

CHRISTOPHER MESSINGER

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PROFESSIONAL SUMMARY

Mr. Messinger has a bachelor's degree in geology along with being ASBOG certified as a Professional Licensed Geologist (PG) in the state of North Carolina, Arizona, Utah and Texas. He has over 20 years of experience as a geologist, and over 10 years' experience as a consulting geologist he is the owner/operations manager for all locations. His professional experience ranges from being a chief geologist, reserve geologist and the mining industry, which included mine operations, mine planning, geological modeling, reserve analysis-evaluations, mineral quality evaluations, marketability studies, acquisitions, due diligence, and permitting. Other industries of expertise are oil and gas industry, environmental site assessments and geotechnical engineering.

Mr. Messingers' specific areas of consulting expertise include managing the geological information for reserve bases, exploratory drilling, drill management, personnel management, permitting, sampling (bench splitting), reserve modeling, surv-cadd, data base management and mapping.

The experience that has been gained through all these endeavors have proven to drive results for numerous companies. Along with being able to consult for all geological needs the experience gained provides working knowledge of people and personal issues along with the ideology that all ideas are warranted and needed to formulate a working relationship.

SKILLS & ABILITIES

With experience in Permian, Eagle ford, Carboniferous (Mississippian through the Pennsylvanian basin), Rocky Mountain (Cretaceous), and Coastal Geology the skills obtained are mining, drilling, due diligence acquisitions, reserve evaluations, operations expert reserve analysis, marketability studies, wetlands mitigation, Phase I, II, III.

EDUCATION & PROFESSIONAL DEVELOPMENT

OSHA TRAINING

MSHA TRAINING

SURV-CADD TRAINING

B.S., GEOLOGY, MARSHALL UNIVERSITY, HUNTINGTON WV

PROFESSIONAL AFFILIATION & REGISTRATIONS

CPG – STATE OF TEXAS

CPG – STATE OF ARIZONA

CPG – STATE OF UTAH

CPG – STATE OF NORTH CAROLINA

MEMBER, AMERICAN INSTITUTE OF PROFESSIONAL GEOLOGIST

EXPERIENCE

- 2019-2019 PG Consulting Geologist, *Intrepid*
- Oversight of drilling and development of well. Ran step draw test and constant head test.
- 2019-2019 PG Consulting Geologist, *TPS – Turnkey Processing Solutions - Midland*
- Chlorination system. Well evaluations / TCEQ standards. Ran step draw test.
- 2019-2019 PG Consulting Geologist, *TPS – Turnkey Processing Solutions - Oklahoma*
- Oklahoma Mine planning / hydrogeological evaluation.
- 2019-2019 PG Consulting Geologist, *Preferred Sands – South Texas*
- Step Draw Test / Constant head test. Drilling oversight of well field. Designed and development of 4 wells. Provided mine models, explored for sand deposits, input data in SGB, Reserve analysis, quality models, well drilling, well management and design, Geophysical evaluations, hydrogeological modeling, VFD-PLC programming for aquifer protection
- 2017-2019 PG Consulting Geologist, *Preferred Sands of Permian Basin, Eagle ford, and Oklahoma*
- Drilling oversight of well field. Designed and development of 12 wells at 1100'. Provided mine models, explored for sand deposits, input data in SGB, Reserve analysis, quality models, well drilling, well management and design, Geophysical evaluations, hydrogeological modeling, VFD-PLC programming for aquifer protection and to develop the cone of influence, along with monitoring well field.
- 2016-2017 PG Consulting Geologist, *Stagg Resource Consultants Permian and Eagle ford basins*
- Managed over 10 geologists and 4-6 rigs. Worked throughout the state of Texas and Oklahoma. Exploring for sand deposits which demonstrate a high degree of sorting and roundness. Based from analytical and visual evaluations a series of data sets would be mapped to help extrapolate the changing depositional environments to help identify the next series of drilling. Certain environments such as eolian beach fluvial and braided systems were discovered and followed to identify and purchase tracts of land for development.
 - Based on the drilling, spacing, analytical vales, and current and future market conditions a reserve analysis was created to help solidify investment and ability to go public SEC. Provided due diligence with several investors, banking institutions, along with land and local government officials. Provided surv-cadd modeling, mine planning, isopach maps structure and data base management. Also provided the first series of bench splitting to illustrate the value in detail mine planning. The K value increased, and percent fines were constrained to inner burden and

discarded as waste. Used geophysical logs to identify and stimulate water bearing formations for wet plant design and use.

2015-2016 Director of Geology, *Coastal Environmental and Geotechnical North & South Carolina*

- Environmental Site Assessments Phase 1-3. T clips VOC. Report writing and field research, flow nets and contaminant flow modeling through surv-cadd. Geotechnical engineering- Subsurface site assessment, soil sampling, compaction nuclear density, concrete testing, petrometer measurements, construction oversight and inspection to blueprint planning, proof roll testing, proctors, permeability assessment flow nets and contaminant flow modeling through surv-cadd.

2014-2015 Consulting Geologist, *Continental Oil and Gas*

- Land acquisitions – lease by owner and 3rd party operators, Title, and courthouse research. Also, X sectioned Rome trough area by state information and other drilling data. Utica shale and Rogersville. Researched well log data neutron-density logs. Set up 640-acre grids for development. Worked with DEP For permitting information along with certain cadd files needed for permitting. Studies surrounding well data and competitors land acquisitions along with current drilling data for trending.

2014-2015 Consulting Geologist, *Kentucky River LLC*

- Complete reserve evaluation 1800 drill holes to correlate and grid. One of Kentucky's River's largest holding was issued to me to create a complete data base and reserve evaluation. This evaluation was to be used to help entice future energy companies to explore and evaluate the properties energy resources such as deep mineable steam coal, surface mineable coal and high wall miner coal removal. In addition, a proposal for further analysis for the Selbyville CBM Development was also included. The reserve study included the following: reserve evaluation per seam an per applicable mining plan, CBG management, mapping, reserve tons, SEC tons measured, indicated and inferred, cross sections, fence diagrams, gridding, reserve booklets with over 52 maps and data points along with specific recommendations for the study area and its resources.

2013-2016 Operations Manager Consulting Geologist, *Marathon Petroleum*

- Provided environmental and geo-technical drilling for cavern-mine design in Robinson, Illinois. This position required historical research for the area on certain industrial characteristics that could play a role on formation pressure desorption or absorption due to micro fracture connectivity. A total of six 900-foot holes was drilled and logged according to their lithology and structures. Correlation was created and confirmed by the Illinois Geological Survey. Provided geophysical interpretation, drilling management, permitting, safety director, roof and floor analysis, sigra testing, horizontal stress analysis and mapping, geo-tech environmental sampling, point loan, uniaxial, shear strength, permeability, slake durability, surv-cadd modeling.

2012-2013

Manager of Geology, *Patriot Coal*

- As manager of geology, the principal responsibility was to create a base model that can report SEC tons, but also be used by the mine engineers to calculate their individual mine methods and extraction parameters. A grand total of 35,000 holes had to be re-correlated and bench split in order to follow each identifiable reserve or resource coals. Re-classification of many of the data was necessary to complete the reserve resource evaluation. Complex data was stored into drill hole system. This data needed to be modified to correctly enter a surv-cadd format to allow proper modified ridding techniques which would not allow the model to extrapolate out of the range of data points. This prevents the model from allowing coal tonnage to exist where drill data would prove none to exist. It also allows the program to use a pinch out method, which allow the first position thickness to be recorded halfway from the data point that has no coal at that specific horizon. Long wall operations underlined many of our rom and pillar operations. Certain coal seam roof stability decreased due to previous mining. Sigra testing was used to collect data and offer an infrared 3 dimensional visual of the underlying stresses from the longwall operations and change in shear strength from the existing roof within current coal operations. By using this data and current grid data, we could overlay these maps to illustrate the most productive and safe minable passage to access an area that is less effected from the stress due to unloading and displacement. Several key objectives to this position are: exploration budgeting, permitting, refer and examine future coal reserves and land acquisitions, land acquisitions and due diligence with banking institutions and investors on coal reserve, management of staff geologist and geo-techs. Deep mine data collecting and surveying and SEC reporting.

2011-2014

Chief Geologist, and Consulting Geologist *Essar Mineral North America*

- As chief geologist, I reverified all the reserves and created new databases along with quality data. I extracted this data and constructed new models based on current methodology and reported the reserves based on these methods. These technical reports were used to help identify the loss coal claims from the purchasing company and to illustrate how the companies reserves were miscalculated by erroneous modeling methods. Also used this time to tighten up companies drilling areas to show provable and proven reserves based on circumferences distances for measures, inferred and proven reserves/resources based on the current economic conditions. Refer and examine future coal reserves and acquisitions. Land acquisitions and due diligence on coal reserves through duetche bank and overseas investors. Management of staff geologist and geo techs, SEC CIMD and JORC report techniques.

2011-2003

SR Geologist, *International Coal Group*

- Exploration management and budgeting, core drilling, geologic interpretation, geologic coal sampling based on current mine and geological changes, short prox. Gravities, met test and petrographic, ABA rock sampling, mine roof stability testing, RQD and tensile and compressive testing. Reserve analysis and modeling based on correct correlation from

current mining methods. Gridding Key Elevation Grids, Thickness Grids, Top Mod Grids, GFU, Geo SDF, HRN codes. 3D topo, Block Modeling, and Model by mineable coal split. Geologic mapping – roof hard maps, CTFA, isopach analytical, structure, thickness, total seam total coal, X-Sections, Geo Logs, E-Log interpretation and Drill logs. Marketability studies based on geographic location, transportation, coal reserves, mining method, blending and or washing coal and Mine Plan. Coal bed methane development from reserves that potentially contain CBM Based on depth and hydraulic head. Management of staff geologist and Geotech's.