

BULLETIN

Corpus Christi Geological Society



and

Coastal Bend Geophysical Society



**September, October
2023
ISSN 0739 5620**

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CORPUS CHRISTI GEOLOGICAL SOCIETY

P.O. BOX 1068* C.C.TX. 78403

2023-2024

www.ccgeo.org

OFFICERS

President	Dennis Moore	361-946-6037	moore.dennis24@yahoo.com
Vice President	Juan Cabasos	361-289-5457	juan.cabasos@corelab.com
	Charles Benson	402-319-0064	charlesl.jr.@icloud.com
Secretary			
Treasurer	Sebastian Wiedmann	361-946-4430	swiedmann.geo@gmail.com
Past President			
Councilor I	Frank Cornish	361-563-9184	frank.cornish@gmail.com
Councilor II	Rick Paige	361-884-8824 Ext 415	rpaigesio2@gmail.com

AAPG DELEGATE

EDITORS

Bulletin Editor	Marian Wiedmann	361-855-2542	wiedgulf@gmail.com
Bulletin Tech. Editor	Jeanie Timmermann	361-883-1492	jeanie@industrialcorrosion.net
Web Master	Josh Pollard	361-654-3100	support@interconnect.net

GEOLOGICAL SOCIETY COMMITTEES & CHAIRPERSONS

MEMBERS PLEASE NOTE COMMITTEES CONTINUE TO FUNCTION WITHOUT A NAMED CHAIR, ALL ARE WELCOME TO ANY COMMITTEE THAT SUITES YOUR INTEREST

Advertising/Bus. Cards Arrangements	Leighton Devine Wes Gisler & Will Graham	361-882-8400 830-239-4651 361-885-0110	ldevine@suemaur.com arrangements@ccgeo.org willg@headingtonenergy.com
Continuing Education			
Education	Dawn Bissell	361-960-2151	bissells@swbell.net
Scholarship Program	Dawn Bissell	361-960-2151	bissells@swbell.net
Fishing Tournament	Leighton Devine	361-882-8400	ldevine@suemaur.com
History	OPEN (Ray Govett)	361-855-0134	ray30@hotmail.com
Membership	Dorothy Jordan Randy Bissell	361-885-0110 361-885-0113	dorothyj@headingtonenergy.com randyb@headingtonenergy.com
University Liaison	Dr. Veronica Sanchez	361593-4925	veronica.sanchez@TAMU-K.edu



COASTAL BEND GEOPHYSICAL SOCIETY
P.O. BOX 2741 *C.C. TX. 78403
2023-2024

OFFICERS

President	Dr. Mohamed Ahmed	361-825-3278	mohamed.ahmed@tamucc.edu
Vice President	Dr. Subbarao Yelisetti	361-593-4894	subbarao.yelisetti@tamuk.edu
Secretary/Treasurer	Charles Benson	402-319-0064	charlesjr.@icloud.com
Golf Chairman	Mark Wiley	361-902-2844-office 361-445-6712-mobile	Mark_Wiley@eogresources.com
Scholarship Chairman	Matt Hammer	361-888-4792 361-563-6137	mhammer@royalcctx.com

**Visit the geological
web site at
www.ccgeo.org**

CCGS/CBGS JOINT MEETING SCHEDULE 2023-2024

September 2023							October 2023							November 2023						
S	M	T	W	Th	F	S	S	M	T	W	Th	F	S	S	M	T	W	Th	F	S
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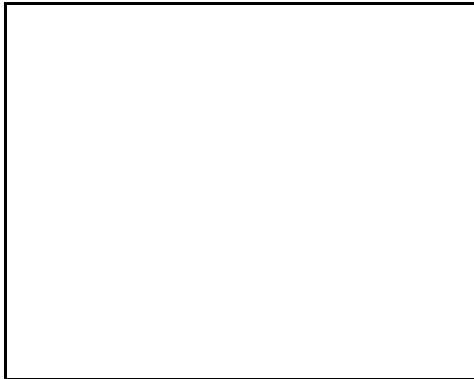
<p>2023-24 Membership Kickoff— Nueces Brewing Co. Downtown, Thursday Sept. 14 5:00p.m.-til 8:00p.m.</p>	<p>Meeting at Joe’s Crab Shack Downtown. 11:00 Bar, 11:45 lunch, 12:00 speaker. Speaker: William DeMis— Rochelle Court LLC, “Commodity Super Cycle of Oil & Gas.”</p>	<p>Meeting at Joe’s Crab Shack Downtown. 11:00 Bar, 11:45 lunch, 12:00 .Speaker: Mohamed Ahamed/Grad Student</p>
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December 2023							January 2024							February 2024						
S	M	T	W	Th	F	S	S	M	T	W	Th	F	S	S	M	T	W	Th	F	S
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31																				

	<p>Meeting at Joe’s Crab Shack Downtown. 11:00 Bar, 11:45 lunch, 12:00 speaker Speaker: Mark Thompson, Volcanoes role in opening of Gulf of Mexico</p>	<p>Meeting at Joe’s Crab Shack Downtown. 11:00 Bar, 11:45 lunch, 12:00 speaker Speaker: Robin Dommissé/BEG</p>
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CCGS/CBGS Joint Meeting Schedule 2023-2024

March 2024							April 2024							May 2024						
S	M	T	W	Th	F	S	S	M	T	W	Th	F	S	S	M	T	W	Th	F	S
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17	18	19	20	21	22	23	21	22	23	24	25	26	27	19	20	21	22	23	24	25
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31																				



Meeting at Joe's Crab Shack
downtown. 11:00 Bar, 11:45
lunch, 12:00 speaker

Meeting at Joe's Crab Shack
downtown. 11:00 Bar, 11:45
lunch, 12:00 speaker

Calendar Of Meetings and Events

- Corpus Christi Geological/Geophysical Society..... Third Wed.—11:30a.m.
- SIPES Corpus Christi Luncheons..... Last Tues.—11:30a.m.
- South Texas Geological Society Luncheons..... Second Wed—noon San Antonio
- San Antonio Geophysical Society Meetings..... Fourth Tuesday
- Austin Geological Society..... First Monday
- Houston Geological Society Luncheons..... Last Wednesday
- Central Texas Section of Society of Mining, Metallurgy & Exp..... 2nd Tues every other month in
San Antonio



PRESIDENT'S LETTER

Greetings to All

It is an honor for me to be back as president. Many things have changed in the past decade. I am looking forward to this year's speakers and programs.

I hope you all had a great summer. Speaking of summer, congratulations to Leighton Devine on a great fishing tournament. Also, a big thank you to the sponsors making the event successful.

It's time to renew your CCGS and CBGS memberships. This is a good time to add a little extra donation for the scholarship fund. There is a new twist for the luncheons this year as far as students. Student membership (which is free) is a MUST to qualify for the luncheon meeting meal to be free.

Speaking of our students, we are in need of more sponsors for our monthly luncheons.

We are fortunate to have 3 excellent geology/geoscience programs in the coastal bend. I believe we, as professionals should step up and volunteer our knowledge to help the local programs. Perhaps share information through lectures, data sharing, and mentoring.

My question is what does the future hold for geologist/geoscientist? Is it oil and gas exploration? Is it exploring for rare earth and metallic deposits? Is it environmental or carbon capture work? There are literally endless possibilities for the future of geology.

The future is now, so please volunteer.

Kick off will be September 14th at the Nueces Brewing Company. Come on by and meet old friends and meet new one. This is a good time to pay your dues and get signed up.

Dennis O. Moore

President CCGS 2023-24



Corpus Christi Geological Society

2023-24 Membership Kickoff

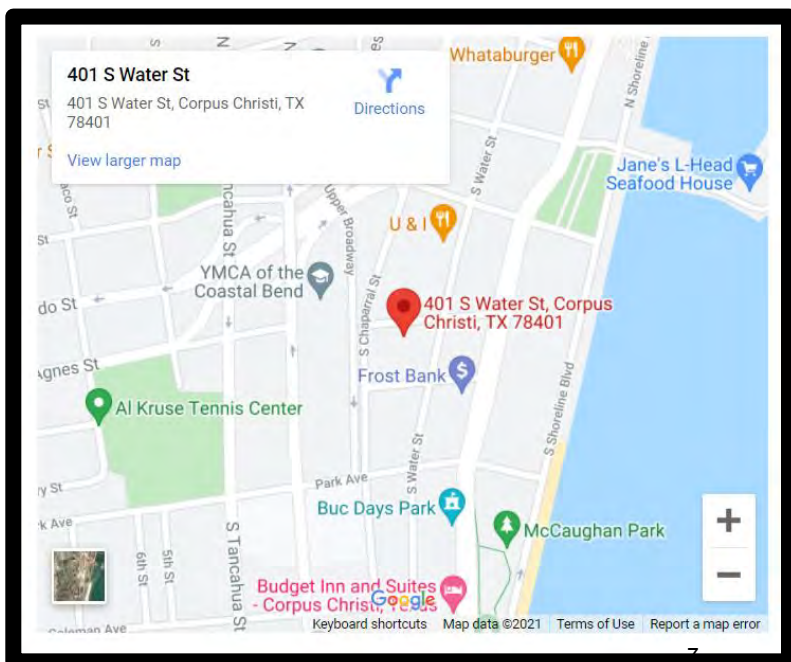
Nueces Brewing Co. Downtown

Thurs. Sept. 14, 2023 – 5:00 pm – ‘til

Meet & Greet/Come & Go

No RSVPs, BBQ and snacks available

Please pay dues (still just \$25) online or at this event.



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RENEW...RENEW...RENEW...RENEW...RENEW...RENEW...RENEW...RENEW...RENEW

Please RENEW for the 2023-24 Membership Period.



PAY ONLINE at www.ccgeo.org and follow the simple steps. We ask that you email corrections and updates on your personal info to membership@ccgeo.org

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- **BULLETINS ARE AVAILABLE ONLINE AT** www.ccgeo.org
- Student Memberships are still FREE, but you must send an email with your contact information and graduation date to membership@ccgeo.org

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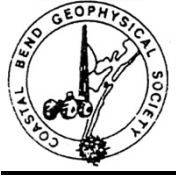
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CBGS President's Letter

CBGS Board 2023-2024

- President- Dr. Mohammed Ahmed
- Vice President- Dr. Subbarao Yelisetti
- Secretary/Treasurer-Charles Benson

CBGS Scholarships

The Coastal Bend Geophysical Society will be awarding scholarships in Fall 2023. Scholarships will be awarded based on merit and need. The award amounts may vary with the minimum award being \$1,000. The application deadline is August 28th, 2023.

CBGS Business

- CBGS currently has 43 active members, 4 honorary members, and 40 student members.
- Raised \$1,450 towards student scholarships through membership revenue this past year.

CBGS Workshops/Talks

- CBGS hosted the luncheon meeting in May 2023 featuring speaker, Dr. Amer Shehata at TAMU-CC. The title of this talk is “Integration of multiscale datasets for reservoir characterization: Implementation for improving prediction processes and development strategies”.

Student News

- Dr. Mohamed Ahmed's graduate students at TAMU-CC honored with prestigious SEG Award and Scholarships. Ramadan Abdelrehim has been honored with the SEG's 2023 Near-Surface Geophysical Research Award and Mohamed Mousa has been awarded both the SEG's 2023 Charlie and Jean Smith Scholarship and the Richard & Rollande Lockhart Scholarship.
- Ramadan Abdelrehim at TAMU-CC won the first place in the 2023 Invent for The Planet Competition.
- TAMU-CC students won 3 places at the TAMU Pathway Symposium. Ramadan Abdelrehim won first place at the 2023 TAMU Pathway Symposium. Ahmed Omar won second place, and Mohamed Mousa won third place.
- Six TAMU-CC students participated in the 2023 EG Challenge Bowl (the Gulf Coast Regional Challenge Bowl).

Academic Programs and Research Activities at TAMU-CC and TAMUK

- Texas A&M University-Corpus Christi (TAMU-CC) Geology program conducted the Field Geology course (i.e., field camp) during the Summer I semester in the Yucatan Peninsula, with focuses on karst hydrogeology, geochemistry, and structural geology. Great field work opportunities and lots of fun. For more information contact Dr. Valeriu Murgulet (Valeriu.Murgulet@tamucc.edu) at TAMU-CC.
- TAMU-CC's geology curriculum is constantly being refreshed with new courses but this academic year we are looking to add additional tracks such as Marine and Climate Geosciences, Planetary Geosciences and Biogeosciences. For additional information contact Dr. Valeriu Murgulet (Valeriu.Murgulet@tamucc.edu) at TAMU-CC.

- The Geophysics Lab at TAMU-CC is ready for students registering for the Spring Geophysics Class. Dr. Ahmed's lab includes the Geometrics G-858 magnetometer and gradiometer system, LaCoste & Romberg gravimeter, AGI SuperSting 1D, 2D, and 3D land resistivity system, GSSI SIR-4000 GPR system with 200 MHz and 350 MHz antennae, Geonics EM-31 frequency domain ground conductivity system, Geonics G-TEM time-domain system, Geometrics stratagem EH-4 magnetotelluric imaging system, Geometrics ES-3000 24-channel seismograph, Tromino passive seismic system, Trimble differential GPS system. The Geophysics Test Site (GTS) is being used in teaching this class (see <https://library.seg.org/doi/abs/10.1190/tle40030208.1>). Interested, contact Dr. Mohamed Ahmed (Mohamed.ahmed@tamucc.edu) at TAMU-CC.
- Dr. Mohamed Ahmed at TAMU-CC has recently received funding from the Texas General Land Office (TGLO) to conduct research on coastal Texas. Interested researchers and students can find more details here: <https://ahmedlab.tamucc.edu/>.
- Dr. Mohamed Ahmed and his graduate students at TAMU-CC spent one month this summer in Egypt collecting field data for the SEG-funded project. Additional information: https://seg.org/gwb_projects/egypt/
- At TAMU-CC's Center for Water Supply Studies and the Hydrogeology lab, both led by Dr. Dorina Murgulet (Dorina.Murgulet@tamucc.edu), students delve deeply into water-related studies of utmost relevance. Currently, we are actively working on projects funded by three substantial grants from the National Science Foundation, including the DISES project which examines groundwater pollution, extreme wet events, and their socio-economic impacts on unincorporated communities (NSF Award #2307996 - DISES: Through the Prism of Groundwater Pollution: The Interplay of Extreme Wet Events, Socio-Economic Well-Being, and Polity in Unincorporated Communities). Additionally, our partnership with the Texas General Land Office through the NOAA pass-through funding supports our research on the hydroclimatic influence on bacteria and nutrient input in Texas coastal waters. Altogether, our projects total over \$3M.
- TAMU-CC students receive hands-on training experiences. They immerse themselves in rigorous fieldwork and laboratory exercises as part of directed independent studies, internships, or roles as undergraduate research assistants. Adding to our capabilities, we're proud to announce our recent acquisition of a state-of-the-art Portable Geoprobe System (7822DT). This system is equipped with subsurface sampling, logging, and imaging capabilities, further enhancing our geoscience research and educational offerings. For additional information, contact Dr. Dorina Murgulet (Dorina.Murgulet@tamucc.edu).
- The first cohort of the NSF-funded graduate training program on Stakeholder-Guided Environmental Science (NRT STAGES) at TAMU-CC started Spring term. This training program is designed to train the next generation of experts to conduct big data analyses in interdisciplinary research settings for a globally competitive workforce. Along the way trainees will receive training in science communication and also work with regional stakeholders to co-develop research questions of interest to the resiliency of our coastal communities and environments. NRT STAGES trainees (10) and some non-trainees (4) at TAMU-CC went on a field trip from the headwaters of the Nueces River to Corpus Christi Bay during Spring semester where they learned about hydrological, atmospheric, geologic, geographic, biological, and human connections within the watershed. The trainees planned the trip and collected samples for water and atmospheric chemistry at 11 sample sites over three days. TAMU-CC faculty and NRT STAGES trainees met with stakeholders from the coastal bend region in a two-day workshop to discuss the research needs of the community and potential collaborations. The NRT STAGES trainees formed into two groups, 1) rainfall prediction error assessment with the National Weather Service and 2) seagrass and ecosystem health around Ingleside on the Bay, and have continued to work with their respective stakeholders to refine their research questions as they assimilate and begin exploring the data. We

added a course over the Summer semester on big data science to provide NRT STAGES trainees instruction and mentorship throughout the process of acquisition of big datasets, preparation for analysis, and potential analyses to consider. For more information about the NRT STAGES contact the project PI Dr. Dorina Murgulet (Dorina.Murgulet@tamucc.edu) or the program manager Dr. Audrey Douglas (Audrey.Douglas@tamucc.edu).

- Dr. Ingo Pecher at TAMU-CC recently acquired a portable sub-bottom profiler and multibeam echosounder system and is looking forward to deploying this system in shallow waters off the Texas coast. Next spring, he will be on a research cruise to the Ross Sea, Antarctica, with two of his students and other scientists from TAMU-CC and the University of Texas to acquire reflection seismic and ocean-bottom-seismometer data aiming at understanding possible gas hydrate dissociation in Antarctica. Contact Dr. Pecher for more details: ingo.pecher@tamucc.edu.
- Dr. Lindsay Prothro at TAMU-CC received over \$700,000 in active grants from the National Science Foundation and the Matagorda Bay Mitigation Trust that are currently supporting projects with focuses ranging from Antarctic glaciomarine sedimentary processes to mercury distribution in Lavaca Bay sediment. This Spring, for our second consecutive year, she and one of her graduate students will sail on an icebreaking research vessel to collect seismic data, multibeam bathymetric data, oceanographic data, and sediment cores from the Ross Sea, Antarctica, to better understand triggers of past ice sheet instability. Reach out to Dr. Prothro for additional details: lindsay.prothro@tamucc.edu.
- The Department of Physical and Environmental Sciences at TAMU-CC invites applications for two 9-month, tenure-track Assistant Professors of Environmental Science to begin as early as spring 2024. Read more: <https://www.higheredjobs.com/details.cfm?JobCode=178460070>
- Texas A&M University-Kingsville (TAMU-K) started its first cohort of MS Petrophysics program in Fall 2018. If you are interested in joining this program, please contact the graduate coordinator for MS in Petrophysics, Dr. Subbarao Yelisetti at Subbarao.Yelisetti@tamuk.edu.
- The Department of Physics and Geosciences at TAMU-K is offering competitive scholarships for MS Petrophysics students. For additional details about the program and scholarships, please visit the website: <https://www.tamuk.edu/artsci/departments/phge/phys/academics/gp.html>
- BS degree in Geophysics, Minor in Geophysics and Certification in Geophysics offered at TAMU-K since Fall 2017. Interested students can contact Dr. Subbarao Yelisetti (Subbarao.Yelisetti@tamuk.edu) for additional information.

Meetings & Events

- The 2023 The International Meeting for Applied Geoscience & Energy (IMAGE) meeting will be held in Houston, TX from August 27 – September 1. See <https://www.imageevent.org/>
- The 2023 Fall AGU annual meeting will be held in San Francisco, CA from December 11-15th, 2023. See <https://www.agu.org/Fall-Meeting>
- The 2023 GSA Annual Meeting will be held in Pittsburgh, Pennsylvania, from October 15 to 18, 2023. See <https://community.geosociety.org/gsa2023/home>

Mohamed Ahmed

President, CBGS

Mohamed.ahmed@tamucc.edu

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**CORPUS CHRISTI GEOLOGICAL SOCIETY
COASTAL BEND GEOPHYSICAL SOCIETY**



LUNCHEON MEETING ANNOUNCEMENT

October 18th, 2023

- Location:** Joe's Crab Shack, 444 North Shoreline Dr.,
Corpus Christi, TX 78401
- Student Sponsor:** Viper Exploration, Imagine Resources. Thank
you!
- Time:** 11:30 AM Social, Lunch follows at 11:45 AM,
Speaker at 12:00 PM
- Cost:** \$35.00 (additional \$10.00 surcharge without
reservation: NO SHOW may be billed.)
- Reservations:** Please RSVP by 11:00 AM on Monday, October
16th before the meeting!

Email: arrangements@ccgeo.org

Please note that luncheon RSVPs are a commitment to Joe's Crab Shack (Shoreline Drive) and must be paid even if you can't attend the luncheon.

SPONSORSHIP OPPORTUNITIES ARE AVAILABLE! IF YOU WOULD LIKE TO SPONSOR, PLEASE CONTACT US AT:

arrangements@ccgeo.org



William (Bill) DeMis has over 35 years of energy experience. He has held positions of exploration manager for Marathon Oil, exploration vice president for Roxanna Oil Company, and senior vice president and chief geologist for Goldman Sachs. He has taught classes on by-passed pays and plays twice at the AAPG ACE conference. He continues to be active in oil and gas prospect generation, consulting, and business development.

The Coming Commodity Super Cycle
DeMis, William
Rochelle Court LLC, 16402 Cretian Point Court, Cypress, Texas, 77429

EXTENDED ABSTRACT

Commodities have been at historic lows, comparable to early 1970s (Figure 1). But a commodity super cycle is now forming. It will last 7-10 years and peak in this decade. Its resolution will be slow. In a super cycle, all commodity prices rise and commodity scarcity limits economic activity.

The International Energy Agency (IEA) prescriptive scenario for Net Zero by 2050 has proven destructively wrong for an energy-hunger world. Oil demand continues to rebound after Covid and is expected to hit 101.9 mmbo/day in 2023. IEA now admits, “much has changed since that report” (IEA, 2022) and now predicts oil demand will level off in the next decade. OPEC’s World Oil Outlook also predicts an oil demand plateau of 110 mmbo/day in 2035 (Lawler, 2022). Yet ESG-advocacy groups continue to use IEA’s admittedly inaccurate 2021 Net Zero conclusions as an “ESG cudgel” against fossil fuel companies and banks.

Energy supplies are not keeping up with demand. Key OPEC countries admit they are near their pumping capacity and have warned non-OPEC countries to invest more in long-term oil and gas projects (Turak, 2023). Since 2014, global E&P upstream investing has declined from \$900 billion to \$400 billion in 2022 (Goehring and Rozencwajg, 2023). Cumulative under-investment in oil, gas, and nuclear over the last 10 years could be \$2 trillion or more. Record-low global oil and gas discoveries in 2021 reflect the long-term underinvestment.

US nuclear-sourced electricity is also failing. Since 2017, it is down 5%. Six nuclear power plants totaling 4,736 megawatts have been retired. New York State prematurely shut down the Indian Point nuclear power plant, losing 2,051 megawatts (EIA, 2022). Three natural gas power plants have been introduced to replace New York’s lost power (EIA, 2021). New York does not allow fracking.

ESG and anti-oil NGOs are forcing capital into low Energy Returned on Investment (EROI) projects (Figure 2). Major oil companies that embraced “ESG investing” are now paying the price for their malinvestment with lower stock prices and lower returns to shareholders (Figure 3). Chastened, BP’s CEO Looney now “plans a narrower green-energy strategy” with “less emphasis on so-called ESG goals”

(Strasburg, 2023). Despite poor returns, oil companies continue to malinvest in low EROI “green” projects.

Power-grid operators are overwhelmed with wind and solar connection requests. Mid-Atlantic power-grid operator PJM Interconnect has a moratorium on any new wind and solar connections requests until 2026 (Plumer, 2023). In 2021, 8,100 solar and wind projects were waiting on technical review by operators; up from 5,600 in 2020 (Hiller, 2023). From 2000 to 2016, only 23% of the green utility projects that applied for grid connections were built, according to Lawrence Berkeley National Laboratory (ibid). Nineteen gigawatts of wind and 60 gigawatts of solar utility capacity were withdrawn from the connection processes in 2020 and 2021 (ibid). Mid- PJM Interconnection predicts that by 2030, wind and solar power will replace 50% of the power lost from retiring fossil fuels power plants.

According to the Department of Energy, wind and solar power plants require 10 to 18 times more fabricated material (steel, copper, glass, fiberglass, cement, etc.) per terawatt of power than natural gas and nuclear power (Figure 4). Therefore, they are more sensitive to rising energy costs.

Wind and solar are more expensive and require more material than a Haynesville gas well. The 1,300 acre Roserock Solar has a lifetime energy output equal to 1.163 Haynesville wells (Table 1). One Haynesville well has the same energy output as 28 3-megawatt wind turbines (Table 2). In these simple case studies, wind and solar require 5.6 and 20 times more fabricated materials for the same energy as Haynesville gas. Wind and solar power cost 5.6 and 15.6 times more than natural gas. Green energy’s cost and need for materials will bring “greenflation.”

Net zero goals are unrealistic. Princeton’s Net-Zero America study shows the US will need 17 million acres of solar (using 9 billion PV cells), 1.5 million wind turbines, and a 5.2-fold increase in the US power grid that took 70 years to build - in 27 years (Larson et al, 2021). Princeton’s estimates the cost to 2030 is \$2.5 trillion but the majority of Princeton’s modeled build-out occurs after 2030 (ibid.).

Copper is critical to an electrified economy. Global copper deposits are past “peak minerals” (Northey et al., 2014). Copper ore grades are below 1% around the planet (ibid). An impediment to increasing global copper output is that third-world communities are adopting ESG stakeholder rights. Stakeholders in Chile have delayed a copper mine expansion for 12 years (Sharma, 2021). Every new deposit for energy-transition minerals in the US is either banned, stalled, or being litigated by environmental opponents.

Adopting a “mine, baby mine!” energy-transition strategy to create an electrified economy dependent on consuming 10 to 20 times more material per unit of electricity is ill-considered from both the US and global mining perspective. It is also ruinous to the environment.

Social license for utility-scale solar and wind power generation is waning because of their enormous footprints, environmental impact, and rural stakeholder opposition. Community stakeholders have banned over 480 utility-scale solar and wind power plants across the US.

Fiscal and monetary policy stands apart from the intrinsic problems of the energy transition, but it plays a key role. Every energy transition scenario proposed relies on federal largess - but the US government is out of money. US debt is now 120% of Gross Domestic Product. Interest payments on the federal debt are consuming an ever-larger share of Treasury Department’s revenue. Congress appears intent on creating more deficits and debt, fueled by a dysfunctional “inside-the-beltway” culture that always

equates spending as synonymous with “compassion.” Federal deficits spawn inflation (in addition to “greenflation”) and rising interest rates that impact green projects. For example, the offshore Commonwealth Wind Project is “no longer viable” because the contract did not allow for the increased cost of materials and financing.

Oil prices will settle in \$85-150 range, but excursions over \$200 should be expected. Longer term, \$200 oil might become the floor (DeMis, 2021). Natural gas prices in the US will rise towards prices in Europe and Japan, circa \$20/mmcf, until Congress gets involved. Attempts to pivot back to traditional energy sources will fall short for years because of the time required to develop new plays for oil and gas, and because of the very long time to site and build nuclear power plants.

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Figure and Table Captions

Figure 1. Commodities relative to Dow Jones Industrial Average, 1900 to present. 1900 = 100. Commodities go through bull and bear cycles. Commodities today are more undervalued than in 1972, just prior to the 1970s “decade of commodities.” The recent commodity bear cycle has forced commodity-centric professional societies into a senseless questioning their mission rather than accept the commodity cycle context. Graph from Goehring and Rozenchwajg (2022). Reprinted by permission.

Figure 2. Energy returned on energy invested (EROI). Both the ‘nameplate’ and the “buffered” (meaning with energy storage) EROIs are shown. Natural gas, coal and nuclear can run 24/7 so they do not have a “buffered” number. Solar CSP indicates concentrated solar power. Gas CCGT means combined-cycle gas

turbine. Data modified from Weissbach et al (2013) with biomass EROI approximated from a range of 1.28 to 2.23 reported by Wang et al (2020).

Figure 3. Major company stock performance 12/2018 to present. BP and Shell embraced low-carbon ESG projects, Exxon and Chevron did some low carbon projects, but to a lesser extent. Exxon's and Chevron's stocks are up 104% and 81%, respectively. BP's and Shell's stocks are up 32% and 6%, respectively. Shareholders have paid the price for BP and Shell's malinvestment.

Figure 4. Fabricated materials required for different power sources, normalized per terawatt-hour of electricity (Data from DOE (2015)). Solar and wind require 10 to 18 times more material, and by inference more energy, than natural gas or nuclear power plants. Increases in energy costs will disparately impact wind and solar because they require enormous amounts of mining and fabricated materials but only last for 25 years (NREL webpage; "Useful life of wind and solar").

Table 1. Energy comparison of Roserock Solar and Haynesville gas well. Roserock Solar has a lifetime output equal to 1.163 Haynesville wells. Roserock has a 20-year life (ERCOT webpage). The Haynesville base-case in is in center column, in grey. A low EUR is used for Haynesville well. Roserock uses 186 times more land, costs 15.6 times more, and uses 20 times more fabricated materials than 1.163 Haynesville wells. The analysis intentionally favors solar by leaving out solar's annual operating cost and the additional cost and material for back-up power required for when sun does not shine.

Table 2. Energy comparison of 3-megawatt wind turbine and Haynesville gas well. Twenty-eight 3-MW wind turbines are required to the equal life-time energy of one Haynesville well. Wind turbine life and costs from NREL (Stehly and Duffy, 2022), materials from Mone et al (2015). The twenty-eight wind turbines use 4.6 times more land, cost 5.6 times more, and use 6.2 times more material than one Haynesville well. The analysis intentionally favors wind by extending turbine life to 25 years, leaving out installation and annual operating costs for wind, and omitting the additional material and costs for back-up power required for when the wind does not blow.

Figure 1

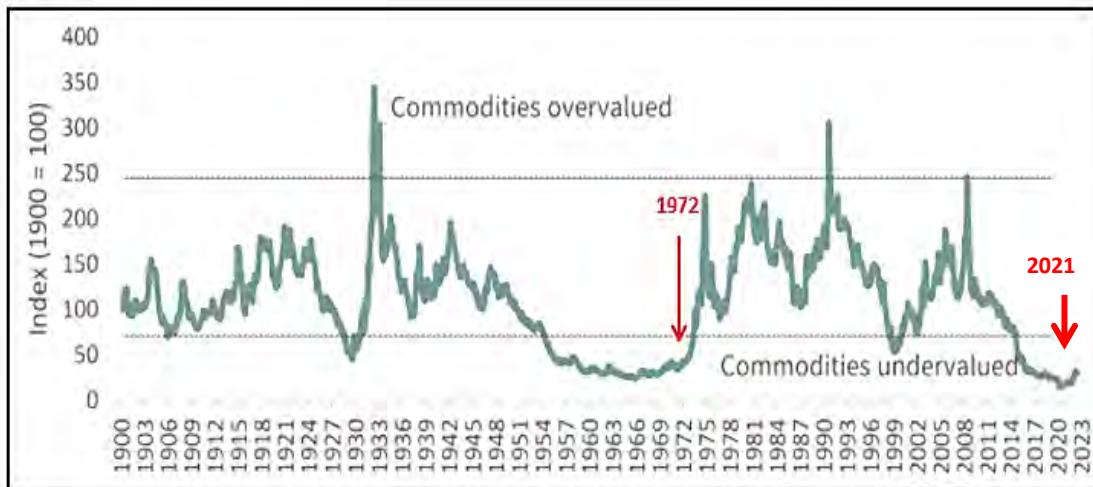


Figure 2

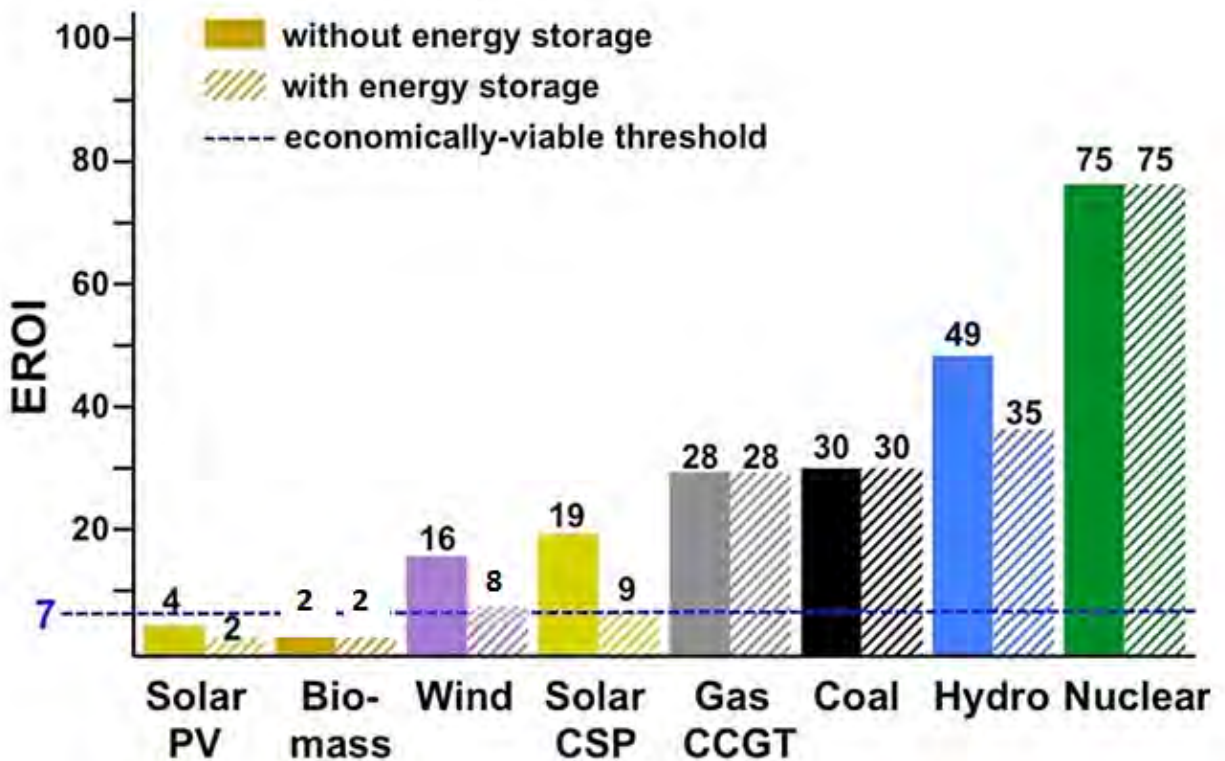


Figure 3



Figure 4

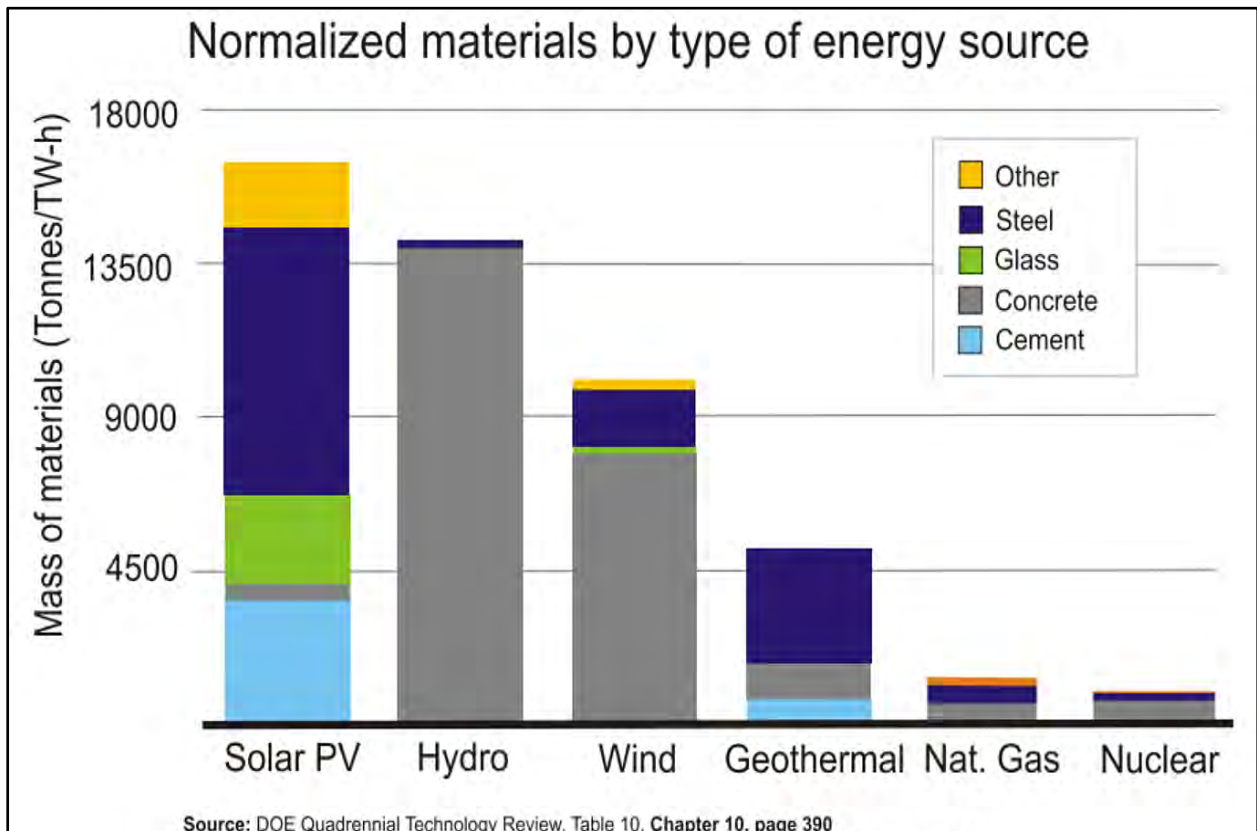


Table 1

Solar: Energy, Land, Cost, Material Analysis			
	Roserock Solar	Base Case Haynesville Well**	Haynesville Equivalence
	20-year contract life per ERCOT	10,000' lateral metrics (22,000 MD; 2.0 BCFG/1,000' lat)	1.163 Haynesville wells equals power output of 1 Roserock
MegaWatt-Hours¹	7,035,477	6,045,430	7,035,477
BCFGE EUR	23.27	20	23.28
GigaJoules²	25,327,717.9	21,763,548	25,327,717.9
Land used, Acres	1,300	6	7
Cost Millions*	\$405.3	\$22.3	\$25.98
Material (Tons)	6,328	664	772
Footnotes:	*No operating cost included for 20 year contract life of Roserock	**Well cost \$18 million D&C, surface facilities, plus 12 year of op ex at \$30K/mo totaling \$4.32 million. Energy is net of fuel used in drilling.	
1 - one Gft ³ NG = 302380 MWh 2 - one Gft ³ NG = 1,088,568 GJ			

Table 2

Wind: Energy, Land, Cost, Material Analysis			
	3 MW Wind Turbine	Base Case Haynesville Well**	Wind Equivalence
	25-year life (NREL 2022: 20 year life for turbine)	10,000' lateral metrics (22,000 MD; 2.0 BCFG/1,000' lat)	27.89 Wind Turbines = 1 Haynesville well
MegaWatt-Hours¹	216,810	6,045,430	6,047,600
BCFGE EUR	0.717	20	20.0
GigaJoules²	780,516	21,763,548	21,771,361
Land used, Acres	1	6	27.894
Cost Millions*	\$4.5	\$22.3	\$125.52
Material, Tons³	305	664	4,115
Footnotes:	*No operating cost included for 25 year life of Wind Turbine.	**Well cost \$18 million D&C, surface facilities, plus 12 year of op ex at \$30K/mo totaling \$4.32 million. Energy is net of fuel used in drilling.	
1 - one Gft ³ NG = 302380 MWh 2 - one Gft ³ NG = 1,088,568 GJ 3 - material from Mone et al, 2015 (Vestas V82 approximated weight)			



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2023 CCGS Fishing Tournament

The 13th annual CCGS fishing tournament was held July 28th in Port Aransas. We fought through the scorching heat, and at the end of the day celebrated one of the best years in our tournament's history. We have an excellent group of people that participate in this event, and you all made this tournament one to remember.

The captain's meeting at Treasure Island Thursday night was a blast. We had some great food and drink, and we gave away over \$5,000 in door prizes. It was great to see everyone enjoying themselves.

Friday morning, 21 inshore and 4 offshore teams set out in search of the winning fish. Overall, the fishing was tough, but as always, some teams were able to put together a good stringer of fish. The weigh-in was well attended and, as to be expected, the food was spectacular. Big shout out to Pete Graham and family for donating their time and culinary skills for our cause.

The 2023 CCGS Fishing tournament raised over \$5000.00 for the CCGS Scholarship Trust Fund. Looking back over the books this year's tournament stacks up as one of the most successful events on record. To date the CCGS Saltwater Fishing Tournament has raised over \$65,000 for our local society. I always have a wonderful time putting on this event and must thank all my volunteers for helping with the fundraising, planning, and execution. You know who you are.

Finally, I cannot say enough for the great Sponsors that have supported this event throughout the years. I have more than a handful of sponsors that have been with me from day one and seem to find a few new ones every year. As long as these great companies and individuals step up and support this event, we will continue working hard to provide a wonderful experience for everyone.

Leighton Devine

2023 CCGS Saltwater Fishing Tournament

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Factors Controlling Barrier Island Geomorphology: Insights from Geophysical Surveys

Ramadan Abdelrehim, Mohamed Ahmed

Department of Physical and Environmental Sciences, Texas A&M University-Corpus Christi.

Abstract:

Coastal regions within the contiguous United States hold significant economic importance, despite encompassing less than 10% of the total land area. These areas are home to nearly 40% of the U.S. population. However, coastal communities face distinct challenges due to escalating risks from flooding, hurricanes, sea-level rise, and broader climate change. Padre Island, situated along the Gulf Coast is an important coastal system that plays a pivotal role in protecting the well-being and sustainability of southeast Texas' coastal communities. Central to its protective function, Padre Island's dunes act as a first line of defense shielding the mainland from the impacts of extreme events such as hurricanes and storms. However, the morphological features of the island and its dunes, encompassing aspects like height, shape, and volume, depend on the underlying subsurface geologic conditions. These conditions comprise elements such as lithology, stratigraphy, structures, and soil water content characteristics. Understanding the relationship between the subsurface features and the dune morphology is critical in protecting the island as well as the inland communities. In this study, we use several geophysical techniques, including Ground Penetrating Radar (GPR), Time Domain Electromagnetic (TEM), Frequency Domain Electromagnetic (FDEM), and Electrical Resistivity Tomography (ERT) to study the subsurface characteristics and to explain the complex relationship between the island geomorphology and subsurface conditions. Preliminary results indicated that the beach region, denoted as Zone I, displays the highest recorded apparent electric conductivity (289.7 ± 66.3 mS/m) alongside the lowest elevations (1.4 ± 0.2 m). These patterns are primarily attributed to the close proximity of the beach to saline groundwater and the occurrence of maritime floods. In contrast, the foredune area, referred to as Zone II, showcases the lowest apparent conductivity (19.0 ± 3.4 mS/m) and the greatest elevation (4.5 ± 0.4 m). These characteristics are a result of the greater distance from saline waters, deeper groundwater levels, and relatively dry soil conditions in this zone. Human activity has had a notable impact on Zones III (located in the east-central area) and IV (located in the west-central area). This impact is evident in the increased apparent conductivity (Zone III at 40.3 ± 21.8 mS/m; Zone IV at 159.5 ± 83.0 mS/m) and the decreased elevation (Zone III at 2.1 ± 0.5 m; Zone IV at 1.3 ± 0.4 m) observed in these zones. Anthropogenic activities have modified hydrologic patterns, introduced conductive materials, and altered vegetation cover and soil composition. This study unveils the intricate relationship among subsurface electrical

conductivity, surface morphology, and the influence of human development on the shape of barrier islands. These findings offer essential understanding for the management and preservation of coastal areas.

Short Biography

Ramadan Abdelrehim is currently a Ph.D. student at Texas A&M University-Corpus Christi. He is working in the Geophysics Lab with Dr. Mohamed Ahmed. His current focus involves the extensive use of geophysical techniques to study the characteristics of barrier islands, such as Padre Island. The goal is to gain insights into the intricate relationship between the island's subsurface geological structure and its surface geomorphology and their impact on the island's response to storms and hurricanes. Ramadan previously worked as a research assistant at the Desert Research Center in Cairo, Egypt, from 2014 to 2021. During this period, he actively employed various geophysical and remote sensing methods for groundwater exploration and sustainable development studies, primarily within arid regions of Egypt. His background includes substantial fieldwork experience, totaling over 200 days, in diverse environments. Furthermore, he enriched his expertise through international exposure during a year-long tenure as a Visiting Research Scientist at Chiba University in Japan. This opportunity was made possible by the Egypt-Japan Education Partnership (EJEP) scholarship. It allowed him to delve into the realm of environmental remote sensing and engage in multidisciplinary research that harnessed remote sensing and geophysics to address environmental challenges and contribute to sustainable development strategies. His academic accomplishments include a master's degree in applied Geophysics from Ain Shams University in Cairo, Egypt, along with a bachelor's degree in Geophysics from Sohag University, Egypt.

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Thomas William Swinbank



Obituary

Thomas William Swinbank suddenly passed away on April 26, 2023, in his sleep at his home in Seattle, Washington, with his beloved wife of 50 years, Cynthia, by his side. He was 74. We have lost an incredible father, grandfather, husband, son, brother and amigo to anyone he ever met.

Tom was born August 2, 1948, in Jackson, Minnesota, but he and his parents, Bill and Elsa Swinbank, moved to Falfurrias, Texas, in January of 1949. In his words, “he got here as soon as he could!” It was in Falfurrias that Tom became the oldest of five siblings, all of whom survive him today along with his mother. The family moved to Houston, Texas, in 1958, and put down stakes on Memorial Drive in what was then the western edge of the city. Tom attended Memorial High School where he played clarinet and was a member of the first graduating class in 1966. After a brief stint at Texas Christian University, Tom ended up at the University of Texas at Austin where he graduated with a B.S. in Geology in 1971.

It was at Texas that Dad met our mother and his soulmate, Cynthia Elliott of San Antonio, Texas. They graduated together in a class that included only 10 geologists and were married in the chapel at Trinity University in San Antonio on May 22, 1971. Together they had five children who became his proudest and most loved achievements. In 1981, Tom and Cindy hitched up the wagon and headed west to Georgetown, Texas to a home on a bluff overlooking the San Gabriel River where our family continues to gather to this day.

Tom enjoyed a successful career as a petroleum geologist and found many oil and gas wells throughout South Texas over the span of 50 years. An eternal optimist, a requisite personality trait for a wildcatter, Tom brought enthusiasm to every project he participated in. Along the way he collected many friends, and he built a reputation in his industry for being a straight shooter. He was one of a kind and his stories of far away and long forgotten oil wells never ceased to be entertaining.

Tom was an avid outdoorsman and happy traveler to places both near and far, but he loved to be home as well with his family, and after his children flew the coop, with our mother. They enjoyed traveling to Big Bend, Seattle, and really anywhere in the western US and did so quite often in between trips around the world. They gardened, raised chickens and he acted like he didn't like all the dogs over the years, but we knew he really did. He was a voracious reader, loved old bars and the Texas Longhorns, mowed his own yard and had a million good song tips.

Tom had a keen sense of humor and a quick wit which our mother matched step for step. In his grandchildren he finally had the ideal audience for his silly side. Nobody understood Grandpa like a six-year-old!

Tom is survived by his wife, Cynthia and his five children: Chris Swinbank (wife Jennay), Sam Swinbank (wife Jennifer), Hannah Strong (husband Frank), Claire Swinbank (wife Elizabeth) and Joe Swinbank (wife Andrea). He is also survived by his grandchildren: William, Warren, Wilson, Emma, Ava, Lauren, Katie, Allie, Kaio, Mila and Luka.

Tom is also survived by his mother, Doris Elsa Swinbank and his siblings Laura Connally, Joe Swinbank, Tami Swinbank and Jill Norris.

A private celebration of Tom's life will be held on May 13. Thank you to everyone for your thoughts and prayers. Happy to you!

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Charlie, Chaz, Brown



Obituary

Charlie, Chaz, Brown, Coach Charlie, Pop, Dad, Papi, Rick- passed away on Thursday, June 8th of 2023 at the age of 68. He was born on June 30th, 1954 in Havana, Cuba. Throughout his childhood and young adulthood in Corpus Christi, Texas, Charlie developed a bond with the outdoors and a strong sense of family: central values that would remain consistent throughout his life. A natural-born fisherman, he regularly cast his line into the bay down the street from his childhood home, spent time hunting quail and raising cattle with his father, Carlos, at the family ranch, and loved water skiing with his sister, Elsie, and brother-in-law Mandy. Charlie and his mother, Elsa, never missed the Dallas Cowboys games on Sundays- their devotion never seeming to waver despite how terribly they played.

After earning his degree in Geology, Charlie became an avid collector of rocks, fossils, seashells, and geodes. His collection documented his many travels and adventures around the world. He met Diane, the love of his life and mother to his four children, in 1982 and together they created a warm, loving home in Katy, Texas. Passing on his competitive spirit and zest for life, his children- Alicia, Zack, Tara, and Michelle-grew up in an active household alive with sports, games, laughter, and fun. He shared his spiritual path his family during heart felt conversations while on camping trips, on hikes through "the forest", and during their time with Second Baptist Church. His children always poked fun at their father's fascination for creatures such as Bigfoot and the Chupacabra, but also earnestly loved his open-hearted curiosity towards life's mysteries.

Charlie's professional career spanned more than 35 years in the oil and gas exploration industry. The majority of that time was with WesternGeco where he held numerous supervisory and managerial positions. His strength in operations and sales earned him the respect of clients, contractors, and employees alike.

In retirement, his love for fishing and spending time with his family continued to grow. Taking his dog Roxy, his wife, children, and grandchildren out on his fishing boat to explore and embrace the beauty of the Texas Gulf Coast was a point of pride for Charlie who was always generous and eager to share his passions with those he loved. He also found joy in gardening, playing golf and tennis with his wife and friends, traveling, cheering on the Astros, and cooking delicious fish dinners. Always a very spiritual man, he was a long-time member of Second Baptist Church.

Charlie is survived by his mother Elsa Yanez, his wife of 40 years Diane Yanez, daughter Alicia Ferguson, son Zachary Yanez and his wife Jessica Yanez, daughter Tara Yanez, daughter Michelle Yanez and her fiancée Kyle Gregor. Charlie will be deeply missed by his sister Elsie DeLeon and brother-in-law Mandy DeLeon along with his numerous nieces, nephews, and in-laws. His legacy will also be carried on by his four grandchildren Ashton, Camryn, Cody, and Wesley.

Our family would like to give a special thanks to the crew at Mauna Kea Beach Hotel who helped Charlie's family and friends during the time of his passing. Our family is extremely grateful that Charlie left his physical body doing what he loved: taking in the natural beauty of the ocean.

We love you Papi- you are deeply missed. The depth and strength of your character as a father, grandfather, husband, son, and friend will live on through all who were lucky enough to know you.

Celebration of Life ceremony TBA. To honor Charlie's memory, please make contributions to one of his favorite organizations: Coastal Conservation Association at <https://ccatexas.org/donate/> or St. Jude Children's Research Hospital <https://www.stjude.org/donate/donate-to-st-jude.html>.

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USGS TAPESTRY OF TIME AND TERRAIN <http://tapestry.usgs.gov> The CCGS is donating to all of the 5th and 6th grade schools in the Coastal Bend. Check it out--it is a spectacular map. You might want to frame one for your own office. The one in my office has glass and a metal frame, and It cost \$400 and it does not look as good as the ones we are giving to the schools.

FREE TEXAS TOPOS'S <http://www.tnris.state.tx.us/digital.htm> these are TIFF files from your state government that can be downloaded and printed. You can ad them to SMT by converting them first in Globalmapper. Other digital data as well.

FREE NATIONAL TOPO'S [http://store.usgs.gov/b2c_usgs/b2c/start/\(xcm=r3standardpitrex_prd\)/do](http://store.usgs.gov/b2c_usgs/b2c/start/(xcm=r3standardpitrex_prd)/do) go to this webpage and look on the extreme right side to the box titled TOPO MAPS DOWNLOAD TOPO MAPS FREE.

<http://www.geographynetwork.com/> Go here and try their top 5 map services. My favorite is 'USGS Elevation Date.' Zoom in on your favorite places and see great shaded relief images. One of my favorites is the Great Sand Dunes National Park in south central Colorado. Nice Dunes.

<http://antwrp.gsfc.nasa.gov/apod/asropix.html> Astronomy picture of the day--awesome. I click this page everyday.

<http://www.spacimaging.com/gallery/ioweek/iow.htm> Amazing satellite images. Check out the gallery.

<http://www.ngdc.noaa.gov/seg/topo/globegal.shtml> More great maps to share with kids and students.

www.ccgeo.org Don't forget we have our own we page.

<http://terra.nasa.gov/gallery/> Great satellite images of Earth.

www.ermaper.com They have a great free downloadable viewer for TIFF and other graphic files called ER Viewer.

<http://terrasrver.com> Go here to download free aerial photo images that can be plotted under your digital land and well data. Images down to 1 meter resolution, searchable by Lat Long coordinate. Useful for resolving well location questions.

TYPE LOGS OF SOUTH TEXAS FIELDS by Corpus Christi Geological Society

NEW (2019) TYPE LOGS IN RED;

lost now found

ARANSAS COUNTY

Aransas Pass/McCampbell Deep
Bartell Pass
Blackjack
Burgentine Lake
Copano Bay, South
Estes Cove
Fulton Beach
Goose Island
Half Moon Reef
Nine Mile Point
Rockport, West
St. Charles
Tally Island
Tract 831-G.O.M. (offshore)
Virginia
BEE COUNTY
Caesar
Mosca
Nomanna
Orangedale(2)
Ray-Wilcox
San Domingo
Tulsita Wilcox
Strauch_Wilcox
BROOKS COUNTY
Ann Mag
Boedecker
Cage Ranch
Encintas
ERF
Gyp Hill
Gyp Hill West
Loma Blanca
Mariposa
Mills Bennett
Pita
Tio Ayola
Tres Encinos
CALHOUN COUNTY
Appling
Coloma Creek, North
Heyser
Lavaca Bay
Long Mott
Magnolia Beach
Mosquito Point
Olivia
Panther Reef
Powderhorn
Seadrift, N.W.
Steamboat Pass
Webb Point
S.E. Zoller
CAMERON COUNTY
Holly Beach
Luttes
San Martin (2)
Three Islands, East

Vista Del Mar

COLORADO COUNTY

E. Ramsey
Graceland N. Fault Blk
Graceland S. Fault Blk

DEWITT COUNTY

Anna Barre
Cook
Nordheim
Smith Creek
Warmley
Yorktown, South

DUVAL COUNTY

DCR-49
Four Seasons
Good Friday
Hagist Ranch
Herbst
Loma Novia
Petrox
Seven Sisters
Seventy Six, South
Starr Bright, West

GOLIAD COUNTY

Berclair
North Blanconia
Bombs
Boyce
Cabeza Creek, South
Goliad, West

St Armo

Terrell Point

HIDALGO COUNTY

Alamo/Donna
Donna
Edinburg, West
Flores-Jeffress
Foy
Hidalgo

LA BLANCA

McAllen& Pharr
McAllen Ranch
Mercedes
Monte Christo, North
Penitas
San Fordyce
San Carlos
San Salvador
S. Santallana
Shary
Tabasco
Weslaco, North
Weslaco, South

JACKSON COUNTY

Carancahua Creek
Francitas
Ganado & Ganado Deep
LaWard, North
Little Kentucky

Maurbro

STEWART SWAN LAKE

Swan Lake, East
Texana, North
West Ranch

JIM HOGG COUNTY

Chaparosa
Thompsonville,N.E.

JIM WELLS COUNTY

Freeborn
Hoelscher
Palito Blanco
Wade City

KARNES COUNTY

Burnell
Coy City
Person

RUNGE

KENEDY COUNTY

Candelaria
Julian
Julian, North
Laguna Madre
Rita

STILLMAN

KLEBERG COUNTY

Alazan
Alazan, North
Big Caesar
Borregos
Chevron (offshore)

LAGUNA LARGA

Seeligson
Sprint (offshore)

LA SALLE COUNTY

PEARSALL

HAWKVILLE: EAGLEFORD

LAVACA COUNTY

Hallettsville
Hope
Southwest Speaks
Southwest Speaks Deep

LIVE OAK COUNTY

Atkinson
Braslau
Chapa
Clayton
Dunn
Harris
Houdman
Kittie West-Salt Creek
Lucille
Sierra Vista
Tom Lyne
White Creek
White Creek, East

MATAGORDA COUNTY

COLLEGEPORT

MCMULLEN COUNTY

Arnold-Weldon
Brazil
Devil's Waterhole
Hostetter
Hostetter, North

NUECES COUNTY

Agua Dulce (3)
Arnold-David
Arnold-David, North
Baldwin Deep
Calallen
Chapman Ranch
Corpus Christi, N.W.
Corpus Christi West C.C.
Encinal Channel
Flour Bluff/Flour Bluff, East
GOM St 9045(offshore)
Indian Point
Mustang Island
Mustang Island, West
Mustang Island St.
889S(offshore)

NUECES BAY/NUECES BAY WEST

PERRO ROJO

PITA ISLAND

RAMADA

REDFISH BAY

RIVERSIDE

RIVERSIDE, SOUTH

SAXET

SHIELD

STEDMAN ISLAND

TURKEY CREEK

REFUGIO COUNTY

BONNIEVIEW/PACKERY FLATS

GRETA

LA ROSA

LAKE PASTURE

REFUGIO, NEW

TOM O'CONNOR

SAN PATRICIO COUNTY

ANGELITA EAST

COMMONWEALTH

ENCINO

ENOS COOPER

GERONIMO

HARVEY

HIBERIA

HODGES

MATHIS, EAST

McCAMPBELL DEEP/ARANSAS PASS

MIDWAY

MIDWAY, NORTH

Odem

Plymouth

Portilla (2)

Taft

Taft, East

White Point, East

STARR COUNTY

El Tanque

Garcia

Hinde

La Reforma, S.W.

Lyda

Ricaby

Rincon

Rincon, North

Ross

San Roman

Sun

Yturria

VICTORIA COUNTY

Helen Gohike, S.W.

Keeran, North

Marcado Creek

McFaddin

Meyersville

Placedo

WEBB COUNTY

Aquilares/Glen Martin

Big Cowboy

Bruni, S.E.

Cabezon

Carr Lobo

Davis

Hirsch

Juanita

Las Tiendas

Nicholson

O'Hem

Olmitos

Tom Walsh

WHARTON COUNTY

Black Owl

WILLACY COUNTY

Chile Vieja

La Sal Vieja

Paso Real

Tenerias

Willamar

ZAPATA COUNTY

Benavides

Davis, South

Jennings/Jennings, West

Lopeno

M&F

Pok-A-Dot

ZAVALA COUNTY

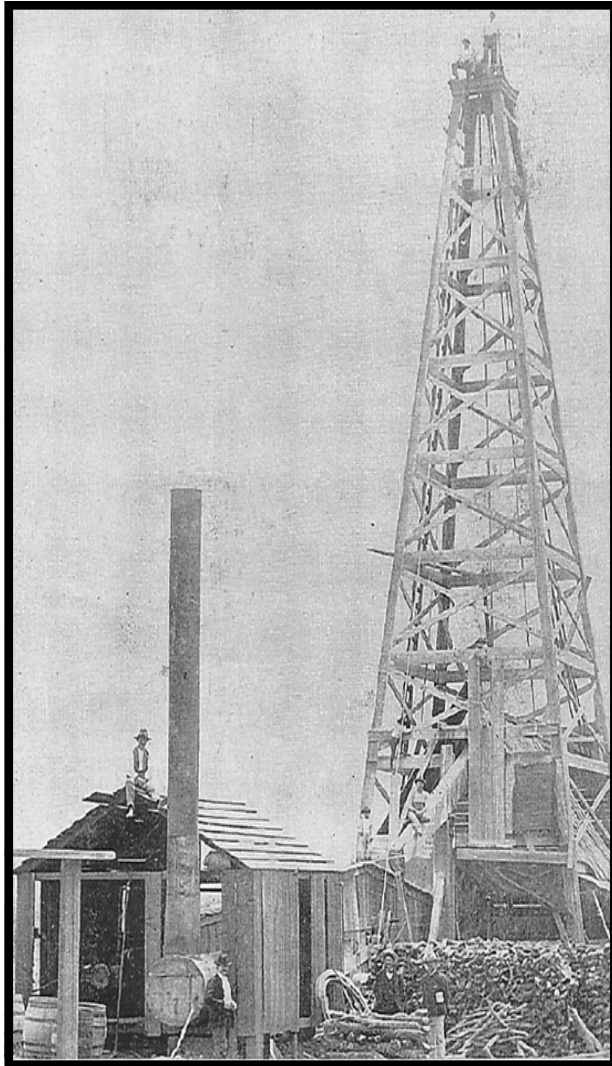
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LEIGHTON DEVINE
Exploration Manager

SUEMAUR
EXPLORATION &
PRODUCTION, LLC

p: (361) 884-8824 ext. 412 555 N. Carancahua, Suite 1230
c: (361) 510-8872 Corpus Christi, Texas 78401
ldevine@suemaur.com www.suemaur.com

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14100 Southwest Fwy, Ste. 350
Sugar Land, TX 77478
M: (361) 742-9252 B: (832) 831-6159
www.TransamericaAgencyNetwork.com
jasondowning76@gmail.com

Tommy Dubois

Petroleum Geology

242 Bayside Drive
Corpus Christi, Tx. 78411

tvdubois@yahoo.com
361-215-0223

MATTHEW FRANEY

Consulting Geologist

AAPG CPG #6342

VENTEX OIL & GAS, INC.

545 N. Upper Broadway, Suite 403 361-563-6327
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Oil & Gas Exploration and Development
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rgrexploration@gmail.com



HART EXPLORATION, LLC.

RICK HART
Geologist / Owner

P.O. Box 3576
Bandera, Texas 78003

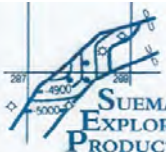
Cell: 512-626-3053
Email: hartexploration@aol.com

RIVIERA EXPLORATION, LLC

H. TONY HAUGLUM
President

500 N. SHORELINE BLVD
SUITE 603
CORPUS CHRISTI
TEXAS 78401

PHONE: 361.684.1811
FAX: 361.684.8071
E-MAIL: THAUGLUM@SWELL.NET



BRENT F. HOPKINS
President and CEO

SUEMAUR
EXPLORATION &
PRODUCTION, LLC

p: (361) 884-8824 ext. 409 555 N. Carancahua, Suite 1230
c: (361) 215-4855 Corpus Christi, Texas 78401
bhopkins@suemaur.com www.suemaur.com



THUNDER EXPLORATION, INC.

WALTER S. LIGHT, JR.
PRESIDENT
PETROLEUM GEOLOGIST

P.O. BOX 541674
HOUSTON, TEXAS
77254-1674

US MOBILE: +713 823 8288
UK MOBILE: +44 (0)794 424 0106
EMAIL: wthunderx@aol.com



Jeff Osborn
Geologist

Herradura Petroleum, Inc.
14493 SPID, Ste A, #539
Corpus Christi, TX 78418

361-537-2349 jeff@herradurapetroleum.com

First Rock, Inc.

RGR Production

First Rock I, LLC

Gregg Robertson

710 Buffalo St. Ste 402
Corpus Christi, TX 78401
361-884-0791

361-215-5559 - Cell
210-260-0300 - Cell
361-884-0863 - Fax
firstrockinc@msn.com

DSX
ENERGY

Doug Sartoris

Exploration Geologist / Managing Partner

800 North Shoreline Blvd.
Suite 2570 South
Corpus Christi, TX 78401

Office: 361-884-1130
Cell: 361-548-1130
doug@dsxenergy.com

Crossroads Exploration

Gloria D. Sprague
Geologist

388 CR 4012
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CORPUS CHRISTI, TEXAS 78403

OFFICE (361) 887-2981
CELL (361) 739-5618
EMAIL RSTERETT@DAHCO.US

SEBASTIAN P. WIEDMANN
GEOSCIENTIST

WILSON PLAZA WEST
606 N. CARANCAHUA, SUITE 500
CORPUS CHRISTI, TEXAS 78401
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