



**GERMI**

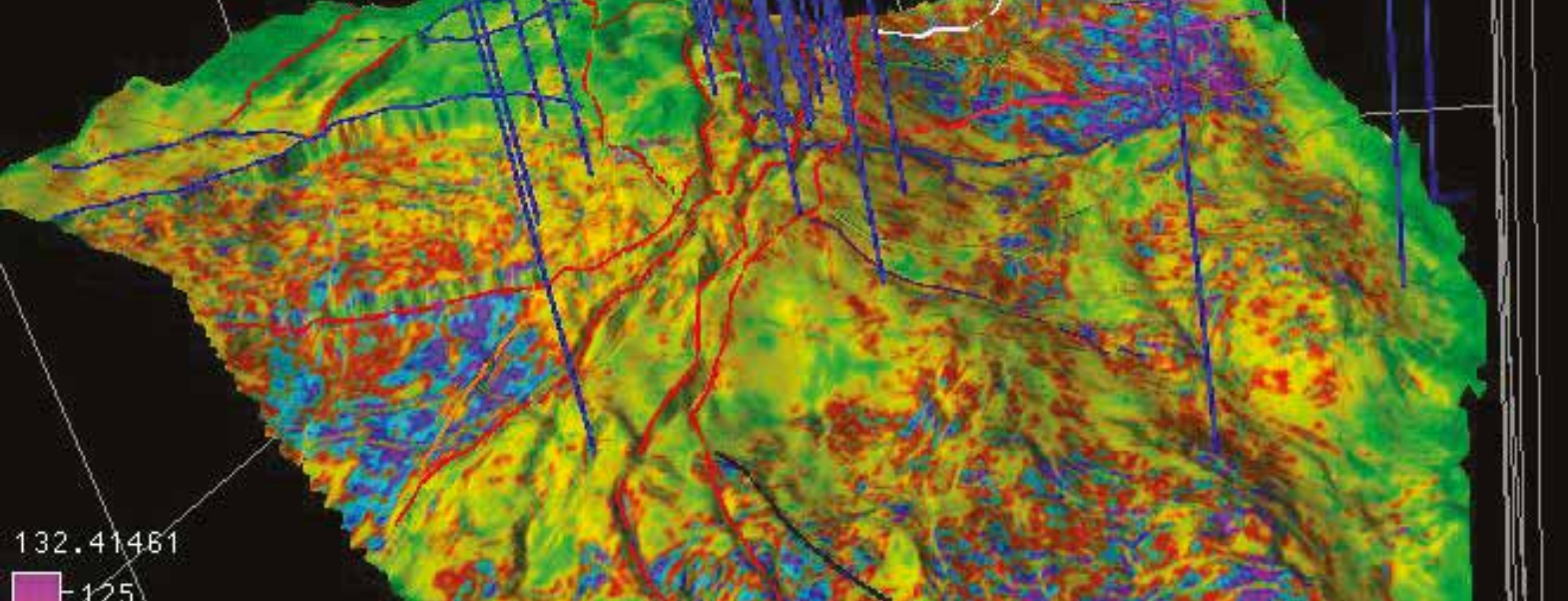
GUJARAT ENERGY RESEARCH  
AND MANAGEMENT INSTITUTE

*Gujarat Energy Research and Management Institute (GERMI) an ISO 9001 : 2008 certified institute, is a Centre for Excellence in industry learning, research and development and education. It is set up to develop human resource assets to cater to both renewable and non-renewable energy sectors, improve knowledge base of policy makers and technologists, and provide a*

*competitive edge to leaders to compete in the global arena.*

*GERMI was brought into existence and is promoted by Gujarat State Petroleum Corporation Limited (GSPC), a Government of Gujarat Undertaking. GERMI has already established specialized research, education, management and training institutes, and is continually*

*expanding its horizons to cater to the allied energy sectors. GERMI is a registered Society and a Trust under the Societies Registration Act, 1860 and the Bombay Public Trust Act, 1950. GERMI is a recognized Scientific and Industrial Research Organization (SIRO) by the Department of Scientific and Industrial Research (DSIR), Government of India.*



## THE TEAM

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**Ms. Annapurna Boruah**  
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## PETROLEUM RESEARCH WING

The objective of Petroleum Research Wing is to serve as a Centre for Excellence in Research on Development of increasingly efficient and well adapted technologies to extract, upgrade, manage and commercialize the oil and gas resources and economic impacts of their production and use.

The results so generated will directly support the GERMI's mission of protecting and responsibly managing country's hydrocarbon resources by advancing the scientific understanding to plan for a balanced and secured energy future.

*Petroleum Research wing has two major groups,*

**DATA INTERPRETATION CENTRE**

**PETROLEUM RESEARCH LABORATORIES**

Important Focal Areas are....

- Sequence stratigraphy
- Reservoir characterization
- Coal characterization through seismic
- Reserve estimation
- Geochemical and Petrophysical data analysis
- Formation evaluation and performance prediction
- Improved / Enhanced oil recovery

## DATA INTERPRETATION CENTRE

The Centre possesses top expertise and performs application oriented Research in areas related to Geophysical and Geological data interpretation. The Centre provides a unique environment that incubates multidisciplinary collaborations among GERMI scientists for developing and exploring new technologies for understanding of hydrocarbon plays.

The Centre equipped with 5 Work Stations with Linux and MS Windows, dual booting Systems with 64 GB RAM and Nvidia Graphics compatible for carrying out 3D seismic data interpretation with latest state of art Softwares.

### FAULTS AND FRACTURE ANALYSIS

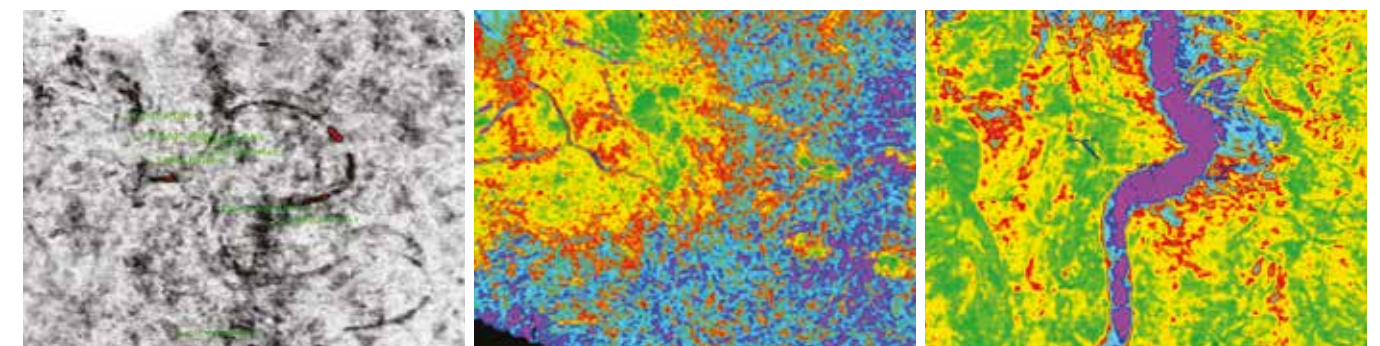


**POLAR DIP**

**MOST POSITIVE CURVATURE**

**MOST NEGATIVE CURVATURE**

### DELINEATION OF CHANNELS AND THIN SANDS

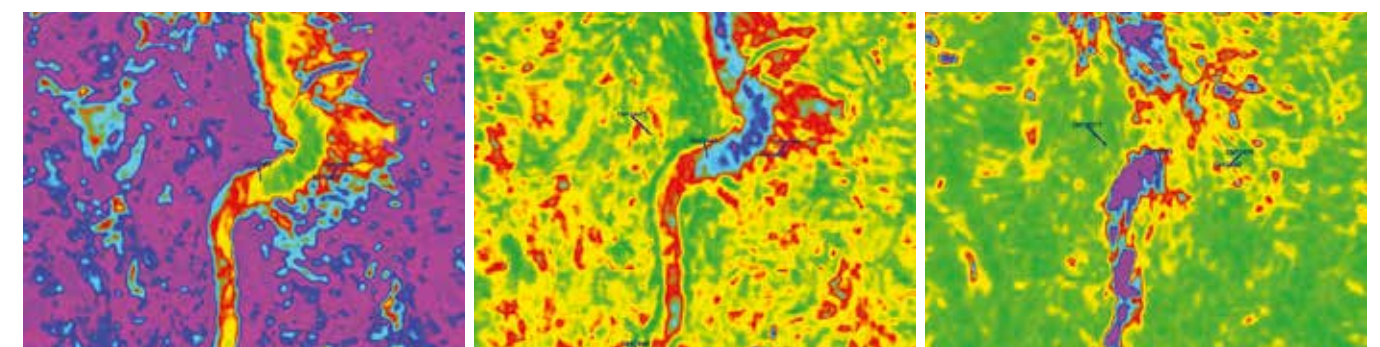


**RMS AMPLITUDE**

**IMPEDANCE**

**SWEETNESS**

### TEXTURE ATTRIBUTE ANALYSIS - ENERGY, ENTROPY AND CONTRAST



**ENERGY**

**ENTROPY**

**CONTRAST**

## R&D ACTIVITIES OF DATA INTERPRETATION CENTRE (DIC)

### ■ Analysis of 3D Seismic Data to bring out optimal work flow for

- Data enhancement
- Fault and fracture analysis
- Spectral decomposition for identification of channels and thin sands
- Reservoir characterization
- Coal characterization through seismics for CBM
- Log analysis, correlation and cross plots for delineating petro-physical parameters to understand lateral variations of lithology
- Integration of log and seismic data for multi - attribute analysis
- Spectral blueing and inversion studies
- AVO
- Texture analysis

## OUR CAPABILITIES

- Seismic data enhancement
- Complicated fault block analysis & fracture geometry extraction.
- Reservoir characterisation
- Coal characterisation using seismics
- Identification of channels and thin sands / coals using spectral decomposition and inversion studies
- Integration of multiple domain data for interpretation
- G&G data analysis for exploratory block evaluation.
- 2D / 3D seismic data acquisition parameterisation / planning & designing of survey and quality control of seismic data acquisition.
- Processing of 2D and 3D seismic data

## FUTURE PLANS

- To achieve excellence in quality of interpretation of seismic data
- To extend R&D efforts in shale gas and CBM exploration
- To establish work flows to optimize multi attribute analysis
- To provide consultancy to E&P companies
- To provide opportunity for research to the earth sciences students



## PETROLEUM RESEARCH LABORATORY

The basic objective of the Petroleum Research Labs is to serve as a Centre for Excellence in Research and Development of increasingly efficient and well adopted technologies to extract, upgrade, manage and commercialize the oil and gas resources. Petroleum Research lab provides facility to carryout source rock characterization for conventional and non-conventional energy resources.

## CAPABILITIES

### GEOCHEMICAL STUDIES

- Source rock characterization
- Petrophysical analysis (Porosity and Permeability)
- Optical (Vitrinite Reflectance)
- Geochemical studies for source rock evaluation (Total Organic Carbon content, Kerogen type and Tmax)
- Surface geochemical prospecting surveys for oil and gas exploration
- Microbial prospecting surveys for oil and gas exploration
- Analysis of wear metals in oil samples by atomic absorption spectrophotometer.
- Analysis of micronutrients in sediments by atomic absorption spectrophotometer.

### PETROGRAPHIC STUDIES

- Mineral identification
- Rock identification
- Texture analysis
- Petrological study

### ROCK PHYSICS

- Porosity
- Permeability
- Wettability
- Stress strain analysis

### EXISTING FACILITY

- Atomated permeameter / porosimeter
- Polarizing research microscope
- Atomic absorption spectrophotometer
- Microwave sample digestion system
- UV-Vis spectrophotometer
- Elementor CHNSO analyser for oil and core samples.
- Automated gas pycnometer
- Planetary ball mill

### FUTURE EXPANSIONS

- Conventional core analysis laboratory
- Special core analysis laboratory
- Formation fluid properties laboratory
- Enhanced oil recovery laboratory
- Artificial lift techniques laboratory
- Drilling fluid properties laboratory
- Rock mechanics laboratory
- Drilling simulation laboratory



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