the government, the public, and the international Earth Science community. CSEG is represented on the CFES Council by Mike Hall.

CFES has been working on several initiatives over the past year, some new and others ongoing. Some highlights are presented in this report. One initiative that was launched in 2019 is the Canadian Earth Sciences Research Plan. Research plans developed by the US, UK, and Australia have been surveyed and potential topics that could be used in a Canadian plan, built around the future needs of Canadians, have been identified and will be discussed at the CFES annual Council Meeting in Ottawa in April 2020.

Another initiative launched in 2019 is the preparation of a Climate Change document, designed to present an educational and scientific Earth Science view on the topic that is accessible to the general public. A committee made up of representatives from some of our member organizations is working on the preparation of this document, which will also be reviewed at the CFES annual Council Meeting.

Over the last couple of years CGEN, the educational arm of CFES, has been working with Parks Canada on the Canadian National Parks Geologist-in-Residence at Pukaskwa National Park pilot project. The role of the Geologist-in-Residence is to highlight the important geological character and history on display within Pukaskwa National Park and how it relates to the wider region. The Geologist-in-Residence will serve as a trainer for staff to learn and gain confidence in speaking about geology and geomorphology with the public. This pilot project will be launched in the summer of 2020. If successful, it will be expanded to other National Parks over the coming years.

On both the public awareness and geoscience careers fronts, an additional 5000 copies of the Geoscience and Canada booklet were printed jointly with Geoscientists Canada. In addition to further distribution of booklets nationwide by Geoscientists Canada, CFES undertook a distribution to all forty-nine Geography Departments across Canada. All our member organizations were encouraged to make full use of the booklet, including posting it for download from each member organization website home page.

Each year, CFES also awards the CFES Mentorship Medal. Launched in 2008, this award recognizes the sustained and inspirational mentorship of colleagues and employees including peers, graduate students, undergraduate students, and technicians. The 2020 Mentorship

Medal winner is Professor Dominique Weis of the University of British Columbia. The award will be presented to Professor Weis at the GeoConvention in May.

Over the past year, CFES has also been working with CSEG and CSPG on the preparation of a nomination for the Bacon and Eggheads series organized by PAGSE (the Partnership Group for Science and Engineering), of which CFES is a member. This will provide a distinguished geoscientist the opportunity to present on a subject of primary scientific importance in an apolitical way, to key decision-makers at the federal government, hence helping them understand some of the contributions of Earth Sciences to Canada.

2019 has also seen CFES' 2014-2019 Strategic Plan come to an end. Work on a new strategic plan is underway and will be presented and discussed at the annual Council Meeting in Ottawa in April.

GRAZIELLA GRECH, PHD

PRESIDENT, CANADIAN FEDERATION OF EARTH SCIENCES

Microseismic User Group

The Microseismic User Group, known as MUG, facilitates free monthly talks and discussions focused on microseismic topics. The MUG has been in operation since 2012 and is organized by Paige Mamer, Johnny Wentzel, and Hoda Rashedi, who has since left the committee to pursue a different career path – we wish her well!

2019 was a great year for the MUG, hosting eight talks on topics covering DAS, new processing and novel interpretation workflows, and induced seismicity. The MUG Committee would like to extend a gracious thank you to Schlumberger and Chevron for providing venues for the 2019 talk series.

2019 Presentations:

- JANUARY 28TH, 2019
Kevin Boone: *Next Generation DAS Application in Microseismic*
- FEBRUARY 26TH, 2019
Sobhi Alhashwa, P.Geo., PMP: *Managing Induced Seismicity Risk in the Duvernay Formation*
- MARCH 20TH, 2019
Marco Perez: *Towards integrating multiple microseismic interpretation templates*
- APRIL 24TH, 2019
Amy Fox: *Imaging Natural Fracture Networks*
- JUNE 10TH, 2019
Ryan Schultz: *The Geological Susceptibility of Induced Earthquakes in the Duvernay Play*
- OCTOBER 4TH, 2019
Stepan Lavrinenko: *Combined processing/interpretation of microseismic and reflection seismic data*
- OCTOBER 29TH, 2019
Peyman Moradi: *Modeling SRV via Integration of RTA and Microseismic Analysis*
- DECEMBER 12TH, 2019
Dr. David Eaton: *How deep is my event? Improved induced-seismicity depth estimation using the focal-time method*

PAIGE MAMER AND JOHNNY WENTZEL

MUG COMMITTEE CO-CHAIRS

Lunchbox Geophysics

Lunchbox Geophysics is an informal, free-of-charge technical lecture series that brings a variety of topical geophysical presentations to CSEG members.

www.cseg.ca/technical/category/lunchbox

The Lunchbox Geophysics committee welcomes all interested parties to submit their ideas for future talks. Our contact information can be found on the web page:

www.cseg.ca/events/lunchbox.cfm.

A new committee was appointed in a hand-off with Richard Gray in December of 2018, comprised of Sarah Grant, Luis Valencia, and Sinead Tracey.

In 2019, five talks were organized by the new committee. Initial talks had low attendance, as seen listed below. This may have been due to lack of awareness of the talk series being revived in 2019. Increased advertising in CSEG events and social media, as well as CSEG-donated 'gifts' for speakers has had a role in the increased attendance through the year.

April: 7 attendees

Focal-Time estimation: A new method for stratigraphic depth control of induced seismicity

By: Ron Weir

May: 6 attendees

GPlates deformable plate tectonic models of the southern North Atlantic: Insights into rift-related deformation and magmatism

By: Alexander L Pearce via online presentation from St. John's, NL and connection with Houston

June: 13 attendees

Implications of persistent post-injection induced seismicity in the Duvernay

By: Thomas Eyre

September: 27 attendees

SAGD dynamic reservoir property characterization using machine learning

By: Luis E. Cardozo

October: 54 attendees

Deconstructing Data Science

By: Marc Boulet

SARAH GRANT, LUIS VALENCIA, AND SINEAD TRACEY

COMMITTEE CO-CHAIRS

Value of Integrated Geophysics (VIG) Committee

The CSEG's VIG Committee was created in 2013 in response to a perceived need to build stronger levels of understanding among geoscientists, engineers, executives and the oil and gas finance community, about the value of using geoscience to increase economic success and safety. Our main approach has been to get out and talk to engineers through SPE and APEGA talks, and to educate CSEG members through VIG-related CSEG talks, RECORDER articles, Doodletrain courses, etc. We have shared the idea with the SEG, who has created a Business of Applied Geophysics (BAG) session at its annual convention.

A. Accomplishments in 2019 (chronological):

1. APEGA Evening Seminar (January 9, 2019):

David Gray delivered "*Demystifying Geophysics for Engineers*". Attended by 36 APEGA members. Pragmatic discussion of how geophysics can help companies optimize well/pad placement and understand more about reservoirs and their surrounding pressure regimes. <https://csegrecorder.com/reports/view/value-of-integrated-geophysics-demystifying-geophysics-for-engineers>

2. Distinguished Lecture Tour (Fall 2018 to Spring 2019):

David Gray delivered the VIG concept to geoscience students and their professors at universities across Canada. Learned that Google is recruiting from the Colorado School of Mines, banks are recruiting geophysicists for their inversion skills, and that students at INRS (l'Institut National de la Recherche Scientifique, a Quebec geological survey mining research school) are being hired before they graduate.

3. VIG-themed DoodleTrain Course (Oct 2019):

John Duhault (Past VIG Chair) presented "*How Engineers Mitigate Risk and Increase Profitability Using Integrated Geophysical Applications: A Course for Geoscientists and Engineers*".

4. CSPG Structural Division Talk (November 6, 2019):

David Gray presented "*Can Seismic Inversion Be Used for Geomechanics? A Casing Deformation Example*".

The remainder of 2019 was devoted to organizing and preparing new talks for 2020, as listed below.

5. CSEG Luncheon Talk (Feb 26, 2020):

Dennis Ellison presented "*Seismic and Surface Deformation: Insights from Qualitative Comparisons over a SAGD Reservoir in Alberta*". <https://cseg.ca/technical/view/tl-seismic-and-surface-deformation-insights-from-qualitative-comparisons>.

6. SPE Geomechanics Breakfast Series at the Petroleum Club (February, 2020):

David Gray joined the SPE's Geomechanics Special Interest Group and presented the second talk in the breakfast series. The talks were well attended.

- a) *Naturally Fractured Reservoirs and their Link to Tight and Shale Reservoirs*
Speaker: Roberto Aguilera, Professor of Petroleum Engineering, University of Calgary
<https://spealgary.com/initiative/5dfbbd461af0bdbc7c7196e3>
- b) *Using Seismic Azimuthal Anisotropy to Find Fractures*
Speaker: David Gray (VIG), Principal Geophysicist, Ikon Science, Canada
<https://spealgary.com/initiative/5dfbbe61af0bdbc7c7196e5>
- c) *A Convenient Technology to Calculate Geomechanical Properties from Drilling Data*
Speaker: Mazeda Tahmeen, PhD, PEng, Technical Product Manager, Rocsol Technologies Inc.
<https://spealgary.com/initiative/5dfbe06f1af0bdbc7c7196ee>

7. 2020 CSEG Symposium – Fall 2020

David Gray: *"The Hunt for Value in Geophysics: Finding Value in the Montney through Seismic Geomechanics"*

<https://cseg.ca/symposium/docs/abstracts/2020-CSEG-Symposium-Gray.pdf>

We also provided feedback and suggestions regarding the CSEG's *Bacon and Eggheads* project, being organized by Earth Science for Society, of which Mike Hall and Dennis Ellison are members.

B. Costs for 2019:

VIG had no expenses in 2019, confirmed by Jim Racette.

C. Future work:

VIG has new talks in mind, including a potential APEGA evening seminar, luncheon talk, Doodletrain course (David Gray - Inversion Bootcamp; suggestion to teach a Project Management for Geophysicists course), SPE talk (David Timko – Geophysics for Reserves Information). Social events have been shut down due to COVID-19, but VIG will see about scheduling talks for the fall. We would also like to update the VIG Reading List.

D. Current members (as of March 2020):

Louis Chabot, Dennis Ellison, David Gray, Mike Hall, Ruth Peach, and David Timko. Ruth Peach prepared this report.

RUTH PEACH

VALUE OF INTEGRATED GEOPHYSICS (VIG) COMMITTEE

GeoConvention 2019

First and foremost, we would like to thank all of the individuals who attended and the companies who supported GeoConvention 2019 by exhibiting, sponsoring and supporting their employees' attendance. GeoConvention 2019 saw another year of increased attendance, a larger number of exhibitors and greater sponsorship than in 2018 as we continue to focus on the quality of the technical program and the return our corporate contributors receive. The Convention hosted 50 sessions in total with 99% of our delegates rating the technical merit as good or excellent.

For the 2019 program, we were extremely fortunate to have passionate session chairs who focused on play-specific talks, others who focused on the latest advancements in technology and panels, bringing together some of the brightest minds in the Canadian industry to share their experiences and insights to the value of geosciences within every organization while navigating the current landscape.

GeoConvention 2019 was successful in bringing together the geoscience community through a cost effective and top-tier technical program, maximizing the professional development of our attendees and providing them with networking opportunities for students, young professionals and industry veterans.

GeoConvention 2019 hosted nearly 400 Technical and Poster Presentations and saw approximately 3200 attendees while returning over \$132K to the CSEG to assist with the society's ongoing education, outreach and geoscience advancement programs (pending final audit results).

VOLUNTEERS

GeoConvention would like to recognize the time and expertise of all our planning committee volunteers who all helped make the 2019 program a success, listed below in Table 1. Additionally, we would like to extend a sincere thank you to our 110 pre-convention and on-site volunteers, both students and industry professionals, who helped make the convention a success.

Committee	Name
General Co-Chair (CSEG)	Gary Paukert
General Co-Chair (CSPG)	Robert Flowerday
General Co-Chair (CWLS)	Gary Bugden
Technical Co-Chair (CSEG)	Lona Gregory
Technical Co-Chair (CSPG)	Jon Noad
Technical Co-Chair (CWLS)	Tracy Du

Poster Chair	Breanne Rathgeber
Judging Chair	Scott Matieshin
Exhibits and Sponsorship Chair	Nash Hayward
Exhibits and Sponsorship Chair	Brendon Lybbert
Exhibits and Sponsorship Chair	Giselle Fonseca
Exhibits and Sponsorship Chair	Tatyana Plaksina
Exhibits and Sponsorship Chair	James Duggan
Mobile App Chair	Zekai Jia
Mobile App Chair	A.J. Gates
Social Media Chair	Chris Harrison
Volunteer Chair	Mandy Thompson
Student Outreach	Adam MacInnis
Student Outreach	Mitchell Gillrie
Finance Chair	Spryng Kubicek

Table 1. GeoConvention 2019 committee listing

TECHNICAL

Based on the success of the 2018 technical program, similar theses were used to derive key content and contributions for the 2019 program. The 2019 themes are presented below.

GeoConvention 2019 Themes

Building Strong Foundations - Technical Fundamentals and Applications

An opportunity to mentor others by sharing fundamental aspects of key subsurface disciplines and grow by learning how others have applied specific discipline skills to improve subsurface understanding.

New Horizons - Novel Technological Tools and Advancements

Do you have a new idea or novel technology to share? Have you applied machine learning or Artificial Intelligence to solve a geo-engineering or subsurface understanding problem? This is your chance to share new approaches and technologies to solve new, and old, problems!

Unconventional Plays - Advancing Understanding and Profitability

Focus will be on key Canadian unconventional plays (Montney, Duvernay, Spirit River, Heavy Oil, Oil Sands) and international analogs. Content will emphasize integrated studies and case examples that show advancements in play understanding and how this drives profitability.

Managing the Risks of Unconventionals Development

Unconventional resource developments face many technical and public relations challenges including surface footprint/access, water sourcing/management/disposal, fugitive emissions and induced seismicity. Cooperation between industry, academia, government agencies and local communities will lead to the best outcome on these issues. Let's share our experiences and views on how to manage these risks.

Conventional Plays and Frontier Basins

Conventionals and frontiers endure as an integral part of our industry. What treasures remain and where do we look for future opportunities?

Challenges and Opportunities for the Canadian Energy Industry

What opportunities await as Canada's energy industry evolves? Share your perspective on the current, near or long term status and needs of our industry.

Business and Development

This theme will focus on personal, business and professional development as well as bring in market insights from industry leaders. How can we best position ourselves and our business for the future?

SPONSORSHIP

We are very thankful to those sponsors who contributed to our success. Sponsorship allows GeoConvention to offer a best-in-class technical program while also supporting our networking programs and ultimately returning to our non-profit partners. The ongoing support of the GeoConvention sponsors is sincerely appreciated and critical to the ongoing success of the Convention. The sponsors and their support levels are shown in Figure 1.



Figure 1. GeoConvention 2019 sponsors

EXHIBITS

2019 saw a 10% year over year increase in sold exhibition space with 96 total exhibitors. The exhibit floor continued (and will continue) to be free to all attendees who wish to join us and learn from our supporting companies as we continue to strive in providing as much visibility and return to our exhibitors as possible.

NETWORKING AND LUNCHEONS

The networking nights again proved to be the single-biggest draw to the exhibition floor. The Monday evening icebreaker attracted an estimated 1050 visitors and the Tuesday evening another 900 as students and industry professionals had the opportunity to reconnect and make new connections while visiting with exhibitors at these very popular industry events.

GeoConvention was very fortunate to have Evil Company Brewing, Freehold Brewing and Long Hop Brewing sponsor drink tickets for all delegates to enjoy a beverage while at the networking functions.

The partner society-hosted luncheons were again a huge success in 2019 with both the CSPG and CSEG lunches selling out. The CSPG hosted Bob Fryklund, Chief Strategist Upstream, IHS Markit for the Monday keynote, the CSEG hosted “Let’s get Geophysical” networking lunch at The Palomino Smokehouse and the CWLS hosted “Refresh” networking lunch at the Bank and Barron.

The final event associated with GeoConvention 2019 will be recognition of the Best of 2019 Networking Night and PechaKucha, scheduled for early October. Please keep an eye on our website and your emails for final details and presentation lineup once confirmed.

GEOCONVENTION 2019 AWARDS

We are very grateful to all presenters at GeoConvention 2019 and would like to extend special congratulations to the 2019 award winners for being chosen as the best of the best by the general audience and industry experts through our Mobile App.

A complete list of award winners as selected through our Mobile App by the general audience and industry experts can be found below in Table 2.

Title	Presenter	Award
<i>Bioturbation and sedimentation rate in prodeltas</i>	Janok Bhattacharya	Best Oral Presentation
<i>Fundamental Skills in Core to Log Correlations in Unconventional Resource Plays: Examples from the Montney Formation</i>	Thomas Moslow	Best Oral Presentation
<i>Responsible Disposal of Oil and Gas Waste Fluids: Trends, Risks and Mitigation</i>	Kim Kingsmith	Best Oral Presentation
<i>Transitioning to High Density Vibroseis - A Case Study</i>	Andrea Crook	Best Oral Presentation
<i>Drilling practices and challenges: With some of the deepest and longest laterals in Canada, what are some of the challenges and successes in the Duvernay</i>	Sean Kleiner	Best Oral Presentation
<i>Facies Control on Fluid Accumulation, Viking Formation, Elrose Field, Saskatchewan, Canada</i>	Stefan Wieclawek	Best Oral Presentation - Honorable Mention
<i>The Importance of Geoscience in using Machine Learning to Predict and Optimize Well Performance – Case Study from the Spirit River Formation</i>	John Hirschmiller	Best Oral Presentation - Honorable Mention
<i>Least-squares RTM of a seismic-while-drilling dataset</i>	Nasser Kazemi	Best Oral Presentation - Honorable Mention
<i>Mineralogical controls on organic-hosted pore volume and pore size – Duvernay Formation, Alberta, Canada</i>	Levi Knapp	Best Oral Presentation - Honorable Mention
<i>Ultra-High-Density 3D Seismic in the Oil Sands with Near Zero Environmental Footprint</i>	Paul Thacker	Best Poster
<i>A Tephrostratigraphic Approach to Understanding Subsurface Sedimentary Architecture. An Example from Permian Fort Cooper Coal Measures, Bowen Basin, Queensland, Australia</i>	Syeda Areeba Ayaz	Best Poster - Honorable Mention
<i>Understanding Public Risk Perception in the Oil and Gas Industry</i>	Jordan Phillips	Best Student Oral Presentation
<i>Analysis of the Metre-Scale Depositional Architecture of the Montney Fm. in Outcrop using UAV Technology: Implications for Sedimentology and Fracture Stratigraphy</i>	Simon Poirier	Best Student Oral Presentation - Honorable Mention
<i>$\delta^{13}C$, $\delta^{18}O$ and $87Sr/86Sr$ isotope composition of Montney Formation carbonate phases: implications for the nature of diagenetic fluids</i>	Mastaneh Liseroudi	Best Student Oral Presentation - Honorable Mention
<i>The interaction between cm- and m-scale heterogeneity of the Duvernay Formation based on an outcrop case study: implications for 3-D reservoir modeling</i>	Samantha Mackie	Best Student Poster
<i>Neural Network Models for Predicting the Size and Horizontal Location of Shale Barrier Using Reservoir Parameters and SAGD Production Data</i>	Min Kim	Best Student Poster
<i>1D and 2D Petroleum System Modelling of Potential Lower Jurassic Source Rock on Scotian Margin</i>	Xinyue Hu	Best Student Poster - Honorable Mention
<i>Defining a Geo-model of the South Swan Hills Reef Complex for Geothermal Use, Swan Hills, Alberta.</i>	Christopher Noyahr	Best Student Poster - Honorable Mention

Table 2. GeoConvention 2019 Award Winners

GEOCONVENTION 2020

For 2020, the GeoConvention partner societies – CSEG, CSPG and CWLS will be joined by GAC (Geological Association of Canada), MAC (Mineralogical Association of Canada), IAH (International Association of Hydrogeologists) and Geothermal Canada for a once-in-a-decade collaboration, fully integrating participation through the full geoscience spectrum.

GeoConvention 2020 will be hosted, at the Calgary Telus Convention Centre **August 31 – September 2**, our postponed dates, due to the recommendations of Government and health officials in response to the COVID-19 pandemic.

Registration for GeoConvention 2020 is now open.

To keep up to date on GeoConvention visit www.geoconvention.com and follow @geoconvention on Twitter, geoconvention on LinkedIn and Instagram and GeoConventionCanada on Facebook. In addition, the GeoConvention 365 App is your year-round resource for all materials, presenter bios and abstracts from GeoConvention; find it on the Google Play or Apple App Store.

DUSTIN MENGER

DIRECTOR, GEOCONVENTION 2019

2019 CSEG Symposium

The 2019 Symposium was once again held in the elegant Hudson Lofts on March 12. The stylish and spacious surroundings set the stage for an inspiring day of geophysical case studies and innovative presentations and discussion. Eight speakers (see list below) covered topics as diverse as azimuthal anisotropy prediction and multi-scale data integration for shale completion optimization to machine learning and futuristic developments. Every year, a prominent Canadian geophysicist is honoured and the theme of the event reflects the contribution and influence of the Honouree. “Standing on the Shoulders of Giants” was the 2019 theme, and the “Giant” Honouree was the late Dr. Roy Lindseth.

Along with a program packed with geoscience presentations, the luncheon provided the opportunity for a keynote presentation by Dr. Susan Eaton. Susan shared her incredible experiences pushing scientific and geographic boundaries in the Arctic and Antarctic, with stunning pictures and inspirational stories. Incidentally, Susan had a direct connection with Roy Lindseth, having worked for him at his processing company, Teknica Resources.

Sponsorship revenue was down slightly from 2018, at \$15,750, but registration was up at 182 (including 29 complimentary attendees). Total revenue therefore, was almost \$44,700, compared to 2018 of \$34,700. Total expenses were \$41,700, for a net profit of just under \$3000. The valuable sponsorship contributions were provided by: Husky, Jupiter Resources, Emerson, Seisware, Sigma Exploration, APEGA, Velvet, Schlumberger, Sound QI Solutions and Explor.

The Symposium could not have been successful without the considerable volunteer efforts of the committee:

Doug Clark: Past Chair

Lisa Kleebaum: Speaker Liaison

Paige Mamer: Speaker Liaison

Radim Vesely: Sponsorship

Scott Matieshin: Arrangements

Rik Gray: Advertisements

Tammy Yu: Sales

Jim Racette: CSEG Representative

The full list of speakers and talks:

- **Weimin Zhang:** *The Effects of Seismic Data Conditioning on Density Estimates from PP-PS Joint Pre-stack Inversion: An Example from the Athabasca Oil Sands*
- **Eric Keyser:** *Azimuthal Anisotropy Prediction of Frac Effectiveness*
- **Pippa Murphy:** *Integration of Multi-scale Seismic Datasets to Better Understand Completion Efficiency of the Montney at Gold Creek*
- **Craig Coulombe:** *Rock Physics Analysis and 3D Seismic Interpretation: Example from the Mannville, Deep Basin, Alberta*
- **Brian Russell:** *Roy Lindseth and the Evolution of Seismic Inversion*
- **Matt Ng:** *The Modern Geophysicist: Using geophysics the Geophysicist to Add Value and Influence Business Decisions*
- **Don Lawton:** *Advances in Seismic Monitoring Using Distributed Acoustic Sensing (DAS)*
- **Ana Krueger:** *Deep Learning in Exploration*
- **Rob Stewart:** *Targets, Technology and Training in the 2020s: Where is Exploration Geophysics Going?*

The 2020 Symposium is well underway with Nanna Eliuk as incoming Chair. Early indications are that it will be as or more successful than 2019.

LAURIE WESTON

CHAIR, 2019 SYMPOSIUM

52nd Annual CSEG Family Ski Spree

The 52nd Annual CSEG Family Ski Spree was held from February 8 – 10, 2019 at the beautiful Fairmont Hot Springs Resort in Fairmont, B.C.

Fifty CSEG members brought their families to B.C. for this weekend that saw a total of 186 participants. It was a weekend of fun for everyone of all ages and skill levels. You definitely didn't need to ski in order to participate. The format for the weekend is a long-standing tradition that focuses on all the children while keeping the adults entertained.

Friday evening began with family registration and name tags supplied by Eagle Canada Seismic Services and then the games began! The CSEG Toddler Room, ages 0-4, was filled with safe and age-appropriate toys. The mini mixer, ages 5-11, was where all the action was. There were multiple crafts for everyone, some needing adult supervision and some not. Pizza, snacks and drinks were readily available throughout the evening. Everyone then helps in the massive clean-up as we set up for a Night at the Movies.

Everyone knows how hard it is to keep the teenagers occupied, but the volunteers in the Teen Room, ages 12-18, seemed to have the formula for success. The night was centered around a scavenger hunt that scattered the teens to all corners of the hotel, along with interactive games that kept teens occupied most of the night. Again, tons of pizza, snacks and drinks for all.

Let's not forget about the adults! The Eagle Canada Mogul Mixer was a chance to meet up with old friends and make new ones as the adults gathered for a mexican themed taco bar. This was followed by the Divestco Ski Spree Grande Prix, racing Hot Wheels cars on a 10m track. Entertainment for the adults then continued upstairs in the Bear's Paw as DJ Nico spun tunes later into the evening.

Saturday was focused on the Fairmont Hot Springs Resort Ski Area, about a 5-minute drive from the hotel. For the younger generation, the Pulse Seismic Snow Snake Hunt and the Earth Signal Processing Ltd. Obstacle Race occupied the beginner hill. Children of all abilities navigated the minimal difficulty obstacle course and searched for snakes in the snow to receive small prizes. For everyone else, they were encouraged to participate in the Explor Snowboard Races and/or the Katalyst Data Management Downhill Races.

Participants raced side-by-side against their parents, siblings or friends. The race commentary done by Peter Harding from Fairmont Ski Hill provided great entertainment to everyone as it could be heard all over the Main Hill. Lunch was provided courtesy of Integrity Industries Ltd. and TGS provided Cocoa on the Mountain at the top of the ski lift. There was just enough time after all the events on the hill for many of the participants to take a quick dip in the giant hot tub before heading for dinner.

Saturday dinner saw all the families seated together as the Ski Spree Committee recognized the sponsors for the weekend and handed out all the awards from the day. Table wine for evening was sponsored by SISMA Drilling. A charity raffle is held each year and this year we were raffling off fantastic prizes, donated by various companies. These items raised \$3,000.00 for a new timing system for the Fairmont Ski Hill Ski Club.

Mr. & Mrs. Ski Spree is an award that recognizes years of participation and a visible positive attitude towards this event and it was given this year to Mike and Theresa Clement.

For the adults, the night did not end after dinner. Synterra Technologies Ltd. Late Night occurred in the Bear's Paw lounge, again, with DJ Nico providing the music for the evening. In another difficult year for the industry, the 2019 CSEG Family Ski Spree is extremely grateful for all the sponsors that donated what they could for this fantastic event. All it takes is to have seen all the kids faces either in the Crafts Room on Friday night or coming off the hill on Saturday to know that it was worth it. On behalf of the organizing committee we hope that everyone had a wonderful and fun-filled weekend and we look forward to seeing everyone again in 2020 at our 53rd celebration.

GEOFF CASTLE

CSEG FAMILY SKI SPREE CHAIRMAN, 2019

2019 Doodlebug

Date of Event: August 16-17, 2019

Venue: Kananaskis Golf and Country Club

Funds existing before event (last year's year-end):

- \$53,000

Amount raised in sponsorship:

- \$75,000 – 2019 \$70,000 – 2018

Amount raised in registration:

- \$10,000 – 2019 \$18,000 – 2018 (included more paid spots in sponsorship)

Total expenditures: \$123,000

Donations raised from the event: \$7,000

Organization receiving donations:

- KidSport

Funds Remaining Post-Event: \$38,000

Committee Members: Listed on website

Incoming (2019) Committee Lead: Alex Daum

GEOFF CASTLE

2019 DOODLEBUG COMMITTEE LEAD

2019 T-Wave Golf Tournament

Date of Event: June 24, 2019

Venue: Valley Ridge Golf Club

The T-Wave had another incredible turnout in 2019 with 148 participants. The venue at Valley Ridge is great at taking care of us and it is always a fun day. We had a live band again on the 6th tee box and had a RC car race course setup as well. Many hole competitions and a great raffle prize table were set up, so all participants went away happy.

Funds existing before event (last year's year-end):

- After 2018 we had \$16,415 in the bank account and after 2019 we have \$22,136 so clearly the sponsorship and participation levels are doing great and this event is able to thrive, even during the downturn.

Amount raised in sponsorship:

- \$30,000 in 2018 and very similar in 2019. Companies like this local, one day event.

Amount raised in registration:

- same totals for 2018 and 2019, based on 148 golfers both years @ \$150/golfer

Total expenditures: \$50,000

Donations raised from the event: \$2,500

Organization receiving donations:

- Calgary Reads

Funds Remaining Post-Event: \$22,136

Committee Members:

- **Andrew Nicol**, Chairman
- **Brian Ingenthron**, Past Chairman
- **Rob Curts**, Registration
- **Andrew Nicol**, Vice Chairman / Prizes
- **Maggie Stratton**, Finance
- **Ed Slobodian**, Prizes
- **Patty Evans**, Sponsorship
- **Sandy Lucas**, Sponsorship
- **Wade Whitlow**, Sponsorship
- **Joe Bonaventura**, Sponsorship/Prizes
- **Brendan Smith**, Sponsorship/Signage

Incoming (2019) Committee Lead: Joe Bonaventura

ANDREW NICOL

2019 T-WAVE COMMITTEE LEAD

Doodlespiel 2019

DOODLESPIEL 2019! The 47th annual 2019 Doodlespiel has now come and gone and this year we had 61 teams with around 275 participants. The town of Banff, the Banff Curling Club, and the Best of Banff company once again created an amazing venue for the Doodlespiel that was enjoyed by all. The A event final had the Brack rink against the Hansen rink. In the end the Brack rink consisting of, Jim Brack, Mike Langois, Dale Johnson, Bill Campbell and Dave Cryer, won the A event... Congratulations Team Brack on winning back to back to back Doodlespiels!! Other event winners include: B Event = Marty Sommerville, Marvin Lebeau, Tim Carry and Stephen Menduk. C Event = Todd O'Brien, Todd Stuebing, John Duhault, Jon Crealock and Bill Mansell. D Event = Al Starkoski, Dave Timko, Jocelyn Frankow, Gary Scheifele. There were great costumes again this year, but there can only be one winner. The Doodlespiel Spirit Award for best costume goes to: "Amplitude Versus Offset" – Team Solvason. Well done!!

This year we held a charity raffle once again with all proceeds going to the CSEG Foundation "In the Rings" Scholarship Fund. With everyone's amazing generosity we raised over \$2000 from the raffle. And once again, Larry Herd has generously matched all proceeds towards the fund, bringing us to a grand total of over \$4000! Thank you Larry!

As Chairman of the 2019 Doodlespiel, I would like to take the opportunity to Thank ALL of our sponsors... we could not do it without you!! THANK YOU!!

Without the continued support of the industry, this great event would not be able to continue. Sponsorship and overwhelming participation of our industry continue to make this one of the largest curling bonspiels in Western Canada. As outgoing Chairman I am confident that next year's Doodlespiel committee will no doubt deliver another excellent event. On behalf of the entire committee, THANK YOU and we look forward to seeing everyone back in Banff for 2020.

LUC GRAVEL

CHAIR, 2019 DOODLESPIEL

CANADIAN SOCIETY OF EXPLORATION GEOPHYSICISTS
Financial Statements
Year Ended December 31, 2019

CANADIAN SOCIETY OF EXPLORATION GEOPHYSICISTS

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Year Ended December 31, 2019

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INDEPENDENT AUDITOR'S REPORT

To the Members of Canadian Society of Exploration Geophysicists

Report on the Financial Statements

Opinion

I have audited the financial statements of Canadian Society of Exploration Geophysicists (the Company), which comprise the statement of financial position as at December 31, 2019, and the statements of revenues and expenditures and changes in net assets and cash flows for the year then ended, and notes to the financial statements, including a summary of significant accounting policies.

In my opinion, the accompanying financial statements present fairly, in all material respects, the financial position of the Company as at December 31, 2019, and the results of its operations and cash flows for the year then ended in accordance with Canadian accounting standards for not-for-profit organizations (ASNPO).

Basis for Opinion

I conducted my audit in accordance with Canadian generally accepted auditing standards. My responsibilities under those standards are further described in the *Auditor's Responsibilities for the Audit of the Financial Statements* section of my report. I am independent of the Company in accordance with ethical requirements that are relevant to my audit of the financial statements in Canada, and I have fulfilled my other ethical responsibilities in accordance with these requirements. I believe that the audit evidence I have obtained is sufficient and appropriate to provide a basis for my opinion.

Responsibilities of Management and Those Charged with Governance for the Financial Statements

Management is responsible for the preparation and fair presentation of the financial statements in accordance with ASNPO, and for such internal control as management determines is necessary to enable the preparation of financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the financial statements, management is responsible for assessing the Company's ability to continue as a going concern, disclosing, as applicable, matters related to going concern and using the going concern basis of accounting unless management either intends to liquidate the Company or to cease operations, or has no realistic alternative but to do so.

Those charged with governance are responsible for overseeing the Company's financial reporting process.

(continues)

Independent Auditor's Report to the Members of Canadian Society of Exploration Geophysicists
(continued)

Auditor's Responsibilities for the Audit of the Financial Statements

My objectives are to obtain reasonable assurance about whether the financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditor's report that includes my opinion. Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with Canadian generally accepted auditing standards will always detect a material misstatement when it exists. Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of these financial statements.

As part of an audit in accordance with Canadian generally accepted auditing standards, I exercise professional judgment and maintain professional skepticism throughout the audit. I also:

- Identify and assess the risks of material misstatement of the financial statements, whether due to fraud or error, design and perform audit procedures responsive to those risks, and obtain audit evidence that is sufficient and appropriate to provide a basis for my opinion. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control.
- Obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Company's internal control.
- Evaluate the appropriateness of accounting policies used and the reasonableness of accounting estimates and related disclosures made by management.
- Conclude on the appropriateness of management's use of the going concern basis of accounting and, based on the audit evidence obtained, whether a material uncertainty exists related to events or conditions that may cast significant doubt on the Company's ability to continue as a going concern. If I conclude that a material uncertainty exists, I am required to draw attention in my auditor's report to the related disclosures in the financial statements or, if such disclosures are inadequate, to modify my opinion. My conclusions are based on the audit evidence obtained up to the date of my auditor's report. However, future events or conditions may cause the Company to cease to continue as a going concern.
- Evaluate the overall presentation, structure and content of the financial statements, including the disclosures, and whether the financial statements represent the underlying transactions and events in a manner that achieves fair presentation.

I communicate with those charged with governance regarding, among other matters, the planned scope and timing of the audit and significant audit findings, including any significant deficiencies in internal control that I identify during my audit.

Calgary, Alberta
April 15, 2020



CHARTERED ACCOUNTANT

CANADIAN SOCIETY OF EXPLORATION GEOPHYSICISTS

Statement of Financial Position

December 31, 2019

	2019	2018
ASSETS		
CURRENT		
Cash	\$ 177,637	\$ 154,941
Accounts receivable	39,161	47,980
Convention development fund	62,276	51,782
Prepaid expenses	20,177	14,769
	<u>299,251</u>	269,472
FURNITURE AND EQUIPMENT (Note 5)	9,702	6,279
RESTRICTED FUNDS	<u>1,071,632</u>	1,071,632
	<u>\$ 1,380,585</u>	\$ 1,347,383
LIABILITIES AND NET ASSETS		
CURRENT		
Accounts payable	\$ 38,437	\$ 35,886
Deferred income	42,162	39,930
	<u>80,599</u>	75,816
NET ASSETS		
Capital assets	9,702	6,279
General fund	218,652	193,656
Restricted fund	1,071,632	1,071,632
	<u>1,299,986</u>	1,271,567
	<u>\$ 1,380,585</u>	\$ 1,347,383

ON BEHALF OF THE BOARD

_____ Director

_____ Director

CANADIAN SOCIETY OF EXPLORATION GEOPHYSICISTS
Statement of Revenues and Expenditures and Changes in Net Assets
Year Ended December 31, 2019

	Total 2019	Total 2018
REVENUES		
Geo convention	\$ 139,908	\$ 131,356
Continuing education	63,908	31,567
Doodletrain	148,327	147,665
Interest and other	23,610	20,662
Luncheon fees	45,552	64,630
Memberships	93,090	74,851
Recorder	14,255	21,429
	<u>528,650</u>	<u>492,160</u>
EXPENDITURES		
Administration	257,801	222,827
Amortization	2,050	1,570
Continuing education	48,090	29,519
Communications	35,667	53,997
Doodletrain	96,792	106,701
Luncheons	36,429	36,241
Member services	23,402	22,235
	<u>500,231</u>	<u>473,090</u>
NET EXCESS OF REVENUES OVER EXPENDITURES	28,419	19,070
NET ASSETS - BEGINNING OF YEAR	1,271,567	1,252,497
NET ASSETS - END OF YEAR	\$ 1,299,986	\$ 1,271,567

CANADIAN SOCIETY OF EXPLORATION GEOPHYSICISTS

Statement of Cash Flows

Year Ended December 31, 2019

	2019	2018
OPERATING ACTIVITIES		
Excess of revenues over expenditures	\$ 28,419	\$ 19,070
Item not affecting cash:		
Amortization of furniture and equipment	2,050	1,570
	<u>30,469</u>	<u>20,640</u>
Changes in non-cash working capital	<u>(2,300)</u>	<u>(25,061)</u>
Cash flow from (used by) operating activities	<u>28,169</u>	<u>(4,421)</u>
INVESTING ACTIVITY		
Purchase of furniture and equipment	<u>(5,473)</u>	-
Cash flow from (used by) investing activity	<u>(5,473)</u>	-
INCREASE (DECREASE) IN CASH FLOW	22,696	(4,421)
Cash - beginning of year	<u>1,226,573</u>	<u>1,230,994</u>
CASH - END OF YEAR	\$ 1,249,269	\$ 1,226,573
CASH CONSISTS OF:		
Cash	\$ 177,637	\$ 154,941
Restricted assets	<u>1,071,632</u>	<u>1,071,632</u>
	<u>\$ 1,249,269</u>	<u>\$ 1,226,573</u>

CANADIAN SOCIETY OF EXPLORATION GEOPHYSICISTS

Notes to Financial Statements

Year Ended December 31, 2019

1. BASIS OF PRESENTATION

The financial statements were prepared in accordance with Canadian accounting standards for not-for-profit organizations (GAAP).

2. NATURE AND OBJECT OF THE SOCIETY

The Canadian Society of Exploration Geophysicists (the Society) was established as a Society under the Societies Act of Alberta on December 20, 1949 as a not-for-profit organization.

The object of the Society is to promote the science of geophysics, especially as it applies to exploration, and to promote fellowship and cooperation among the persons interested in geophysical problems.

3. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

Revenue recognition

The Society follows the deferral method of accounting for contributions. Restricted contributions are recognized as revenue of the appropriate fund in the year in which the related expenses are incurred. Unrestricted contributions are recognized as revenue of the appropriate fund when received or receivable if the amount can be reasonably estimated and collection is reasonably assured.

Project revenues and expenses are recognized in the Project Fund during the period when the revenue is received and expenses are incurred.

Convention revenues and expenses are recognized in the Convention Fund during the period when the convention is held.

Capital assets

Capital assets are recorded in the Operating Fund at cost. Amortization is provided on straight-line basis over three to eight years, being the estimated useful life of the assets.

Leasehold improvements are amortized on a straight-line basis over the term of the lease, which is five years.

Contributed services

The operations of Society are dependant on the services of many volunteers. Although these volunteered services form an integral part of the ongoing operations, the value of contributed services has not been recognized in these financial statements.

(continues)

CANADIAN SOCIETY OF EXPLORATION GEOPHYSICISTS

Notes to Financial Statements

Year Ended December 31, 2019

3. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES (continued)

Social committees

Various social committees within the society have monies available to them in order to administer the specific activities for which the committees were established.

The financial activities of these committees have not been reported upon in these financial statements..

Income taxes

The Society is a not-for-profit organization and is exempt from income taxes pursuant to Section 149 of the Income Tax Act.

Measurement uncertainty

The preparation of financial statements in conformity with Canadian generally accepted accounting principles requires management to make estimates and assumptions that affect the reported amount of assets and liabilities, disclosure of contingent assets and liabilities at the date of the financial statements and the reported amounts of revenues and expenses during the period. Actual results could differ from these estimates.

4. INTERNALLY RESTRICTED FUND BALANCES AND INTERFUND TRANSFERS

The internally restricted funds have been allocated as follows:

	<u>2019</u>	<u>2018</u>
Operating fund - reserve	\$ 940,000	\$ 940,000
Convention fund	131,632	131,632
	<u>\$ 1,071,632</u>	<u>\$ 1,071,632</u>

The Society's Executive Committee has internally restricted funds amounting to \$ 1,071,632 (2018- \$ 1,071,632). These amounts are not available for other purposes without approval of the Executive Committee. The internally restricted fund provides for sustainable administration, recorder and membership costs.

5. FURNITURE AND EQUIPMENT

	Cost	Accumulated amortization	2019 Net book value	2018 Net book value
Furniture and fixtures	\$ 31,328	\$ 21,626	\$ 9,702	\$ 6,279

CANADIAN SOCIETY OF EXPLORATION GEOPHYSICISTS

Notes to Financial Statements

Year Ended December 31, 2019

6. FINANCIAL INSTRUMENTS

The Society's financial instruments that are included in the statement of financial position are comprised of cash, accounts receivable, accounts payable and deferred revenue, all of which approximate fair value due to the immediate or short term maturity of these instruments. In addition, included in restricted assets are \$ 821,510 of guaranteed investment certificates with maturities ranging from July 2020 to July 2021 bearing interest at rates between 2.05 % to 2.85% . The Society has some exposure to changes in interest rates on these investments over this period. It is the opinion of management that the Society is not exposed to any material credit, or liquidity risk on any of the other financial instruments.

7. COMMITMENTS

The Society is committed to a lease of its premises commencing in October 31 2018 that expires March 31, 2022.. Annual base rental commitments are \$ 12,968. Current monthly payments are \$ 1,081.

8. LITIGATION

During the year a statement of claim was filed against the Society in the amount of \$ 120,000 for the wrongful dismissal of one of its employees. The Board of Directors are of the opinion that the claim is without merit and will defend this action vigorously.

PAST PRESIDENTS

1950	John O. Galloway	1973	Wes N. Rabey	1996	Dan Hampson
1951	Charlie M. Moore, Jr.	1974	John H. Harding	1997	Robert R. Stewart
1952	L. I. Brockway / Norman J. Christie	1975	Jack R. Pullen	1998	Nancy Shaw
1953	Bill (W.R.) Ogilvie	1976	William D. Evans	1999	Doug Pruden
1954	R.J. Copeland	1977	R. J. McCaffrey	2000	Perry Kotkas
1955	R.D. Holland	1978	Earle F. Mahaffy	2001	Randy Pelletier
1956	R.B. Ross	1979	Lloyd R. Hatlelid	2002	Doug Uffen
1957	George J. Blundun	1980	P.D. (Denny) O'Brien	2003	W. (Bill) Goodway
1958	Francis A. Hale	1981	A. Easton Wren	2004	Peter Cary
1959	H.J. Kidder	1982	Duncan A. Carswell	2005	James Stenhouse
1960	Milton Dobrin	1983	Valerie A. A. Nielson	2006	Oliver Kuhn
1961	Peter I. (Ibrahim) Bediz	1984	Jim R. Hume	2007	Doug Bogstie
1962	Peter J. Savage	1985	Larry C. Fichtner	2008	Francois Aubin
1963	Robert Harold Carlyle	1986	John D. Boyd	2009	Jon Downton
1964	Carl J. Chapman	1987	Robert L. Comer	2010	John Townsley
1965	Robert A. Boulware	1988	Ralph M. Lundberg	2011	Larry Herd
1966	John Hodgkinson	1989	Allan J. Ferworn	2012	Rob Kendall
1967	Earl A. Fulmer	1990	Neil E. Rutherford	2013	Ron Larson
1968	George E. Longphee	1991	Brian H. Russell	2014	Robert Vestrum
1969	W. (Bill) Blair	1992	Robert James (Jim) Brown	2015	Rachel Newrick
1970	John L. R. Baxendale	1993	W. (Bill) E. Davit	2016	Marian Hanna
1971	Roy O. Lindseth	1994	Gary G. Taylor	2017	John Duhault
1972	J. Ken Morrison	1995	Barry T. Korchinski	2018	Ron Newman

CSEG MEDAL

The CSEG Medal was introduced in 1988 and is the highest award that the Society bestows. “*The CSEG Medal is given in recognition of the contribution to Exploration Geophysics by a member of the profession in Canada. It can be gained through a long-standing significant contribution to the application, teaching or business development of Exploration Geophysics. It can also be gained through a single achievement in any of these areas, which has been recognized over a period of years as a significant development. The award will be made to a member of the geophysical profession who is recognized for his integrity as well as his accomplishments.*”

Ted Rozsa	John Boyd (1994)	Warner Loven (2009)
Roy Lindseth	Garry Kelman	Mauricio Sacchi (2012)
Greg Davidson (1990)	Brian Russell (1999)	Tad Ulrych (2013)
Dave Robson (1991)	Don Lawton (2000)	Andreas Cordsen (2014)
Robert R. Stewart (1992)	Dan Hampson (2004)	John Pierce (2015)
Hugh Stanfield	Bill Goodway (2007)	Larry Lines (2016)
Donald Chamberlain	George Betram (2008)	

HONOURARY MEMBERSHIP AWARDS

Honourary Membership is normally given only to a few members who have gained recognition for distinguished contributions in the field of geophysics or in service to the CSEG, either nationally or internationally.

George D. Garland	Charlotte Keen	Mike Galbraith (2005)
J. Tuzo Wilson	Peter Gretener	John Bancroft (2005)
Norman Christie	Gordon West	Perry Kotkas (2006)
Milton B. Dobrin	Ron Clowes (1995)	Peter Cary (2008)
A.E. Pallister	Douglas W. Oldenberg (1996)	Peter Duncan (2009)
Roy O. Lindseth	Roy Hyndman (1996)	Gary Margrave (2011)
David W. Strangway	Larry Lines (1998)	Don Lawton (2013)
Peter J. Savage	Zoltan Hajnal (1999)	Don Gendzwill (2013)
R.H. Carylyle	Brian Russell (2000)	Satinder Chopra (2014)
Ernest R. Kanasewich	Robert Comer (2002)	Penny Colton (2015)
Robert Boulware	Robert Stewart (2003)	Dan Hampson (2015)
A. Easton Wren (1987)	John Boyd (2003)	Laurie Weston Bellman (2016)
Sudhir Jain	Davey Einarsson (2004)	Neil Rutherford (2018)

MERITORIOUS SERVICE AWARDS

The Meritorious Service Award is given to members of the CSEG who have made a prominent and/or lengthy contribution to the Society and/or the industry as a whole. Current practice is to present a maximum of two of these awards each year.

Harry McGrew	Bill Blair	Lloyd Hatlelid	John Pierce
Cecil A. Collins	Harold Acheson	Larry Fichtner	Gregg Milne
Milton B. Dobrin	Bud St. Clair	Don Simpson	Ernest Kanasewich
Alexander H. McKee	William D. Evans	John Boyd (1988)	Michael Enachescu (1998)
Peter J. Savage	Earle F. Mahaffy	Arthur Baptie	Elaine Honsberger (1999)
Percy Smith	Jack E. Setters	Bob Comer	Dave Siegfried (1999)
Roy O. Lindseth	Peter Bediz (1983)	Dan Hampson (1991)	Doug Uffen (1999)
John Hodgkinson	William C. Stroup	Nancy Shaw	Penny Colton (2000)
Jack W. Bowden	Ernie K. Shaw (1984)	Ralph Lundberg (1992)	Norm Cooper (2000)
Hal W. Godwin	William Davitt (1984)	Murray Olson	Barry Korchinski
J. Kenneth Morrison	Ray Prudholme	George Kostashuk	George Fairs (2001)
Westley N. Rabey	George Blundun	Robert Grigg	Perry Kotkas (2002)
Easton Wren (1977)	Valerie A.A. Neilson	Neil Rutherford	Oliver Kuhn (2003)
Mary C. Colberg	Duncan A. Carswell	Ken Duckworth (1994)	Satinder Chopra (2005)
A. Vern Street	P. Dennis O'Brien	Melvin E. Best (1995)	Bill Nickerson (2005)
Alan J. Ferworn	Judi McDonald (1987)	Brian Russell (1995)	Helen Isaac (2007)
Jack R. Pullen	Dale Kary	Don C. Lawton (1996)	Mauricio Sacchi (2007)
Sudhir Jain	D.K. Bruce Fenwick	James Brown (1997)	Doug Schmitt (2008)

Larry Mewhort (2008)
Tooney Fink (2009)
John Logel (2009)
J.M. Annette Milbradt (2010)
Laurie Ross (2010)
Doug Bogstie (2011)

Lee Hunt (2012)
Mike Doyle (2013)
Jocelyn Frankow (2014)
Joanne Poloway (2014)
Mo Al-Ibrahim (2015)
Nana Eliuk (2015)

Larry Herd (2015)
Stephen Kotkas (2016)
Trent Olsen (2016)
Nicole Wilson (2017)
Mike Hall (2017)
Susan Thomson (2018)

Jennifer Welsh (2018)
Jeff Gautreau (2019)
Marissa Whittaker (2019)

TECHNICAL ACHIEVEMENT

Daniel Trad (2011)
Shawn Maxwell (2013)
Douglas Schmitt (2014)
Richard Bale (2015)
Stewart Trickett (2016)
Andrea Crook (2019)

SPECIAL COMMENDATION

Penny Colton (2010)
Bill Goodway (2010)
Larry Lines (2011)
Tom Sneddon (2011)
Rob McGrory (2012)
Rick Green (2013)
Paul MacKay (2014)
Kurt Wikel (2015)

Steve Lynch (2015)
Sigma Exploration (2016)
Matt Hall (2017)
Evan Bianco (2017)
Chevron Canada Resources (2018)
Canadian Natural Resources Ltd (2019)
Ruth Peach (2019)

SYMPOSIUM HONOREES

Brian Russell / Dan Hampson (2012)
Bill Goodway (2013)
John Boyd (2014)
David Gray (2015)
Bill Nickerson (2016)
Satinder Chopra (2017)
Mauricio Sacchi (2018)
Dr. Roy O. Lindseth (2019)

VOLUNTEER(S) OF THE YEAR

Juan Joffre
John Fernando
Lona Gregory-Brown

2019 CSEG Corporate Members

