Award of ASEG Gold Medal to Brian Roy Spies

Canberra, October 2020

CITATION

The ASEG Gold Medal is awarded from time to time for exceptional and highly distinguished contributions to the science and practice of geophysics by a Member, resulting in wide recognition within the geoscientific community. The ASEG President has announced that a special award of the ASEG Gold Medal has been made in 2020 in recognition of Dr Brian Spies. Sadly this award is made posthumously as Brian passed away in Sydney on the 8th February 2020, after a courageous two-year battle with cancer.

This award specifically recognizes Brian's exceptional and distinguished contributions to the profession, both in Australia and internationally, as a most eminent and visionary research exploration geophysicist, an accomplished national and international science leader, inspiring geoscience innovator, inventor and research collaborator, science mentor and advocate, and a great science educator.

Brian gained a BSc from the University of New South Wales in 1971, double-majoring in geology and physics, and went on to earn a Post-Graduate Diploma in Applied Geophysics from UNSW in 1972, supported by a Graduate Cadetship from the Australian Bureau of Mineral Resources (BMR), where he undertook applied research throughout the 1970s with a broad range of geophysical techniques in the Australian outback.

In particular, during these early years with BMR, Brian enthusiastically led the field trials of the relatively unknown transient electromagnetic (TEM) method over the Elura and the Woodlawn orebodies and followed with new interpretative scale model studies. This BMR research under Brian's leadership helped to further establish TEM as a practical exploration method for metallic ore deposits in Australia's conductive terrains. Brian was personally responsible for a number of developments in the TEM technique in Australia, which was transferred to the minerals exploration industry in a campaign of field demonstrations, presentations and publications. TEM is now an indispensable geophysical technique in Australian mineral exploration.

In 1976, Brian received the first SEG Foundation scholarship given in the southern hemisphere. This scholarship, and an Australian Public Service Board award, allowed him to commence his PhD studies at Macquarie University, under the supervision of the late Prof. Keeva Vozoff. Brian completed his doctoral studies in 1980 and was awarded a PhD for an outstanding Thesis "The application of the transient electromagnetic method in Australian conditions: field examples and model studies" which still has relevance to today's exploration geophysicists.

Brian's international geoscience and leadership roles began in the USA in 1980, when he joined Exploration Data Consultants in Denver as Senior Geophysicist and in 1981, he moved to California to join Electromagnetic Surveys Inc. as Vice President and Director.

In 1984 he joined the ARCO Oil and Gas Research Center in Texas as Senior Principle Research Geophysicist, where he developed a new non-destructive testing technology for oil pipelines. The method was commercialised by a large multinational engineering organisation and is now used worldwide. In 1989 Brian was awarded ARCO's highest technical award, the Outstanding Technical Achievement Award in Research, for development of the Transient Electromagnetic Probing (TEMP) corrosion detection technique.

In 1990 Brian joined Schlumberger-Doll Research where he led the Deep Electromagnetics research program, involving theoretical and experimental investigations of new borehole electromagnetic and electrical techniques. Fundamental to these studies was the integration of geophysical, geological and engineering data, and large-scale computer modelling of complex, realistic geological sequences. He led the team that developed a new generation of deep-imaging electromagnetic tools for the oil well environment, based on a three-component digital cross-well system capable of generating accurate 2-D images of reservoirs between boreholes.

During the period of Brian's commercial research in North America, he authored eleven Patents covering some highly innovative applications of transient electromagnetics. Brian also took on university Adjunct Professor teaching and post-grad student supervision during his time in the US.

In 1996, Brian returned to Australia to take over the role of Director of the Cooperative Research Centre for Australian Mineral Exploration Technologies (CRC AMET), appointed as part of the Corporate Executive of CSIRO Exploration and Mining. CRC AMET was a collaborative joint venture of government, academic and industry partners, developing a new generation of geophysical exploration technologies for Australian conditions of deep and varied weathered cover. The research programs involved all aspects of airborne and ground electromagnetic exploration, instrumentation, processing, modelling and geological interpretation.

Brian successfully integrated the research programs and participants to achieve the CRC objectives, particularly commercialisation and knowledge transfer. Brian's leadership of the research partnerships delivered a new generation of broadband high-resolution airborne electromagnetic exploration techniques optimised for Australian conditions.

Following the successful delivery of the outcomes from the CRC AMET, Brian was appointed in 2000 as the Director Physics Division of the Australian Nuclear Science Technology Organisation (ANSTO). He later took on the role of Chief Research Scientist, CSIRO Exploration and Mining, with major contributions to Australia's strategy and policy for the "Mineral Exploration Action Agenda". Brian was co-leader for targeted R&D funding for mineral exploration and lead writer for the education and training programs, including increased support for science and technology in secondary and tertiary education.

Brian's leadership positions in ANSTO and then CSIRO Exploration & Mining, provided the platforms for his passion for advocacy of great science influencing good government policy outcomes.

A great example of Brian's contribution to leading strong science evidence, informing national science debate and influencing good policy outcomes was his co-leadership of the Project Review Team on "Review of Salinity Mapping Methods in the Australian Context", which evaluated a range of methods, including airborne and ground EM systems, for mapping the extent and severity of dryland salinity.

In 2004 Brian was appointed Science Manager and later Principal Scientist, Sustainability and Climate Change, in the Sydney Catchment Authority. It was during his time in SCA that Brian began working in climate science.

In Brian's later career he was highly respected as a science advocate for the broader integration of science-technology-engineering and mathematics in modern research, education, and formulation of Government policy. His co-authorship in 2012 of a major report on "Sustainable Water Management – Securing Australia's Future in a Green Economy" produced a visionary roadmap for Australia's future water management.

During this period Brian also made huge contributions through the Australian Academy of Technology and Engineering (ATSE) and was elected as Fellow of ATSE (FTSE) in 1998. In 2003 he was awarded the Australian Centenary Medal for his contributions to Geoscience. Brian also made substantial science contributions in environmental and climate science through the Royal Society of New South Wales and was elected as Fellow (FRSN) in 2016.

Above all else, Brian's most important legacy to geoscience and to successful exploration and discovery has been through his forty eminent and well-cited scholarly papers in refereed geoscience journals, many book chapters and over thirty other papers and articles in geoscience publications and conference proceedings. In addition, Brian's inspiring initiatives and leadership in establishing over 30 national and international workshops at the fore-front of research and the application in geophysical exploration technology, environmental geophysics, reservoir characterisation and trends in science management, has produced ground-breaking conference proceedings and workshop publications that have formed a core part of the industry's reference works on electrical and electromagnetic exploration geophysics.

Throughout his professional life, Brian remained a strong supporter of the ASEG, which he joined as a student in 1970. His active participation in the Society culminated in his distinguished service as ASEG President in 1999-2000, using his position at that time as Director of CRC AMET and his international expert standing in TEM to promote Australia's innovations and breakthroughs in the science of mineral exploration geophysics.

Brian joined the Society of Exploration Geophysicists (SEG) in 1972 and was acknowledged for his outstanding service in many capacities, including a term as 1st Vice President (2003-2004) and Secretary-Treasurer (1996-1997) with the award of SEG Life Membership in 1996.

Brian's geoscience career and his innovations and contributions to exploration geophysics, particularly as one of the pioneers of Transient Electromagnetics (TEM) as well as his contributions to other areas of science, have been brilliant and transformative. He remained an active geoscience collaborator and advocate for the importance of science in our modern society, with significant late-career contributions in the field of environmental and climate science, until a few months before he died.

Brian was greatly admired for his achievements both in Australia and internationally by his peers and colleagues. He leaves an extraordinary legacy of achievement beyond the science of exploration geophysics. His Australian and international science partners, friends and colleagues all speak of him with the highest praise and with reverence for his achievements and contributions and his inclusiveness and openness sharing new ideas and knowledge.

It is especially pleasing to be able to make an award of the Gold Medal in the ASEG's 50th year to one of the Society's committed members, and a distinguished contributor throughout his life to the science and practice of geophysics.