

President's Letter



It seems like yesterday that I sat down to pen my first message to the members in the Spring Newsletter. Now here it is at the end of the year and my term as President.

I have a better appreciation now of how difficult it is to accomplish the goals I laid out at the beginning of my term. A lot of what occupies our time on the Board comes from the unexpected and actions by others. This has led me back to a question posed by **Rod Sidle** on becoming a new Board member in January 2011: does SPEE have a Mission and Vision Statement to guide the Society? This question was taken to the Council of Past Presidents who are responsible for reviewing the long range plan for the Society, and following their review in June, was placed back in my responsibility bucket. The need for this is perhaps greater now than ever as the Society has a European chapter and much of what we do now has a global perspective. I foresee following this up in my role as Past President in 2012.

I am pleased to report that **Mike White** (Denver), **Curt Taylor** (Houston), and **Dee Patterson** (Dallas) were elected as the new members of the Board of Directors. They will be officially instated at the next meeting of the Board scheduled for January 16, 2012 in Denver. Thanks to all six candidates for agreeing to stand for election and to Past President **Stuart Filler** for managing the process. I also thank **Ed Gibbon**, **Tom Collier**, and **Samantha Meador** for serving on the Board over the past three years. Tom served as Chair of the Evaluation Parameters Survey for several years and Samantha continues to serve as Chair of the Qualifications Committee. Samantha has also been nominated by the Executive Committee to continue to serve on the Executive Committee as Secretary Treasurer. A special thank you to Stuart Filler who leaves the Board after completing his year of Past President. Stuart has provided wise council to the Executive in its decision making process. This year I chose to hold the Annual Meeting of the Board in Denver so as to give the Denver Chapter members a chance to have lunch and dialogue with the Board

members. I believe this is important and healthy for the Society since the Executive and Board have few chances outside of the Annual Meeting to meet with members from our various Chapters. Besides, Denver in January is not unlike Calgary, so I remind the Board members to bring your touques.

Let me share with you what your Society has been involved with since my last message to you in August.

- Circumstances caused a need to create a form for reinstatement of members whose membership had lapsed.
- To speed up the new member approval process, the Executive has moved to electronic sign-off rather than circulating the printed application by mail, through all four members.
- The Board approved (with comments) the Guidelines for Application of the PRMS.
- The Executive received a report from the Reserves Definition Committee, acting on a request from the President, on SPEE COGEH PRMS Merger. The report, while preliminary, is very informative and presents creative ideas to accommodate both documents while building on the strengths of each. The RDC has been requested to finalize its study and deliver

2011 Officers and Directors

Executive Committee

President Barry R. Ashton (Calgary)
Vice President.....Marshall Watson (Midland)
Secretary-TreasurerRichard Krenek (Dallas)
Past-President.....Stuart L. Filler (Houston)

Directors

Allen Barron (Houston) Samantha Meador (Europe)
Thomas Collier (Midland) Rod Sidle (Houston)
Edward Gibbon (Houston) Ken Sigl (Oklahoma City)
Gary Gonzenbach (Central Texas) Graeme Simpson (Europe)
Paul McDonald (Dallas)

Chair of the Council of Past-PresidentsFrank Molyneaux

Bylaws Committees

Qualifications Samantha Meador
Committee: Steve Blair, Jon Crawford, Tim Gilblom, Phil Kandel and Dee Patterson
Nominating Stuart L. Filler
Grievance L. D. (Buddy) Sipes

Individual Appointments

Evaluation Parameters Survey Richard F. Krenek II
Committee: Mike Garcia, Cary McGregor, and Joel Turnbull
Fair Market Value.....D. Russell Long
InternetJ. Brian Walter
Membership.....Paul McDonald
Newsletter Publisher..... Richard J. Miller
Communications.....George Schaefer
Production Tax Summary and University InterfaceMarshall Watson
Recommended Evaluation Practices.....Daniel R. Olds
Annual Meeting Advance PlanningBarry Ashton
Professional Registration Marcus Snyder
2011 Software Symposium..... Brian Walter and John Wright
Evaluation of Resource Plays Russell K. Hall
Reserve DefinitionsS. Tim Smith
Journal of the Society of Petroleum Evaluation Engineers ... Richard J. Miller
SPEE/SPE Reprint Richard J. Miller

SPEE Delegates

SPE OGRC Oil and Gas Reserves Committee Observer Ron Harrell
JCRET Joint Committee on
Reserves Evaluator Training..... Rod Sidle, Dan Olds, John Ritter
COGEH Canadian Oil and Gas Evaluation HandbookBarry Ashton
UNECE Expert Group on Resource Classification S. Tim Smith
Washington Reserves Conference 2011 S. Tim Smith

Chapter Officers - 2011

Calgary

Chairman – Harry J. Helwerda
Vice Chairman – Katherine Crerar
Secretary – Boyd Russell
Treasurer – Gary Metcalfe
Membership – David Hornung

California

Chairman - Tom Walker
Vice Chairman – Brad DeWitt
Secretary-Treasurer - Barry Evans
Membership - John Davis

Central Texas

Chairman – Cary McGregor
Vice Chairman – James Bostic
Secretary - Charles Price
Treasurer – Gary Gonzenbach
Membership – Paul Clevenger

Dallas

Chairman - Gary Swindell
Vice Chairman – Jay Thrash, Jr.
Secretary/Treasurer - Jack Harper
Membership - Dean Eiland
SPEE Liaison - Paul McDonald

Denver

Chairman – Mike White
Vice Chairman - Letha Lencioni
Secretary-Treasurer – John Benton
Membership - Fred LeGrand

Europe

Chairman – Paul Taylor
Vice Chairman – Simon McDonald
Secretary-Treasurer – Andrew Evans
Membership – Jes Christensen

Houston

Chairman – Mitch Reece
Vice Chairman – Jerry Blevins
Secretary-Treasurer – Jennifer Fitzgerald
Program Chairman – Anna Hardesty
Membership - All Houston Officers

Midland

Chairman – Russell Hall
Vice Chairman – Todd Yocham
Secretary-Treasurer – Karl Gulick
Membership Chairman – Joe Neal
Director - Charles Gleason
Director - Tom Collier

Oklahoma City

Chairman – Ken Sigl
Vice President - Don Jacks
Secretary-Treasurer - Fletcher Lewis
Membership - Bruce Heath

Tulsa

Chairman - Daryl Duvall
Vice Chairman - Chris Jacobsen
Sec/Treas. - Jerry Russell
Membership - Phil Schenewerk

Wyoming Chapter Coordinator Scott Stinson



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a final report on or before April 1, 2012. This will be a continuing investigative process both within SPEE and eventually with its PRMS partners.

- The success of Monograph 3 has spurred discussion about the creation of additional Monographs. **Stuart Filler** has agreed to Chair a committee that will investigate the creation of a Monograph 4 – Estimating Developed Reserves in Unconventional Reservoirs.
- **Richard Miller** has continued to pursue the publication of relevant technical articles in the Journal of SPEE. He hopes to issue a prototype edition in January 2012 to gauge the interest of members.
- SPEE is now formally recognized within NI 51-101 as a 'professional organization.' I made application to the ASC for this at the request of **David Elliott**.
- Complimentary copies of Monograph 3 were sent to Jim Murphy and Ron Winfrey at the SEC and to David Elliott and Tony Barry at the ASC.

- In my last article I was remiss in not saying that I attended the SPE/AAPG/SPEE Reserves and Resources Estimation and Reporting Symposium. I was invited as President of SPEE to address the Symposium at its closing, along with Alain Labastie, SPE President and Paul Weimer, AAPG President. I thought the symposium had excellent topics and speakers, and provided a great forum for discussion. I would encourage you to attend the next Symposium.

It has been a privilege and an honour to serve the Society these past six years on its Board of Directors and Executive Committee. Much has been accomplished and I foresee the Society playing a greater role on the international stage of the oil and gas industry. Thank you to Stuart, Marshall, Rick, and B.K. for their support this past year, and thank you to all who have voluntarily served on behalf of SPEE. I look forward to seeing you at Society events in 2012.

*Barry R. Ashton, P. Eng.
SPEE President*



SPEE Annual Meetings

June 9-12, 2012 Colorado Springs, CO

Cheyenne Mountain Resort

June 8-11, 2013 Coeur d'Alene, Idaho

Coeur d'Alene Golf & Spa Resort

June 7 - 9, 2014 Stowe, Vermont

Stowe Mountain Lodge

Contact Barry Ashton to provide suggestions
on locations and venues for future meetings.

Chapter News

Calgary

Since the May 2011 newsletter, SPEE (Calgary) held two business meetings on May 17 and October 18, one Special Business meeting on June 21, an Annual General Meeting on September 20, and one Technical meeting on November 15.

The November Technical luncheon featured a presentation by Ms. Marian C. Hanna, P.Geoph., Director, ION Geophysical/GX Technology Canada Ltd. and 2011 Chairman of the Chief Geophysical Forum. Marian's presentation was entitled *Geophysical Applications – Using Geophysics for Reserves and Resources Classification and Assessment*. The Chief Geophysical Forum (CGF) was founded in Calgary in 1999 as a Standing Committee of the Canadian Society of Exploration Geophysicists (CSEG) and currently has 71 members. The CGF is presently finalizing a recommendation to the SPEE (Calgary) for an update to the Canadian Oil and Gas Evaluation Handbook (COGEH). Their report would include specific Canadian examples and inclusion of some developing, reliable technologies in geophysics and their applications and input in reserves and resources determinations. The CGF recommendation report is anticipated to be delivered to the SPEE (Calgary) early in 2012.

During the second, third and fourth quarters of 2011, a number of new initiatives and changes have been undertaken by the Calgary Chapter. These are itemized as follows:

The SPEE (Calgary) and SPEE RDC members John Etherington and David Elliott have been working to identify the significant differences between PRMS and COGEH. A Special meeting of the SPEE (Calgary) was held on June 21 to inform members of the PRMS/COGEH guidance merger project and to receive endorsement for this merger from the SPEE (Calgary) membership. Unanimous approval was obtained from the members present at this meeting for a motion endorsing Phase 1 of the SPEE RDC study project to align PRMS and COGEH.

The Standing Committee, chaired by Robin Bertram, distributed the final draft of the Bitumen section of COGEH Volume 3 to the SPEE (Calgary) membership for comment. The comment period ended September 30 with a few comments having been received. The Standing Committee is reviewing the comments and incorporating those into the final document. The Bitumen section will be sent to the technical editor/writer shortly. The Bitumen section of COGEH Volume 3 should be available for distribution and purchase during Q1 2012.

As mentioned in my last report, a Resources sub-committee has been formed with members of the SPEE (Calgary) and industry experts. This Committee has been

charged with preparing the Prospective and Contingent Resources Guidance section of COGEH. To date, the Committee has met four times and agreed to discuss one major topic each month. The topic for the December 13th meeting will be Petroleum Initially-In-Place. The sub-committee's new chairman is Mr. John Chipperfield, Senior Vice-President, Sproule Associates Limited, whose SPEE membership application is in progress.

David Elliott, SPEE member and Chief Petroleum Advisor to the Alberta Securities Commission, was instrumental in having the SPEE recognized as a "professional organization" under National Instrument 51-101 Standards for Disclosure of Oil and Gas Activities (NI 51-101).

At the October meeting, Barry Ashton, SPEE President, awarded Mr. J. Glenn Robinson with an "Honorary Life Membership to SPEE" in recognition of Glenn's contributions to the SPEE and SPEE (Calgary) as a charter member. Amongst his many accomplishments, Glenn was responsible for the formation of the SPEE (Calgary) committee which eventually led to the June 2002 publication of Volume 1 of COGEH.

Meetings - 3rd Tuesday of each month except June, July and August. Membership - 45

California

The California Chapter held a conference call meeting on December 14. The primary topic of discussion was Ethics and the SPEE requirement for ethics training to maintain membership. Several Members contributed information to the discussion which included a review of the methods whereby SPEE could make ethics training available to Members outside the Annual Meeting. The Chapter is planning to explore alternative methods of holding "meetings" using Webex and similar vehicles. A total of 12 Chapter Members attended at the meeting. The next meeting will be at the SPE Regional Meeting in Bakersfield.

Membership - 27

Central Texas

Central Texas met once during 2011 for a talk by Russell Hall on *Evaluating Resource Plays with Practical Statistics*.

For 2012 Jim Bostic will be the acting Chairman. Plans have been outlined for continuation of the resource play lunch meetings.

Membership - 31

Dallas

The Dallas chapter met in September to hear Dr. Paul Clarke of Pioneer Natural Resources talk on integrating Eagle Ford outcrop data with reservoir quality and actual well performance, based on their study of cores, surface data and seismic. About 36 members and guests were in attendance.

In November, the chapter held a joint meeting with SPE on professional ethics. Jennifer L. Keefe from Patton Boggs, LLP in Dallas spoke on *From BP to Paterno – Modern Ethical Scandals*. Together with the SPE, attendance was over 100. Upcoming meetings include Art Berman on shale plays, Marshall Watson, and Dr. John Lee on reserve estimates in unconventional gas reservoirs.

Meetings – Bimonthly September through May on 3rd Thursday of the month unless otherwise stated. Membership – 55

Denver

On September 15, the Denver Chapter in coordination with the Qualifications Committee held a first-of-its-kind new-member workshop for qualified prospective new members. The workshop was led by Phil Kandel with six qualified



Denver-Phil Kandel, Qualifications Committee

prospective new members in attendance. One of the six has already submitted a completed application. Subsequently, an additional eight prospective members have expressed interest in joining SPEE. Another workshop was conducted in December.

On September 20, the Denver Chapter held an extra luncheon meeting with 23 in attendance including 16 members and 7 guests. The guest speaker was Mr. Michael Dolan, President of the Dolan Integration Group. His presentation was entitled *Stable Carbon Isotopes as Natural Tracers: Using Established Technologies in Unconventional Ways*. Mr. Dolan reviewed the basics of stable isotope science and how understanding variations of atomic concen-



Denver - Michael Dolan, President of Dolan Integration Group

trations can help us understand the accumulation of oil and gas in the subsurface. He further demonstrated how stable isotopes can act as natural tracers or “tags” in the subsurface. Examples of stable carbon isotope distributions were provided demonstrating examples of reservoir compartmentalization, competency of seal, migration of hydrocarbons, and differentiated production of stacked pay.

On October 12, the Denver Chapter held its fourth quarter meeting of 2011 with 25 in attendance including 22 members and 3 guests. As a service to chapter members, chapter officers Mike White and John Benton led scenario discussion on ethics topics. The presentation was designed to meet the requirements of various state licensing boards as well as the SPEE annual renewal requirement for one hour of ethics study.

Meetings – 2nd Wednesday of first month of each quarter – Denver Athletic Club – The New Petroleum Club. Membership-65

Europe

The third Annual General Meeting (“AGM”) of the Europe Chapter was held December 6 with a total of 13 members in attendance.

As of December 2011 the Europe Chapter has 17 members (16 full and 1 associate) giving a net increase of 3 over the year. There is also another potential full member with an application for membership submitted and approximately 8 persons who have shown as interest in becoming an SPEE member attending several of the Chapter meetings during the year. The Membership Chairman is now screening applications prior to submission to head office which is helping to speed up the approval process.

Four meetings were held in 2011 and a similar number of meetings are planned for 2012. The Europe Section’s first meeting outside of London was held in October in The Hague, Netherlands. The plan is to again hold one meeting outside of London in 2012 with Aberdeen or Paris likely candidates. A joint meeting with the SPE and The Geological Society on *Unconventional Reserves and Resources* was held on March 3. In general the meetings attract somewhere between 15 and 25 people.

During June, five Europe Section members attended the SPEE Annual Meeting in Jacksonville.

The election of the 2012 SPEE Europe Chapter officers was held during the AGM.

Meetings – Four per year. Membership - 11

Houston

The first meeting after the Houston Chapter's summer break was conducted September 7 with speaker Louis W. Powers, President of Powers Petroleum Consultants. Mr. Powers' topic was *The World Energy Dilemma*. Louis focused on some highlights from his new book titled *The World Energy Dilemma*, particularly the ability of Saudi Aramco to deliver future crude oil supplies and the world's vulnerability to future oil supplies. There were 54 members, guests, and visitors in attendance for the September meeting.

John Allison, Engineering Manager with Legado, was our guest speaker for the October 5 luncheon meeting and gave a talk titled *Developing Reserve Estimates for CO2 EOR Residual Oil Zone Projects*. John discussed gathering data and evaluation techniques for building an estimate of reserves for a grass-roots CO2 ROZ development project. Additionally John presented a case study of the Goldsmith Landreth San Andres Unit in Ector County, Texas. There were 45 members, guests, and visitors in attendance for the October meeting.

On November 2, the Houston Chapter luncheon featured William (Bill) A. Marko, a Managing Director of Jefferies & Company in the Energy Investment Banking Group. Bill presented *Facts about the North American Shale Plays* focusing on current activities in the oil and gas shale plays in North American from both a technical and commercial perspective. Bill also shared his insights on the near term future for the shales. Additionally at the November 2nd meeting, new 2012 officers for the SPEE Houston Chapter were nominated.

There were 58 members, guests, and visitors in attendance for the November 2nd meeting.

The Houston Chapter's final 2011 program calendar ended on November 30, with an ethic's discussion, *Oil Spills, Ethics, and Society: How they intersect and where the responsibilities reside*, presented by Dr. W.C. Rusty Riese, currently an Adjunct Professor at Rice University, the Colorado State University, and the University of New Mexico, where he sits on the Caswell Silver Endowment advisory board. Our normally scheduled December meeting was pushed back to November 30th for scheduling reasons. Rusty's presentation discussed how increasing global demand for energy has forced societies the world over to look for and use ever more diverse and expensive forms of energy to fuel their economies, how oil is a key part of this energy supply, particularly in the arena of transportation fuels, and how all of us who consume energy have an ethical obligation to educate ourselves, and those around us, on the consequences of our demands for energy and for the environment. Finally at the November 30th meeting, the new 2012 officers for the SPEE Houston Chapter were officially voted on and approved.

There were 27 members, guests, and visitors in attendance for the November 30th meeting.

Meetings – 1st Wednesday of each month except June, July and August – Houston Petroleum Club. Membership – 186

Oklahoma City Chapter

The Oklahoma City Chapter SPEE September meeting was held Thursday the 22nd. Our speaker was Shane E. Matson, Geologist with Spyglass Energy Group LLC. Mr. Matson spoke about the *Geological Characterization of the Mississippian Formation in northeast Oklahoma Using Modern Electric Logs*. He discussed the history of this play and described the performance of the wells in various areas. The audience of 75 members and guests included a diverse group of engineers and geologists.

The Oklahoma City Chapter was pleased to award Kylie Bohannen, a Senior Petroleum Engineering student at the University of Oklahoma, a \$1500 scholarship this fall. Although our Chapter operates on a razor-thin margin of profit per meeting attendee, we anticipate being able to award one or two scholarships per year.

Our October meeting was held on the 28th. We were pleased to have Matthew K. Grubb, President and Chief Operating Officer of Sandridge Energy Inc, give a talk entitled *SandRidge Energy – Transformation from Natural Gas to Oil*. Mr. Grubb gave a review of how he and Tom Ward worked to have an Initial Public Stock Offering at SandRidge. Mr. Grubb also discussed how SandRidge has repositioned itself to be in plays more heavily weighted towards oil and NGLs. Attendance was 60 members and guests.

Our last meeting was held December 8th. The Oklahoma City Chapter typically reserves this last meeting of the year to be discussion of ethics. Although the State of Oklahoma does not require mandatory ethics continuing education, our Chapter and the Oklahoma City Community have several engineers that are registered in Texas where the one hour of ethics is required. This year, Don Jacks, Chapter Program Chairman, led the group in a roundtable discussion of realistic ethics issues that evaluation engineers commonly encounter. Meeting attendees were 35 members and guests.

Meetings – Every odd numbered month. Membership - 23

Tulsa

At the third meeting of the Tulsa Chapter of SPEE in 2011, 26 members and guests heard Larry Britt, Consultant to NSI Fracturing and President of Britt Rock Mechanics Laboratory at Tulsa University discuss *Keys to Successful Mutli-fractured Horizontal Wells in Tight and Unconventional Resources*.

The next meeting of the Tulsa Chapter will be on January 25, 2012 when Dr. John Lee will discuss oil and gas production forecasting using the Stretched Exponential Equation and the newer 'Duong Method' together. On January 26, the Tulsa Chapter will participate with the Midcontinent Section of SPE in a seminar conducted by Dr. Lee.

Meetings – 1st Tuesday of each month – Petroleum Club. Membership – 27

THE ETHICS COLUMN

For many years the SPEE has struggled to understand why there is often a significant difference between the Fair Market Value (FMV) of a property or group of properties, derived from cash flow analyses and financial market interest rates, and the value reported from negotiated sales or auctions. Papers have been written and presentations made to examine the discrepancies.



Take for example the case of an evaluation professional, David, who is engaged by a knowledgeable oil and gas independent to determine the FMV of his properties. David does a meticulous study of 20 properties including one waterflood and one CO2 project which has not yet responded. SPEE recommended evaluation practices are adhered to and median discount rates from the Annual SPEE Survey were used. When presented with the results, Spencer, the independent, is very disappointed. He was expecting a much higher value based on sales that had been reported in various industry publications per barrel of oil equivalent.

At the outset of the engagement David did not inform David of the planned use of the evaluation nor was there any discussion between Spencer and David during the study. Spencer now pressures David to raise his FMV.

WHAT DO YOU THINK?

Should the intended use of David's report been discussed at the time of the engagement? Would that have made a difference?

How can David now respond?

What subsequent action might David undertake?

Is there any credibility to values reported in trade journals?

Readers are encouraged to provide written comments to the SPEE Office – Attention: Editor

Buddy Sipes

The Journal of SPEE

The Journal of the Society of Petroleum Evaluation Engineers was published by SPEE from 1968 through 1974. The last issue, Volume IV, was published in 1974 and included a collection of papers presented at SPEE Annual Meetings and from other sources from 1971 through 1973. Since that time SPEE has published monographs and other reports and studies but has not had a regular venue for publication of papers and articles of interest written by SPEE Members. Those efforts have had to go to an SPE journal or other venue for publication.

In 2007 the SPEE Board of Directors authorized a committee to restore the Journal of SPEE as a source of information for Members and interested persons. The concept that was developed for the JSPEE would include peer-reviewed technical papers, papers and articles from SPE and other sources reviewed by SPEE Members, and other information that readers of the Journal might find useful and which can be applied in day-to-day work. The original Journal of SPEE contained papers that had practical application and the new JSPEE is intended to follow that prescription. In that vein, the first issue of the new Journal will be Volume V, Issue 1.

We hope to launch the new JSPEE in early January, 2012. If all goes as planned, this will be an interactive Word version accompanied by a PDF version that will be distributed by e-mail. Several authors have written papers for this issue. We will also have reviews of one or more recent SPE papers and sections with abstracts of publications from government agencies, consulting firms and academic sources. The Journal will also have a section devoted to Regulatory and Legal Issues.

This first issue is being offered to SPEE Members as a proto-type of the proposed new Journal. Our purpose is to find out if the model is acceptable and gauge SPEE Member support for the JSPEE. Publication of a quarterly or even semi-annual Journal requires significant and continuous support in terms of willingness of SPEE Members to submit papers and articles for publication and serve on editorial, peer-review and selection committees. In order to measure support, the January issue will include a questionnaire asking for your responses to the content of the Journal AND asking about your willingness to provide content and/or serve on the necessary committees. Look for the Journal of SPEE in your e-mail in January.

Richard J. Miller
Editor

Period, End of Story

By Daniel B. Botkin

One of the changes among scientists in this century is the increasing number who believe that one can have complete and certain knowledge. For example, Michael J. Mumma, a NASA senior scientist who has led teams searching for evidence of life on Mars, was quoted in the New York Times as saying, “Based on evidence, what we do have is, unequivocally, the conditions for the emergence of life were present on Mars—period, end of story.”

This belief in absolute certainty is fundamentally what has bothered me about the scientific debate over global warming in the 21st century, and I am hoping it will not characterize the discussions at the United Nations Climate Change Conference in Durban, South Africa, currently underway.

Reading Mr. Mumma’s statement, I thought immediately of physicist Niels Bohr, a Nobel laureate, who said, “Anyone who is not shocked by quantum theory has not understood it.” To which Richard Feynman, another famous physicist and Nobel laureate, quipped, “Nobody understands quantum mechanics.”

I felt nostalgic for those times when even the greatest scientific minds admitted limits to what they knew. And when they recognized well that the key to the scientific method is that it is a way of knowing in which you can never completely prove that something is absolutely true. Instead, the important idea about the method is that any statement, to be scientific, must be open to disproof, and a way of knowing how to disprove it exists.

Therefore, “Period, end of story” is something a scientist can say—but it isn’t science.

I was one of many scientists on several panels in the 1970s who reviewed the results from the Viking Landers on Mars, the ones that were supposed to conduct experiments that would help determine whether there was or wasn’t life on that planet. I don’t remember anybody on those panels talking in terms of absolute certainty. Instead, the discussions were about what the evidence did and did not suggest, and what might be disprovable from them and from future landers.

I was also one of a small number of scientists—mainly ecologists, climatologists and meteorologists—who in the 1970s became concerned about the possibility of a human-induced global warming, based on then-new measurements. It seemed to be an important scientific problem, both as part

of the beginning of a new science of global ecology and as a potentially major practical problem that nations would have to deal with. It did not seem to be something that should or would rise above standard science and become something that one had to choose sides in. But that’s what has happened.

Some scientists make “period, end of story” claims that human-induced global warming definitely, absolutely either is or isn’t happening. For me, the extreme limit of this attitude was expressed by economist Paul Krugman, also a Nobel laureate, who wrote in his New York Times column in June, *Betraying the Planet*, that “as I watched the deniers make their arguments, I couldn’t help thinking that I was watching a form of treason—treason against the planet.” What had begun as a

true scientific question with possibly major practical implications had become accepted as an infallible belief (or if you’re on the other side, an infallible disbelief), and any further questions were met, Joe-McCarthy style, “with me or agin me.”

Not only is it poor science to claim absolute truth, but it also leads to the kind of destructive and distrustful debate we’ve had in last decade about global warming.

The history of science and technology suggests that such absolutism on both sides of a scientific debate doesn’t often lead to practical solutions.

It is helpful to go back to the work of the Wright brothers, whose invention of a true heavier-than-air flying machine was one kind of precursor to the Mars Landers. They basically invented aeronautical science and engineering, developed methods to test their hypotheses, and carefully worked their way through a combination of theory and experimentation. The plane that flew at Kill Devil Hill, a North Carolina dune, did not come out of true believers or absolute assertions, but out of good science and technological development.

Let us hope that discussions about global warming can be more like the debates between those two brothers than between those who absolutely, completely agree with Paul Krugman and those who absolutely, completely disagree with him. How about a little agnosticism in our scientific assertions—and even, as with Richard Feynman, a little sense of humor so that we can laugh at our errors and move on? We should all remember that Feynman also said, “If you think that science is certain—well that’s just an error on your part.”

Mr. Botkin, president of the Center for the Study of the Environment and professor emeritus at the University of California, Santa Barbara, is the author of the forthcoming “Discordant Harmonies: Ecology in a Changing World” (Oxford University Press).

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Welcome New Members

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Membership Applicants

The following member applicants have been processed by the Qualifications Committee. The by-laws require that names be presented to the membership for at least 30 days as a pre-membership requirement. Any member with an objection should address the objection to the Executive Committee (see by-laws regarding other important details) since the applications have already passed through the Qualifications Committee.

APPLICANT	SPONSOR
Bandiziol, Danilo SGS Horizon B.V. Prinses Margrietplantsoen 81 Den Haag, 2595BR The Netherlands	Simon McDonald Graeme Simpson Joel Turnbull
Boyette, Charles D & M 5001 Spring Valley Road, Suite 800 E Dallas, TX 75244	James Hail Attila Szabo Bill Vail
Dean, David Louis Northstar Offshore Energy Partners 11 Greenway Plaza, Suite 2800 Houston, TX 77046	Paul Loveless Mitch Reece Ron Rhodes
Graves, Gregory Kyle DeGolyer and MacNaughton 5151 San Felipe, Suite 950 Houston, TX 77056	Sam Attaya Jim Hail Sam Singer
Winkler, Marcus L. Tradition Resources LLC 1415 Louisiana, Suite 3600 Houston, TX 77002	Chris Avra Greg Avra Stuart Filler