Wednesday September 11, 2024

HGS E&E Dinner Meeting

Social 5:30 p.m., Dinner 6:30 p.m., Presentation 7:30- 9:00 p.m.

Pre-registered HGS Members $35
Non-Members & ALL Walkups $40
To guarantee a seat, pre-register on the HGS website and pay with a credit card. You may walk up and pay at the door if extra seats are available. Please cancel by phone or email within 24 hours before the event for a refund. Online & pre-registration closes Wednesday, at 5:00 a.m.
Los Tios • 9527 Westheimer Rd • Houston, TX 77063
https://www.hgs.org/civicrm/event/info?id=2592
Event Contact: Troy Meinen • troymeinen@gmail.com

Michael D. Campbell, P.G., P.H., C.P.G.
Henry M. Wise, P.G., C.P.G.
Bruce Handley, P.G.
The I2M Corporation

A Tale of the Re-Discovery of the Brookshire Uranium Deposit Whose Time has Come

Once upon a time many years ago, back in the early 1980s, a young geologist had just graduated with a master's Degree from the University of Texas at El Paso. He went to work for the US Steel uranium group looking in frontier areas in Texas where new uranium deposits might be found. Eventually US Steel transferred him to their South Texas uranium mines to develop a new uranium deposit and to develop other US Steel South Texas Uranium mines in the area. In 1981, he was hired by Cambridge Royalty Company where he began to examine hundreds of geophysical logs produced by oil & gas companies in Texas. He ran across one well log in particular that caught his attention, the Humble #1 well, located on the southeastern flanks of the San Felipe Salt Dome near Brookshire, Texas. It showed remarkable activity in the gamma log, the unmistakable signs of uranium mineralization in the form of so-called "roll-front" deposits. He also found such signs in surrounding oil & gas well logs.

He recommended to his company that a few exploration holes be drilled and logged. One hole was drilled. And then another, until some 300 holes were drilled following the fluvial sands over miles of mineralized trends. Unfortunately, his company lost interest in the project resulting from the news of a drop in the price of yellowcake and loss of interest in the future of nuclear power. The company project was shut down after spending more than $1,000,000 and the assets were sold off. He heard that all the drilling data were being sent off to the trash. He retrieved as much data as he could, consisting of summary drilling tables and maps, but the important geophysical logs disappeared and were assumed lost. After that, he pivoted his professional career into opportunities in the rapidly expanding environmental field and that was that. He spent the next three decades managing environmental projects, mostly under company contracts with the TCEQ.

Meanwhile, back in the deep subsurface of the floodplain south of Brookshire, where the long trends of uranium mineralization he had previously identified has existed for millions of years, specialized bacteria, energized by methane or hydrogen sulfide escaping up the nearby faults from the oil & gas deposits deep below, continued to excrete uranium in the dark, carbon-rich environment while migrating slowly, very slowly, in the groundwater of the sands down the hydraulic gradient.

In 2008, signs indicated nuclear power was emerging once again and the uranium price began to rise but a few years later tidal waves hit Japan and damaged one of the four nuclear power plants at Fukushima. Although the ensuing meltdown was managed without casualties, Japan, Germany and other countries were panicked by the world media and began to shut down their nuclear power plants. That created an excess of uranium in the market supplies and the price of uranium once again plummeted.

About a decade later, in the 2010s, nuclear power surged back into the public consciousness driven by new technologies, the superior safety record of nuclear power, and the need for climate-friendly energy sources. This new technology was to first replace the burning of coal, then, in time, other fossil fuels and ultimately to replace wind and solar installations because of their numerous shortcomings. They are currently serving in the transition period prior to the onset of new nuclear power construction by the end of the decade led by the development of small modular reactors (SMRs) that will likely be built around the U.S. and the world as the focus of local power grids.

As the price of yellowcake surged upwards beyond $60/pound, with no signs of future impediments, the uranium mining industry also has begun to gear up to again produce yellowcake, supported by new federal bans on the importation of Russian uranium, which has awakened the search for new uranium deposits. This was the sign it was the time to take another look at the Brookshire uranium deposit.

Based on the extensive exploration drilling in the 1980s, it is known that the San Felipe Salt Dome area contains extensive deep uranium deposits that could now be economic to recover uranium and produce yellowcake. But, what about the risks involving potential damage to the surface and shallow water-

E&E Dinner Meeting *continued on page 37*

 continued from page 36

table wells caused in some way by the in-situ uranium mining operations? To address these issues, the geologist who made the discovery was encouraged by other highly qualified, licensed senior geologists and hydrogeologists in the I2M Corporation to explore the possibilities of the area once again and to address the issues involved.

In this presentation, the authors present a review of the Brookshire uranium occurrence and how oil & gas has played a vital role in creating the uranium deposits and how the oil & gas wells' geophysical logs led to identifying the uranium deposits. They also will review what the development of these deposits would involve in terms of the likely location of these mineralized trends and how the deep uranium would be extracted by the well-known and well-proven in-situ uranium recovery method.

Part of the review being conducted by the I2M Corporation focuses on the characteristics of the uranium deposits and whether the uranium could be produced economically and then whether such development could be accomplished without damage to the land or shallow drinking-water aquifers. Located amidst numerous producing oil and gas wells in the San Felipe Oil Field, the residents and landowners have the potential environmental and economic issues on their minds. The surface owners wonder if their land will be damaged or left with a mess to clean up. Is there danger from radioactivity or from the possible contamination of the water wells? Lastly, has the presence of uranium in the subsurface affected the lands' real-estate values? The mineral-rights owners wonder if this is the right time to develop the uranium deposit where the royalties can be optimized. I2M personnel have been looking into all these issues and more and have prepared a position paper for the local landowners' consideration.

The geological, hydrogeological, and social issues will be discussed in some detail with regards to whether this is the time to recover the uranium from the deep subsurface sands of the Brookshire area. With the backgrounds of the I2M personnel involving many years of environmental, oil & gas, and uranium-mining experience, I2M offers a uniquely qualified team to manage and provide oversight of such a project both in terms of its economic viability and its potential impact on the local environment.

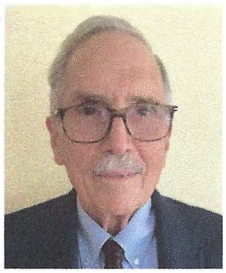
BIOGRAPHICAL SKETCHES

Mr. Campbell received a bachelor's degree in geology and hydrogeology from the Ohio State University and a master's degree in geology and geophysics from Rice University under a Mills Bennett Fellowship. Over a professional career approaching 60 years, Mr. Campbell has over the past two decades served the AAPG's Energy Mineral Division (EMD) as Chairman of the Uranium & REE Committee and was elected President of the EMD in 2010. He has produced more than 200 publications and reports and four books, including a recent memoir. Upon graduation, he was appointed Manager of the Alternate Energy, Mining and Environmental Group of Keplinger and Associates, Inc., a major oil and gas consulting firm in Houston and Tulsa. He managed a staff of six professionals and produced numerous reports of investigations on uranium, coal, and geothermal projects in the U.S. and overseas. While with K&A, he and associates produced the text: "Geology of Alternate Energy Resources," published by the Houston Geological Society. Law Engineering and Environmental Company in Houston, and after a few years, he was promoted to Corporate Chief Hydrogeologist covering Law's 50 officers nationwide. He later was offered a position at DuPont as the Regional Technical Manager within the Dupont Environmental Group with line responsibility for a staff of about 70 professionals in five departments: geology, special services, engineering design and construction, and deep-well disposal services. See Mr. Campbell's more recent activities (https://www.i2massociates.com/downloads/CampbellBioContinued.pdf).

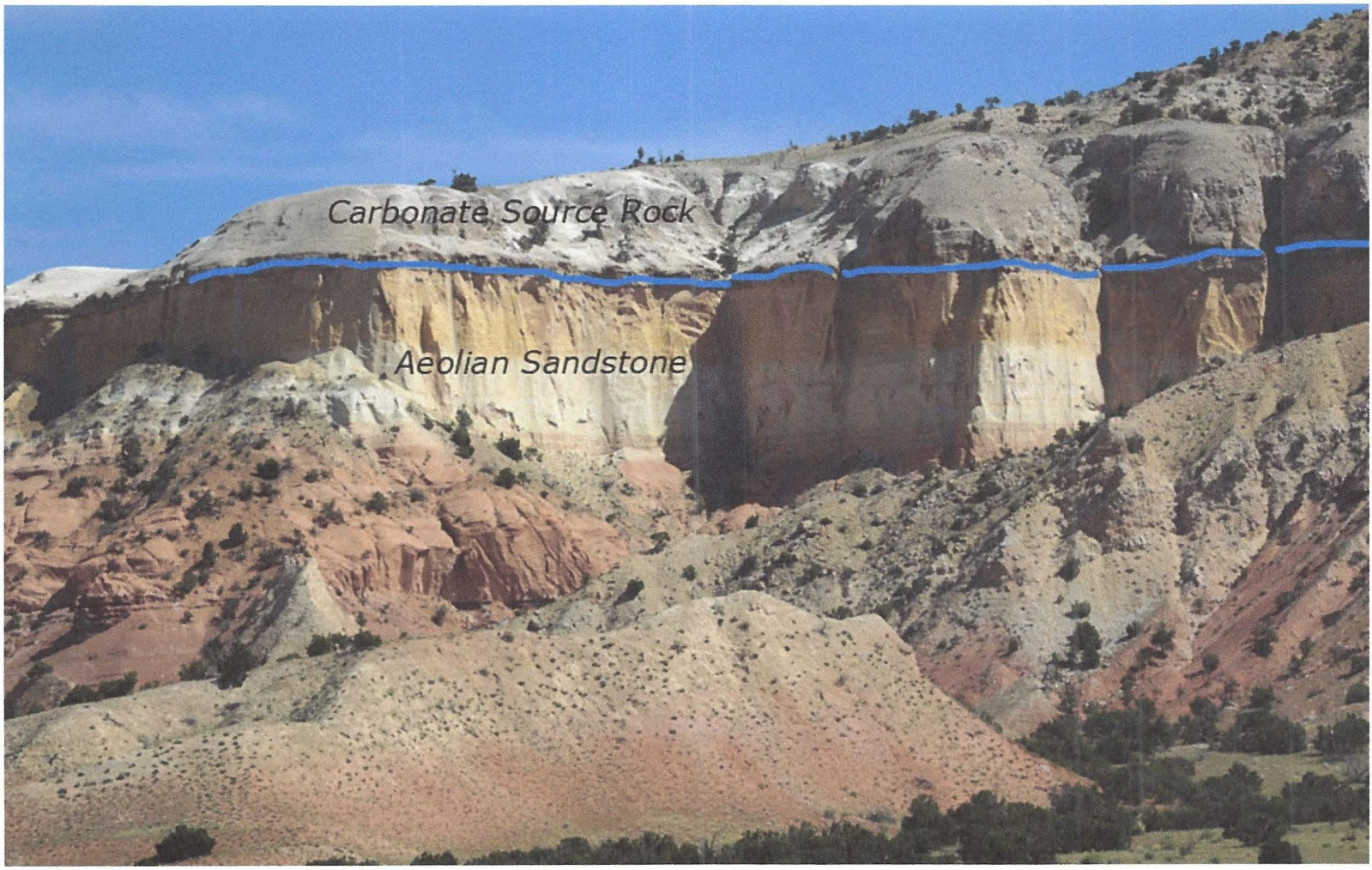
Mr. Wise obtained a bachelor's degree in geology from Boston University and a master's degree in geology from the University of Texas, El Paso. He has 47 years of experience in South Texas uranium exploration and production, and environmental remediation consulting for various private companies and federal, state, and private sector clients. His successful uranium activities includes exploration and in-situ recovery mine development and production. For 25 years he worked for Republic Services and was responsible for three TCEQ contracts, PST State Lead, PST emergency response, and spill-emergency response. He has extensive experience in UST and RCRA facilities, Minimum Site Assessments, Plan A Risk Reduction Environmental Site Assessments, and the Texas Risk Reduction Program (TRRP). Also experienced in site remediation, RCRA Part B applications, deep well disposal, and pipeline permit applications. He also has produced 25 technical papers on uranium and nuclear power, mostly with Michael D. Campbell. Mr. Wise has been serving over the past 20 years as Vice-Chair – Industry on AAPG's Energy Minerals Division's Uranium and REE Committee. He also has been serving as the President of the Texas Chapter of the American Institute of Professional Geologists (AIPG). Beyond his current consulting practice, Mr. Wise is serving as Vice President – Operations for the I2M Corporation in developing a uranium mining project of a deposit he discovered in the 1980s. (See his CV for additional details – https://www.i2massociates.com/downloads/HenryWise2024bio.pdf).

E&E Dinner Meeting continued on page 38

E&E Dinner Meeting continued from page 37



Mr. Handley entered the University of Wisconsin-Madison after his honorable discharge from the United States Air Force. After switching majors and working to establish residency in Wisconsin, he earned a bachelor's and a master's degree in Geology and Geophysics. He started his career in oil and gas exploration at the Sohio Petroleum Company, doing field work and seismic basement mapping in the Appalachians. When Conoco merged with Phillips Petroleum he departed the oil and gas industry. Mr. Handley enrolled in the Institute of Environmental Technology (IET), a program developed by Mr. Michael Campbell to cross train displaced oil and gas professionals into the environmental field. He graduated 2nd in a class of 97 students from this 4-month training program. He began his environmental consulting career that year and served with large and small consulting firms, including Conestoga Rovers and Associates and The Benham Companies. It was during this period that Mr. Handley was exposed to nearly every facet of the environmental consulting industry, including health and safety, due diligence, permit compliance, subsurface interpretation, and remediation. After more than 20 years, he decided to step away from the consulting business, but some long-time clients still needed his experience and Michael D. Campbell, the President and CEO of I2M Corporation and Mr. Handley's long-time mentor, was one of these. As a previous associate at I2M Consulting, LLC in other projects, Mr. Handley was selected to join the I2M team exploring for energy minerals in Texas. One aspect of his experience that adds value to this team is his demonstrated respect for the natural world and our need to act ethically as responsible stewards of the environment. (See his CV for additional details – https://i2mconsulting.com/bruce-handley/).



id Jurassic (Callovian) Todilto carbonate source rock overlying the aeolian Entrada sandstone (blue line). Oil has been found in the Entrada reservoir by downward arging from the overlying Tolilto carbonate source rock in several SW San Juan Basin fields in New Mexico. Photograph taken at the Echo Canyon Amphitheater, ew Mexico, courtesy of Ted Godo.

The Bulletin
Houston Geological Society

Volume 67, Number 1 September 2024

In Every Issue

The Houston Geological Society Bulletin (ISSN-018-6686) is published monthly except for July and August by the Houston Geological Society, 14811 St. Mary's Lane, Suite 250, Houston, Texas 77079-2916. Phone: 713-463-9476.
Editorial correspondence and material submitted for publication should be addressed to the Editor, Houston Geological Society Bulletin, 14811 St. Mary's Lane, Suite 250, Houston, Texas 77079-2916 orto office@hgs.org.
Subscriptions: Subscription to a digital version of this publication is included in the membership dues ($30.00 annually). The subscription price for non-members is $160.00.

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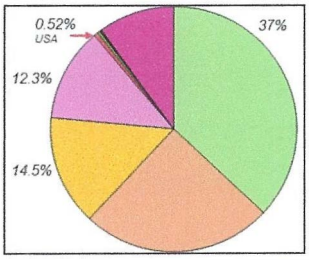
About the Cover: Large-scale cross-bedding in aeolian beds of the Cedar Mesa Sandstone. This outcrop is on Highway 95 in Utah near Hite Crossing of the Colorado River. The Cedar Mesa is a Permian (Wolfcampian) in age. The exposure allows a 3-D view of the cross beds to understand fluid flow better.

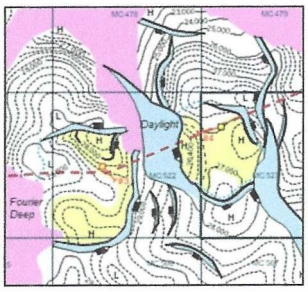
Technical Meetings

Features

page 17



page 22



page 29


page 42


page 48