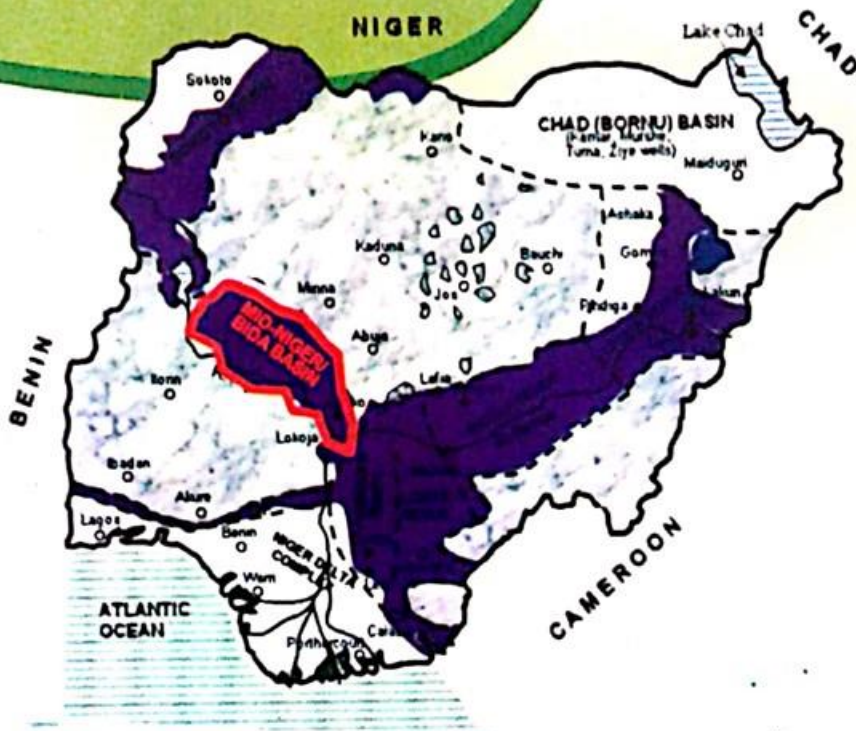


BIDA BASIN HYDROCARBON RESEARCH PROJECT IN PICTURES



An Institutional Research Project of the
Ibrahim Badamasi Babangida University, Lapai

Through:

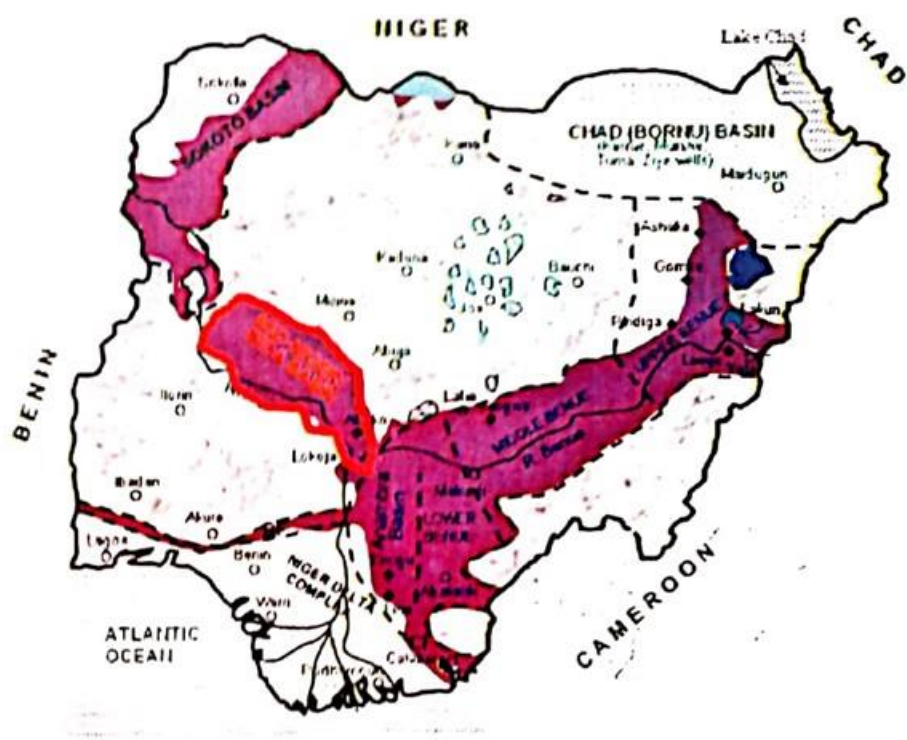
The Department of Geology & Mining

In Collaboration with:

**The Niger State Gubernatorial Committee on the
Development of Bida Basin**



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Bida Basin**

Project Chief Coordinator:

Prof. Ibrahim Adamu Kolo *mnae, mfa, fcasson*

Vice Chancellor, Ibrahim Badamasi Babangida University, Lapai

Project Technical Coordinator:

Prof. Nuhu George Obaje

Professor of Geology and Dean, Faculty of Applied Sciences &
Technology, Ibrahim Badamasi Babangida University, Lapai

Mapping Team (Including Sample Collection and Drilling Controls):

Prof. N. G. Obaje	Ibrahim Badamasi Babangida University Lapai
Prof. D. O. Balogu	Ibrahim Badamasi Babangida University Lapai
Engr. Y. Y. Sani	Bida Basin Committee / Midland Petrogas Ltd
Engr. H. Parti	Bida Basin Committee / Midland Petrogas Ltd
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Mrs. N. Dadi-Mumud	Ibrahim Badamasi Babangida University Lapai
Mr. I. Yusuf	Ibrahim Badamasi Babangida University Lapai
Dr. A. Idris-Nda	Federal University of Technology Minna
Mr. I. A. Goro	Federal University of Technology Minna
Mr. S. H. Dantata	Federal University of Technology Minna

FOREWORD

The Ibrahim Badamasi Babangida University is committed to the study of geology as a course and on that basis has commissioned many institutional geological research projects. Two of these projects are the integrated hydrocarbon prospectivity evaluation of the Bida Basin; and the evaluation and re-blending studies of Nigerian coal deposits as raw materials for the production of smokeless fuels. Despite its dwindling fortunes, petroleum has remained the mainstay of the Nigerian economy since its discovery in commercial quantity at Oloibri in 1956. Surprisingly, the production of this valuable energy resource has been taking place from only the prolific Niger Delta basin. This trend has continued despite the fact that the country is endowed with other notable sedimentary basins having significant potentials for petroleum reserve. It is a well known fact that petroleum is a depletable energy resource. Therefore for us to increase our proven reserve of this valuable resource and maintain our enviable position as a major petroleum producer in Africa, Nigeria must look beyond the currently producing onshore Niger Delta and Deep Water basins and focus more on exploration efforts in the frontier inland basins. The results obtained from this study are defining guides to the high potential of commercial occurrence of oil and gas in the Bida Basin. Areas with these high potentials have been identified; what is left now is for the Nigerian government through the NNPC to commence detailed exploration in the identified areas or for private sector investors to key in to the guidelines of obtaining the necessary licenses to continue detailed exploration and eventual production of oil and gas from the Bida Basin. At every stage of this endeavor, the Ibrahim Badamasi Babangida University stands as a partner in progress. Through this project and many of our institutional projects, we demonstrate commitment to industry-applicable research for the benefit of the Nigerian economy and that of the immediate communities. I invite all stakeholders in the oil and gas sector to take advantage of the outcome of this project, depicted in pictures here, to galvanize investments in the oil and gas fields in the Bida Basin.

Prof. Ibrahim Adamu Kolo mnae, mfa, fcaisson
Vice Chancellor, Ibrahim Badamasi Babangida University, Lapai

EXECUTIVE SUMMARY

The Bida Basin is a NW-SE trending intracratonic structure extending from slightly south of Kontagora in Niger State in the north to the area slightly beyond Lokoja (Kogi State) in the south. All geological maps available on the Bida Basin had lumped the sediments in the basin as one undifferentiated Nupe Sandstone, making it impossible to infer the prospectivity of the basin for hydrocarbon exploration. The delineation of inferred boundaries between the formations in the basin is a significant initial criterion in evaluating the hydrocarbon prospectivity. The formations deposited in the Bida Basin comprise the Bida Sandstone at the base, followed successively upward by the Sakpe, Enagi and Batati Formations in the Northern/Central Bida Basin while the Lokoja, Patti and Agbaja Formations constitute lateral equivalents in the Southern Bida Basin. An institutional research project of the Ibrahim Badamasi Babangida University Lapai (IBBUL), supported by the Niger State Government, has carried out preliminary geological mapping and completed a prospectivity map for the Bida Basin. Geochemical analysis of samples from drilled shallow wells (at Agaie and Kudu) and outcrops was also undertaken along with interpretation of geophysical aeromagnetic data. **From the preliminary geological map prepared, prospective areas, ranked as Less Prospective, Prospective and More Prospective are discernable.** Geochemical data show that mainly gas and some oil would have been generated within the Prospective and More Prospective sections in the basin. The data also show that the Kudu Shale Member within the Enagi Formation and Ahoko Shale Member within the Patti Formation constitute the source rocks for hydrocarbon generation in the Northern and Southern Bida Basin, respectively. Geophysical aeromagnetic data evaluation indicates depths of about 3,000m (> 3 Km) within the identified prospective areas. **The combined geological and aeromagnetic maps provide the basis for detailed further prospectivity evaluation by the University (IBBUL), the Niger State Oil Company (Midland Petrogas), the NNPC, DPR and local and international investors in the search for oil and gas in the Bida Basin. The prepared geological map is the first complete geological map to be produced on the Bida Basin.**

ACKNOWLEDGEMENTS

This project was funded by the Ibrahim Badamasi Babangida University, Lapai and in the greater part by the Niger State Government through the Gubernatorial Committee on Bida Basin Development (GCBBD), chaired by Lt. Gen. M. I. Wushishi (rtd), with the Etsu Nupe, His Royal Majesty, Alhaji Yahaya Abubakar and other distinguished Nigerites as members. The Chief Servant of Niger State, Dr. Mu'azu Babangida Aliyu, OON, GON, Talba Minna, Sodangi Nupe, constituted and inaugurated the Committee.

Full List of GCBBD Members

1. Gen. M. I. Wushishi, *CFR, GCON* - Chairman
2. H.R.H. Alh. (Dr) Yahaya Abubakar, *CFR (Etsu Nupe)*
3. Alh. Umaru Shehu Ndanusa, *OON*
4. Alh. Aliyu Abdullahi, *OON*
5. Amb. Solomon Adama Yisa
6. Engr. Mohammed Sani Alhassan, *MFR*
7. Engr. Mustapha Bello
8. Muhammad Nda
9. Usman T. Muhammad
10. Engr. Abubakar Jibreel, *FNSE*
11. Engr. Habib A. Panti
12. Dr. Ibrahim B. Sule, *mni*
13. Mallam Ibrahim Aliyu
14. Engr. Suleiman Abdullahi
15. Prof. Ibrahim Adamu Kolo
16. Prof. Muhammed Yahaya Kuta
17. Prof. Nuhu Obaje
18. Alh. Mu'azu Bawa
19. Alh. Yusuf G. Tagwai
20. Alh. Isah Ladan
21. Alh. Nuhu Musa
22. Bar. Abdullahi B. Wuse
23. Engr. Y. Y. Sani - Secretary
24. Mohammed Maude Lapai - Dep. Secretary

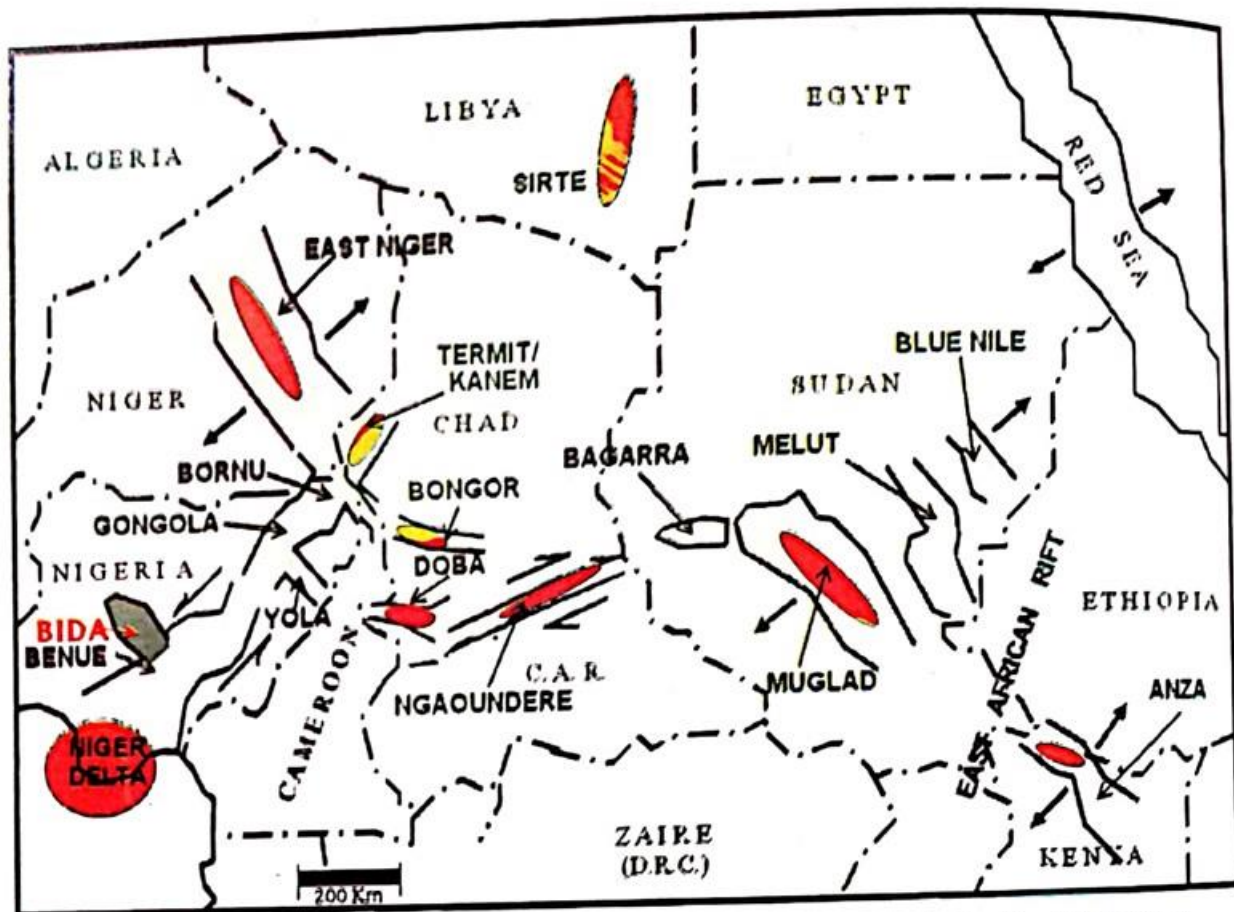
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INTRODUCTION

Petroleum (oil and gas) accounts for up to 95% of Nigeria's foreign earning and has remained the major supporter of its economy since it was first discovered in commercial volume in 1956. Globally, petroleum as energy source will continue to dominate other primary energy sources and is expected to account for up to 60% of the world energy demand in the year 2030. Therefore as a country, it is imperative to continue to search for more oil and gas to add to our reserves, if and only if, we are to maintain our lead as a major oil producer and meet up with our vision 20:2020.

In addition to the Niger Delta Basin from which all current production of petroleum is derived, Nigeria is blessed with numerous other sedimentary basins comprising the Anambra, Bida, Sokoto, Bornu (Chad), and Dahomey Basins, as well as, the Benue Trough made up of the Lower, Middle and Upper Benue Troughs. These basins have structural and stratigraphical similarities with contiguous intracratonic rifted basins of Niger Republic, Chad Republic and Sudan where commercial oil accumulations have been discovered.



Regional tectonic map of western and central African rifted basins showing the relationship of the Muglad, Doba and East Niger Basins to the Bida Basin. Locations of regional shear zones (marked with half-arrow) and major zones extension (complete arrow) as shown. (Adapted from Schull, 1988).

 Major oil and/or gas discovery

Current Global Scenario

Without additional discoveries, petroleum reserves will be exhausted:

USA in 20 years

Nigeria in 40 years

Saudi Arabia in 80 years

Iraq in 160 years

INLAND BASINS EXPLORATION

Nigerian Sector of the Chad Basin

23 wells drilled by the Nigerian National Petroleum Corporation (NNPC);
2 wells (Kanadi-1 and Wadi-1) contain sub-commercial gas

Benue Trough

3 wells drilled (one each) by Shell, Chevron, Elf in the Gongola Basin; only Kolmani River-1 encountered 33 billion standard cubic feet of gas; other two wells (Nasara-1 and Kuzari-1) were dry; No well drilled in the Middle / Lower Benue Trough; geological and geochemical data generated by some consultants and university-based researchers

Anambra Basin

32 wells drilled; 1 well (Anambra River-1) encountered oil, 8 wells encountered gas; remaining 23 wells were dry

Bida Basin

No well drilled; some geological and geophysical studies carried out by university-based researchers; oil seeps reported

Sokoto Basin

No well drilled; data scanty; discoveries made in contiguous basins in neighbouring countries

Dahomey Basin

4 wells, Afowo-1, Bodashe-1, Ojo-1 and Illeppaw-1 drilled by Mobil Producing Nigeria Unlimited between 1960-1961; More data have become available; seems the most prospective

CONDITIONS NECESSARY FOR HYDROCARBON GENERATION AND ACCUMULATION

Source rock lithology = Shale or Carbonate (the darker the better)

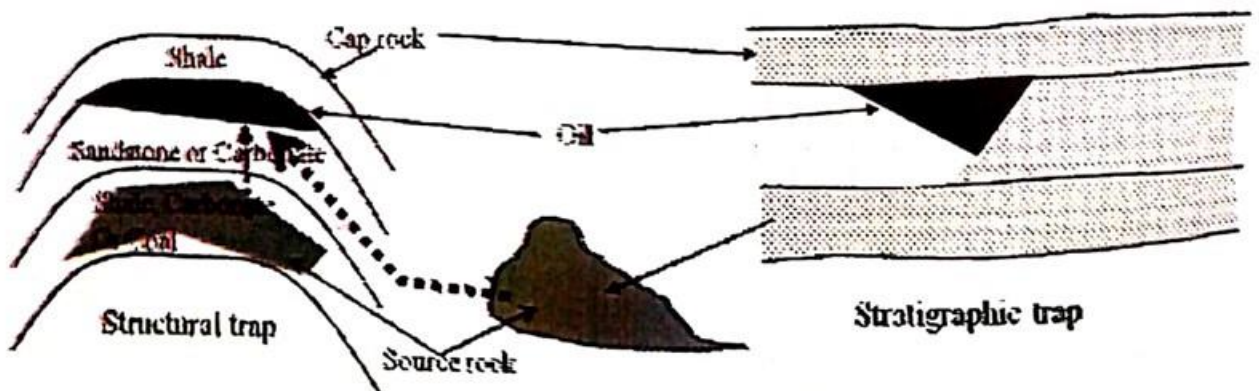
Organic richness: TOC > 0.5wt%, HI = 50 -150 mgHC/gTOC (Gas), > 150 mgHC/gTOC (Oil)

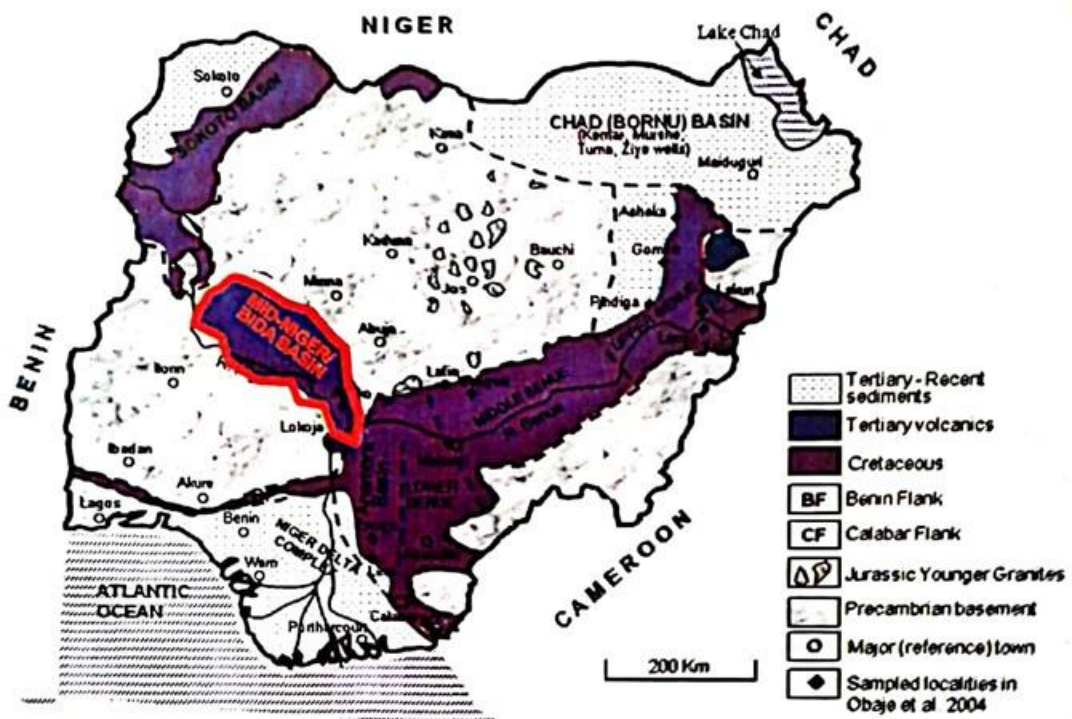
Temperature: May manifest in depth of burial and geothermal history:
Tmax = 435 - 450°C (Oil, Oil & Gas), > 450°C (Gas)
Ro = 0.6 - 1.2% (Oil, Oil & Gas), > 1.2% (Gas)

Reservoir rock lithology = Sandstone or Carbonate (the more porous and permeable the better)

Migration: May be vertical or lateral from source to reservoir and within reservoir

Traps: Structural and/or Stratigraphic

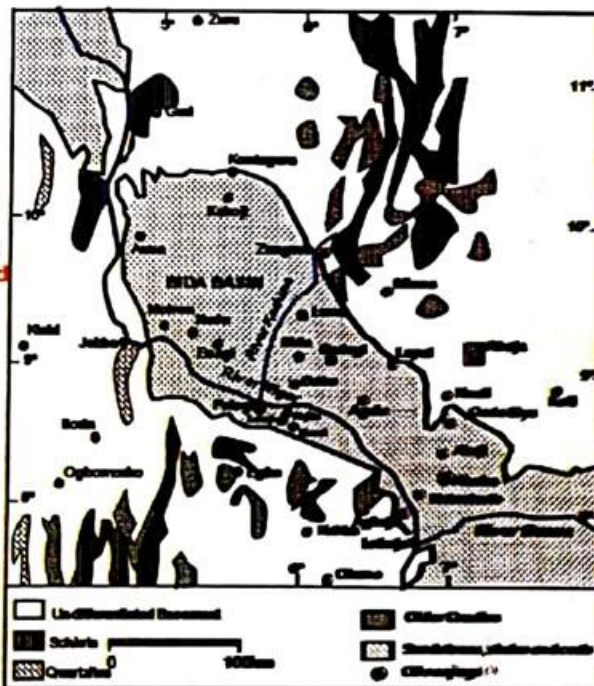


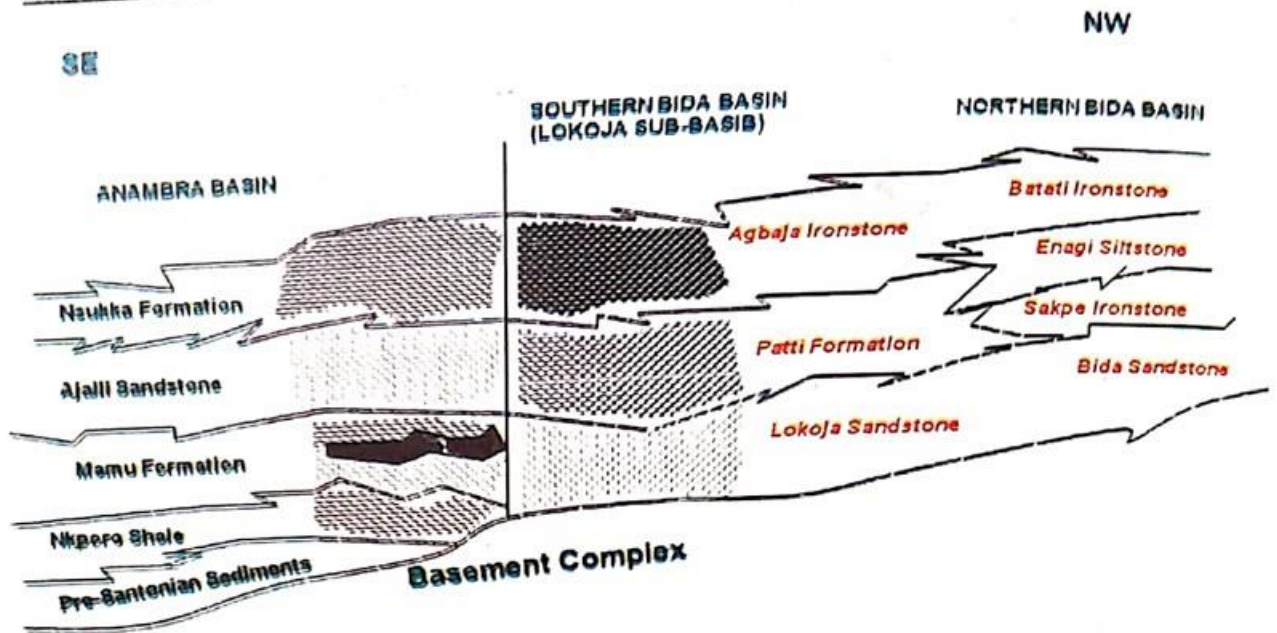


Generalized geological map of Nigeria showing the location of the Bida Basin in relation to the other Nigerian sedimentary basins

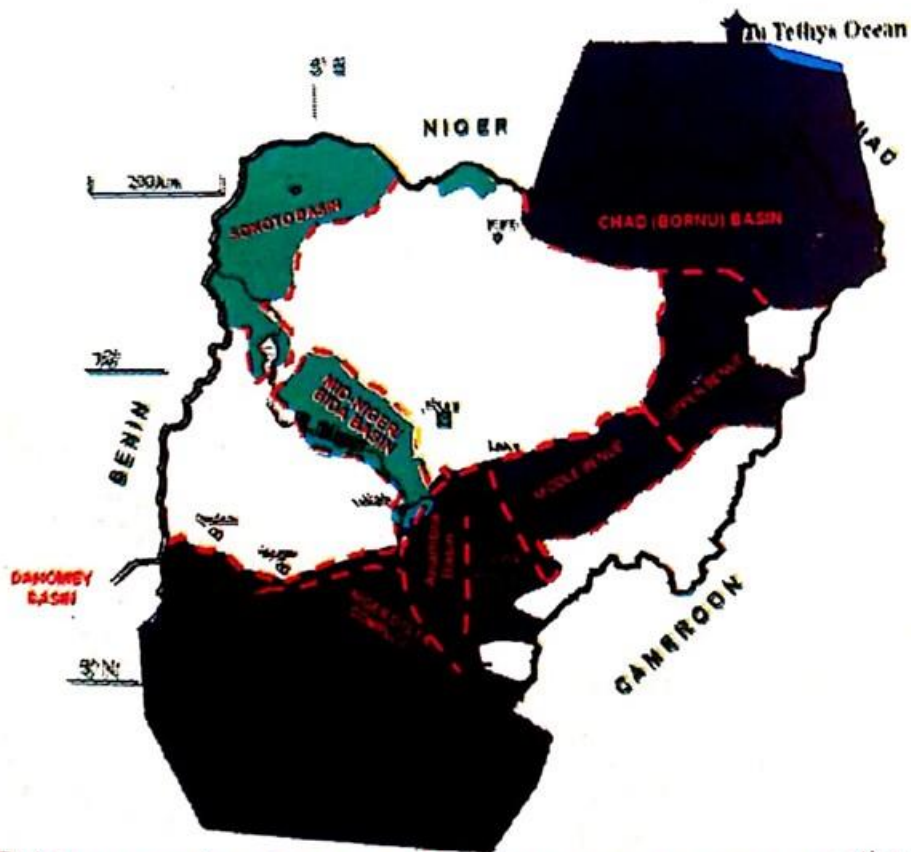
Available geological maps of the Bida Basin have lumped the sedimentary formations into one undifferentiated Nupe Sandstone.

In this way it is not possible to infer prospectivity

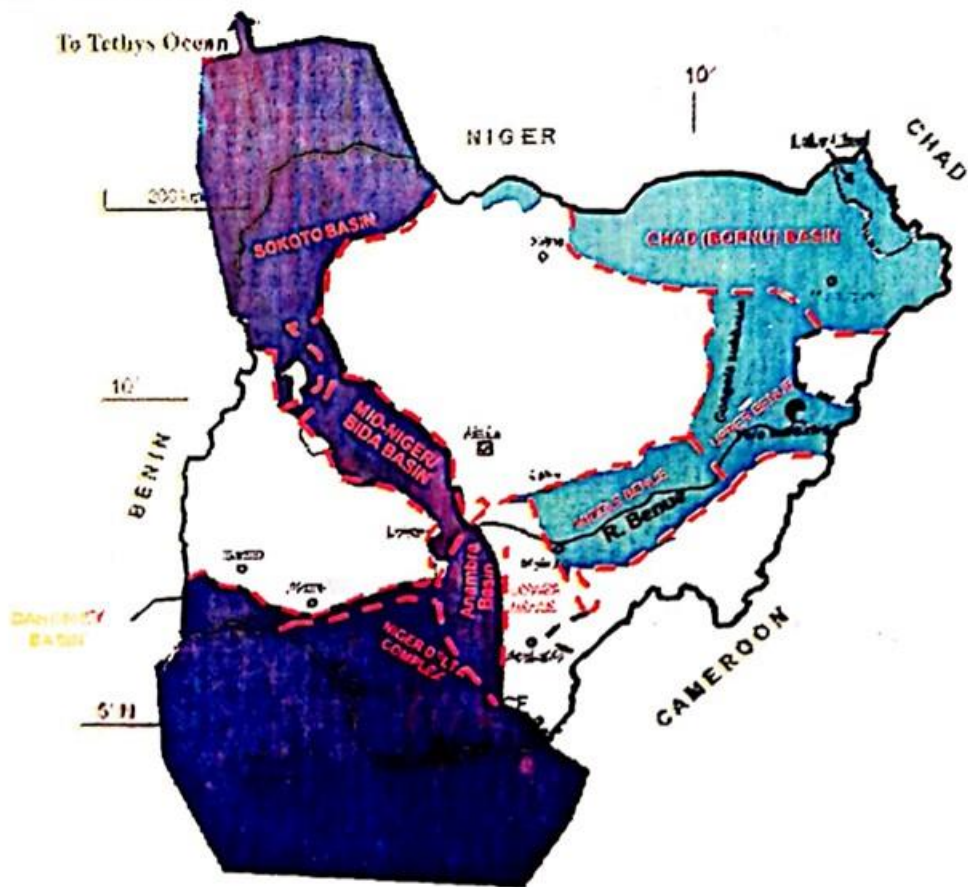




The Bida Basin is made up of the formations indicated in red. Delineating their areal extent and geological boundaries constitute the initial evaluation of the Bida Basin hydrocarbon prospectivity. The formations are correlatable to the Anambra Basin in the south-east and Sokoto Basin in the north-west



Turonian Paleogeography of Nigeria (About 100 million years ago the sea passed through the Benue Trough and the Chad Basins to connect to the Tethys in the north)



Maastrichtian Paleogeography of Nigeria (About 75million years ago the sea passed through the Bida and Sokoto Basins to connect to the Tethys in the north)

GEOLOGICAL MAPPING

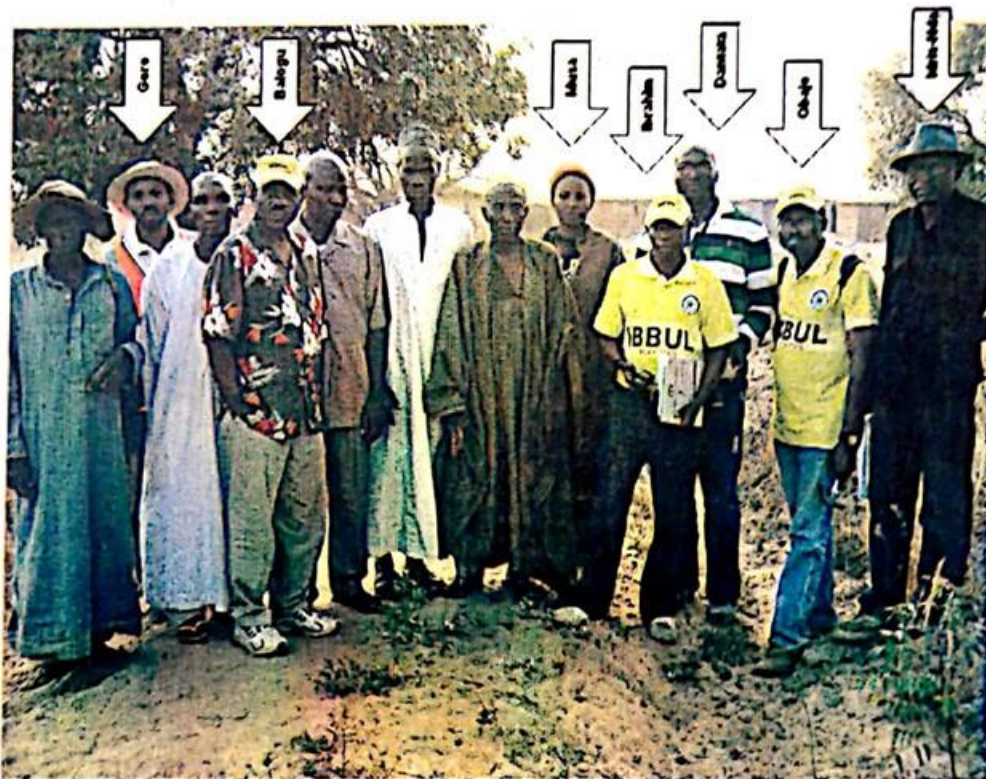


To differentiate the geological formations and come up with an appropriate geological map for the Bida Basin, a team of geologists commissioned by the Ibrahim Badamasi Babangida University commenced the field geological mapping and sample collection in the basin in December 2011.

From left: S.H. Dantata, I.A. Goro, D.O. Balogu, Y. Y. Sani, N.G. Obaje, A. Idris-Nda, S. I. Ibrahim, M.K. Musa



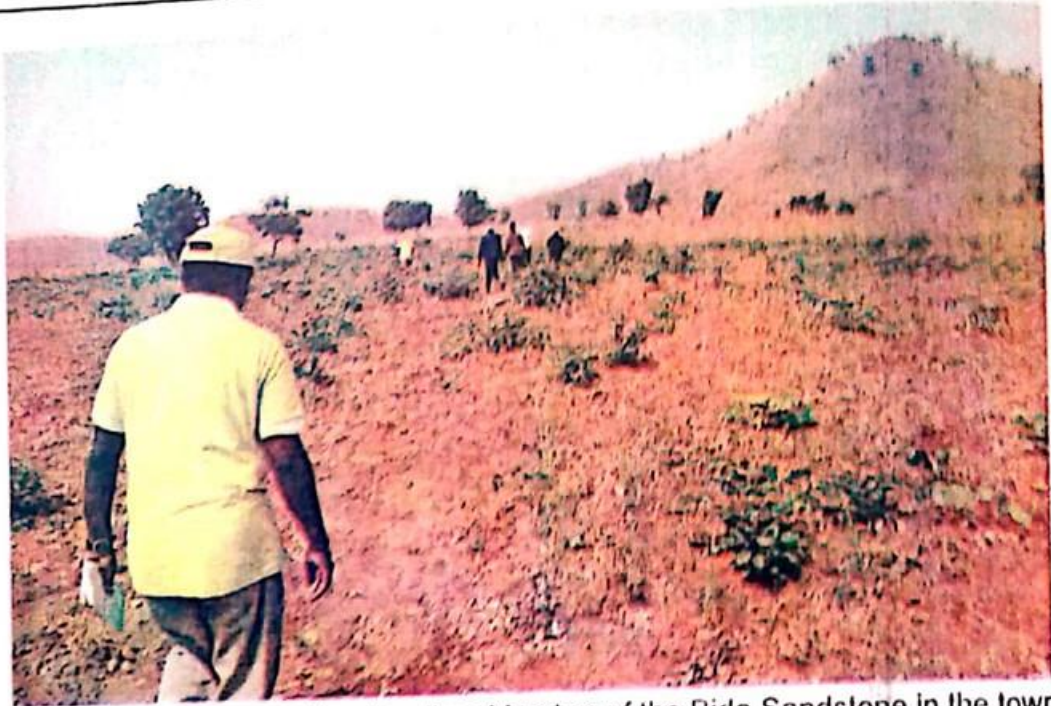
Every mapping project must engage a good community relationship and community sensitization. Mapping team in a group photograph with HRM the Etsu Nupe, Alhaji Yahaya Abubakar, at the Etsu Nupe Palace in Bida.



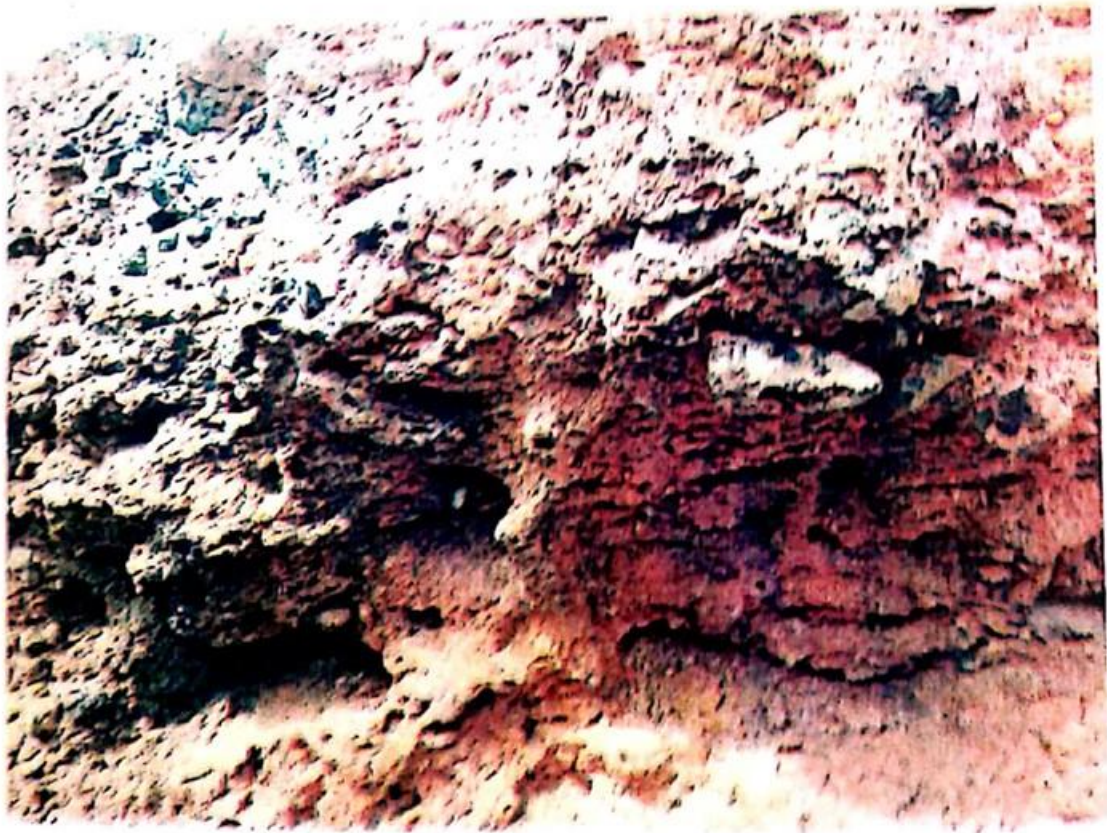
Mapping team in a group photograph with community leaders at Sakpe.
Arrow on mapping team members



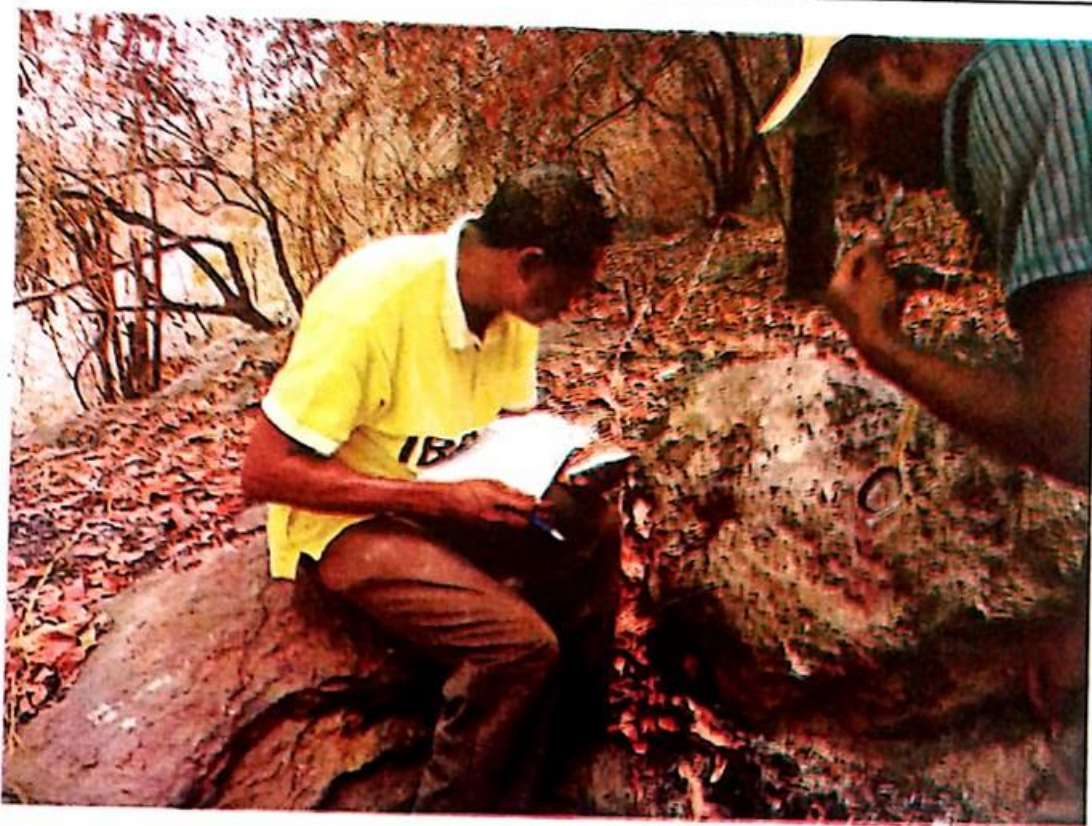
Mapping and logging of the Bida Sandstone (Doko Member)
at Doko Village near Bida



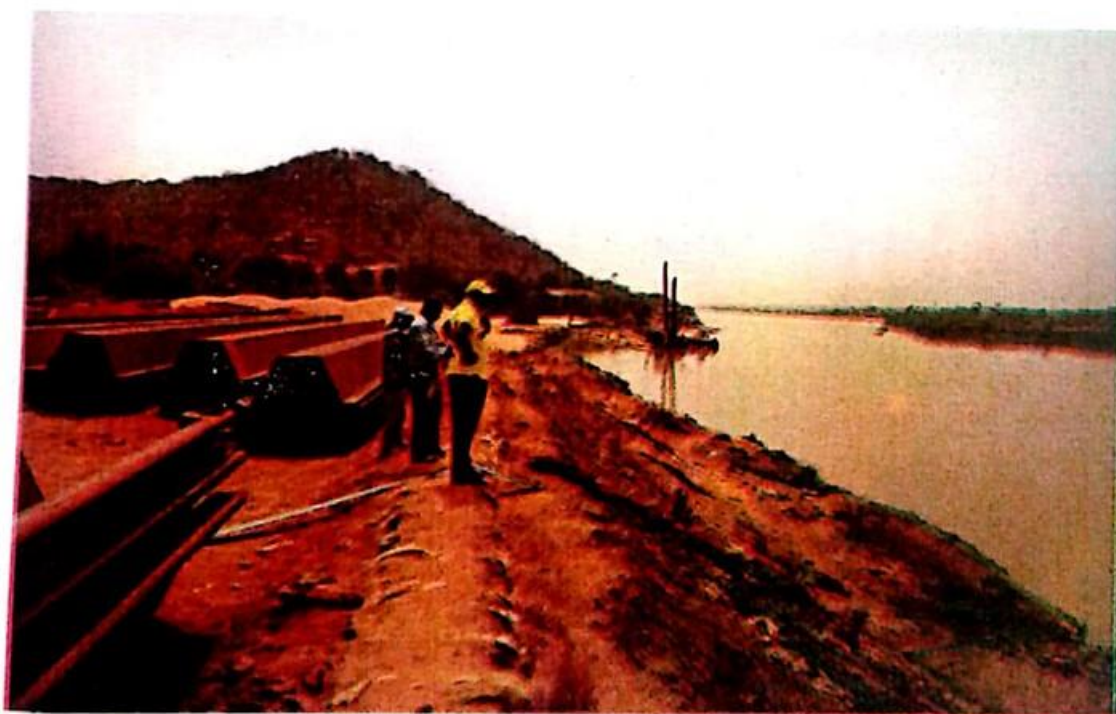
Proceeding to map and log the Jima Member of the Bida Sandstone in the town of Jima, south of Bida



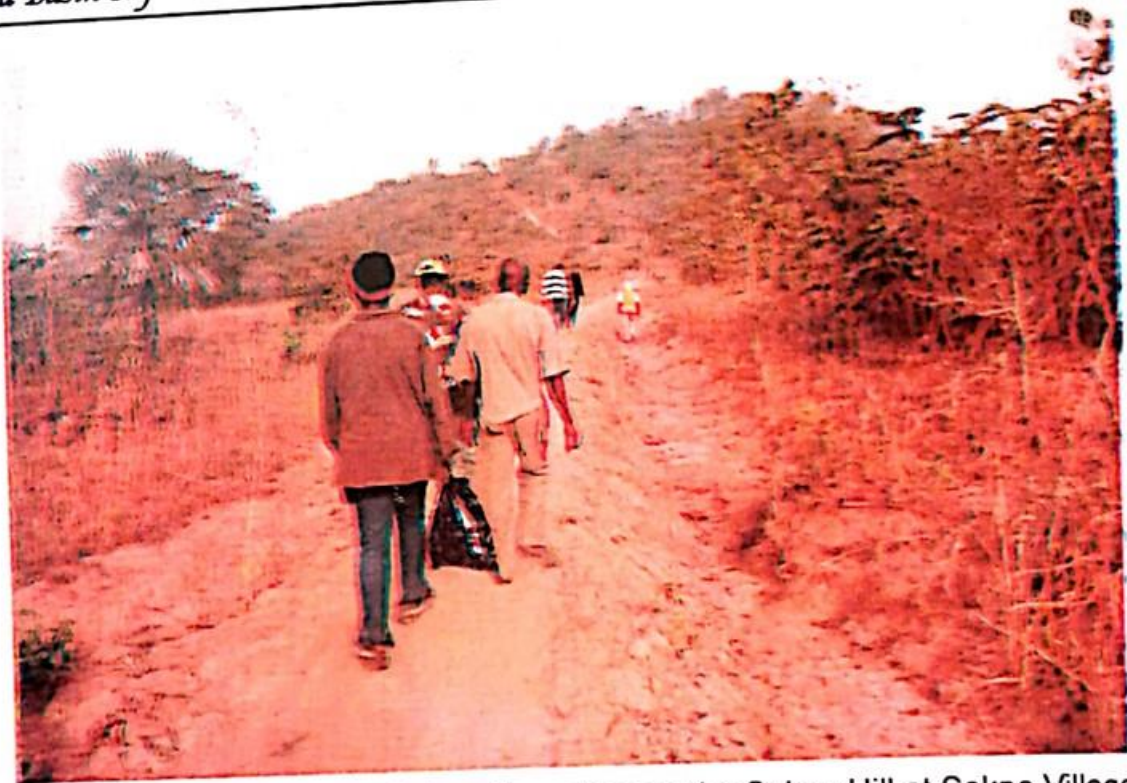
Highly bioturbated coarse grained sandstones of the Bida Formation (Jima Member) exposed at Jima. The bioturbation burrows are very significant to increasing reservoir porosity and permeability.



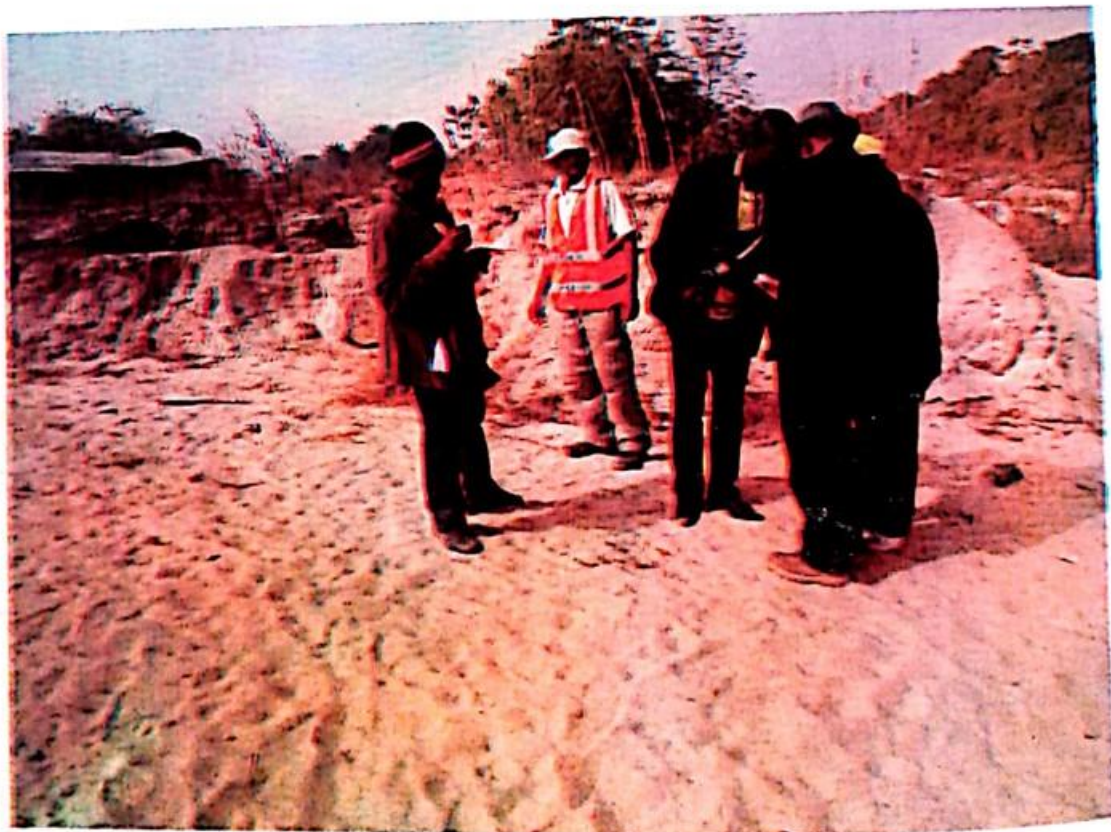
Mapping and logging the Bida Formation at Baro



The Baro inland port terminus under construction at Baro



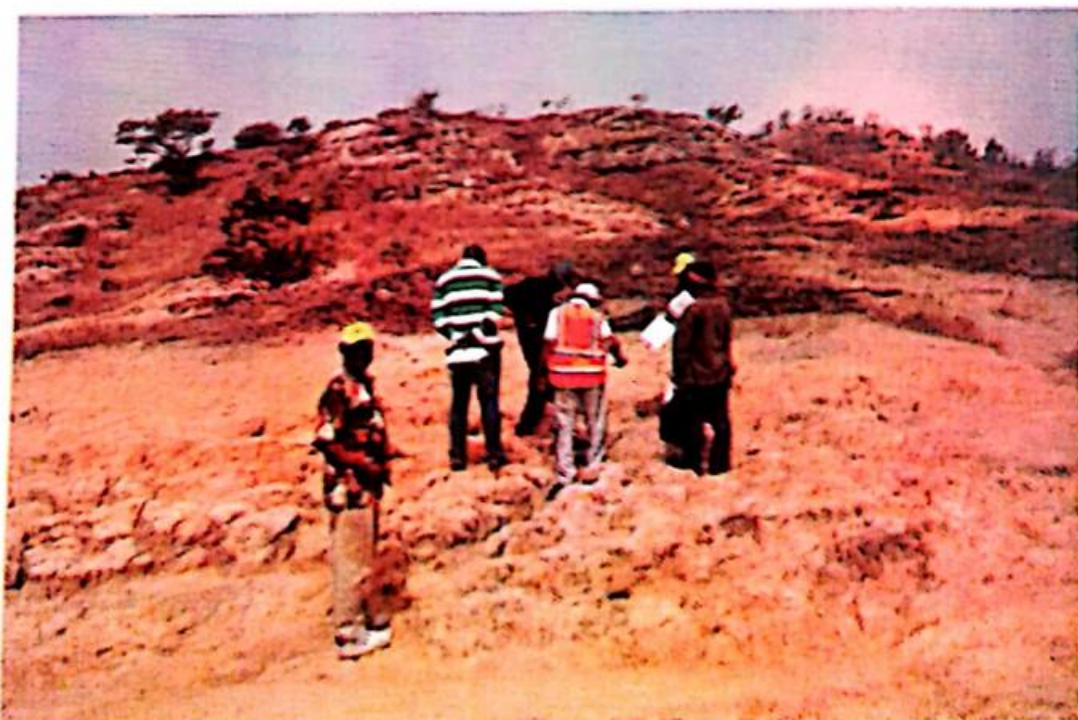
Proceeding to map the Sakpe Formation on the Sakpe Hill at Sakpe Village



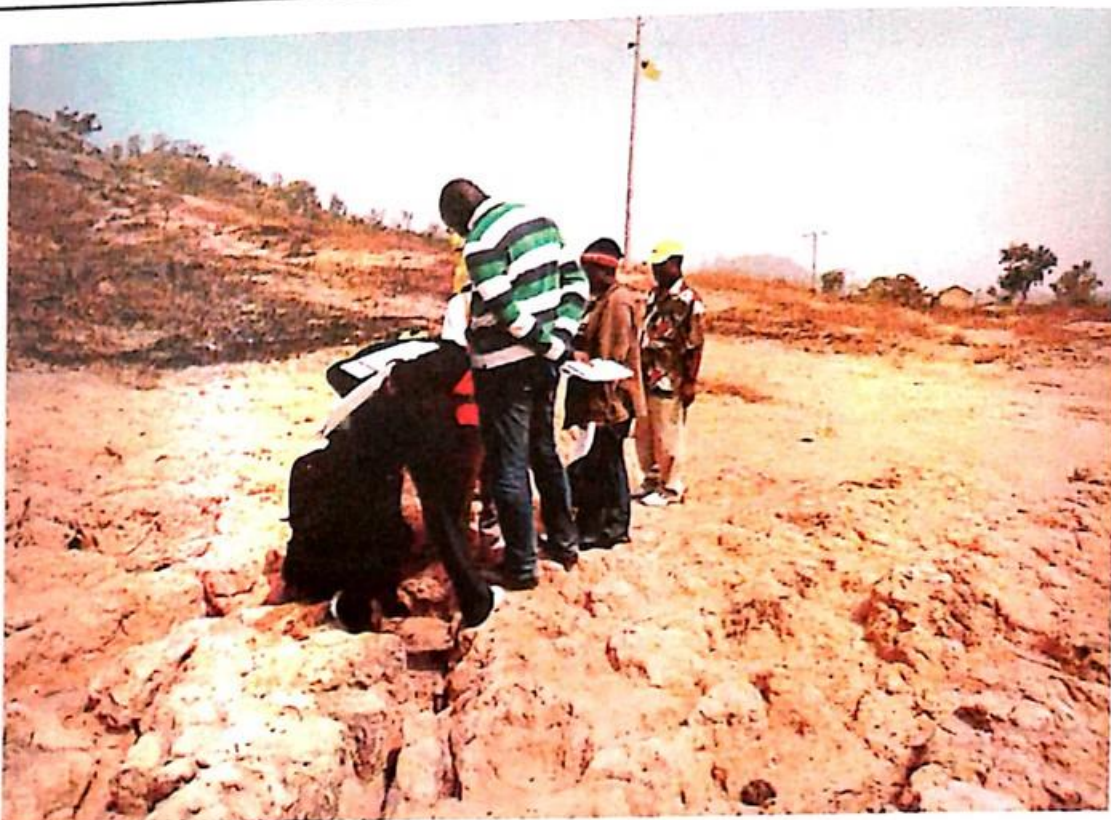
Eroded and re-deposited Enagi Siltstone along a channel in Batati Village



Mapping and logging of the Enagi Formation at the town of Enagi



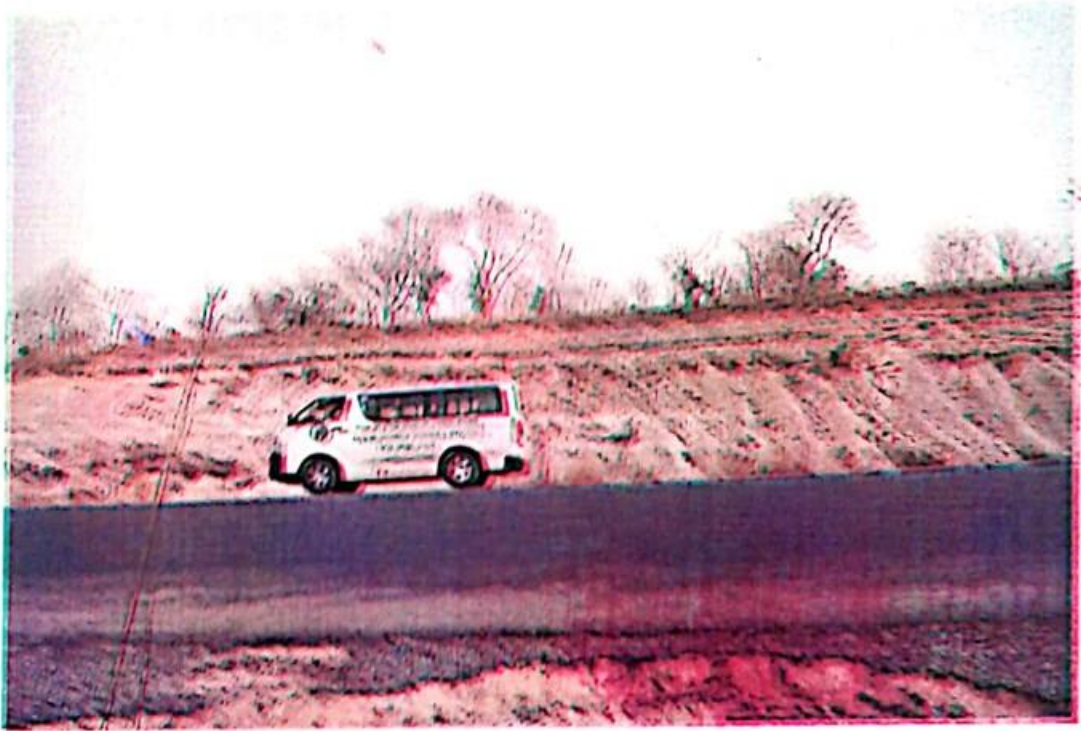
Mapping and logging of the Enagi Formation at the town of Kutigi



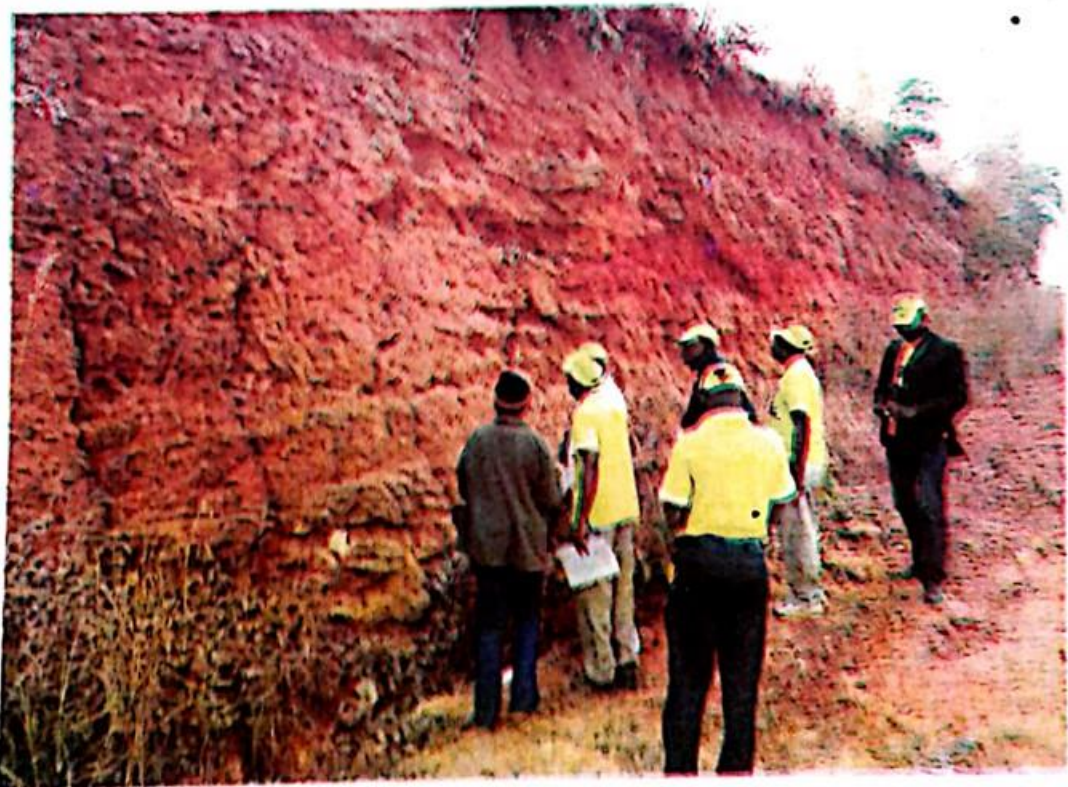
Mapping and logging of the Enagi Formation at the town of Kutigi (another view)



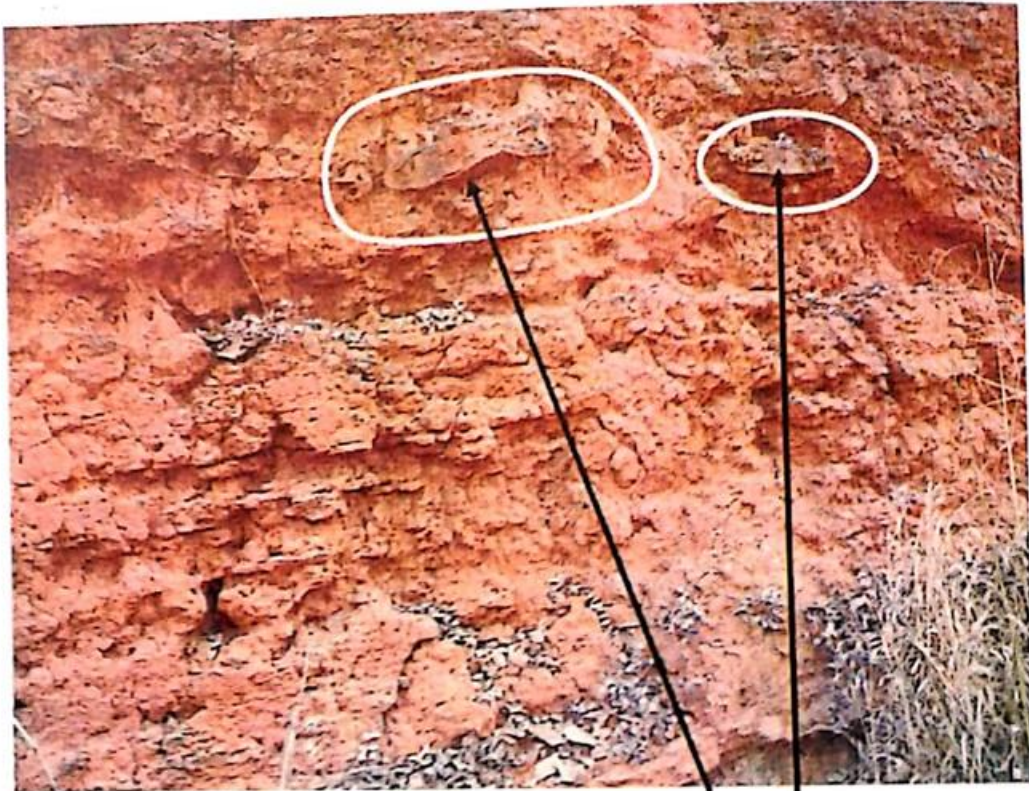
Mapping and logging of the Enagi Formation at Mushegu



Road-cut view of the Enagi Formation at Mushegu



Mapping and logging of the Batati Formation on the road from Bida to Pattishabakolo



Typical characters of the Batafi Formation: Concretionary ellipsoidal ironstones

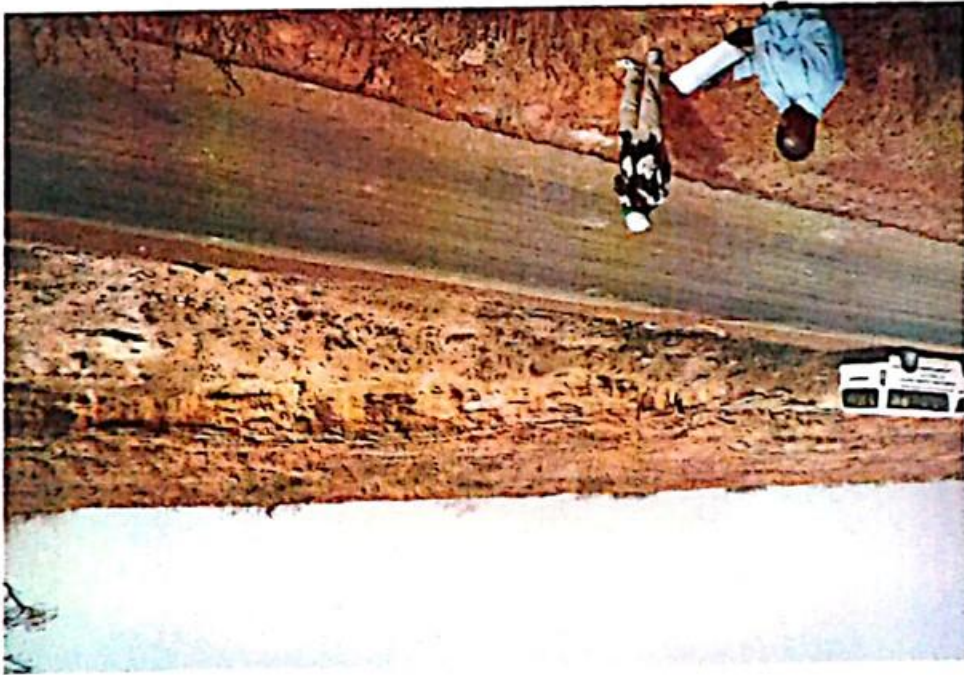


Beds begin to dip towards Pattishabakolo (west of Bida) on the approach towards Pattishabakolo

Road-cut view of the Batati Formation at Kandi near Gulu

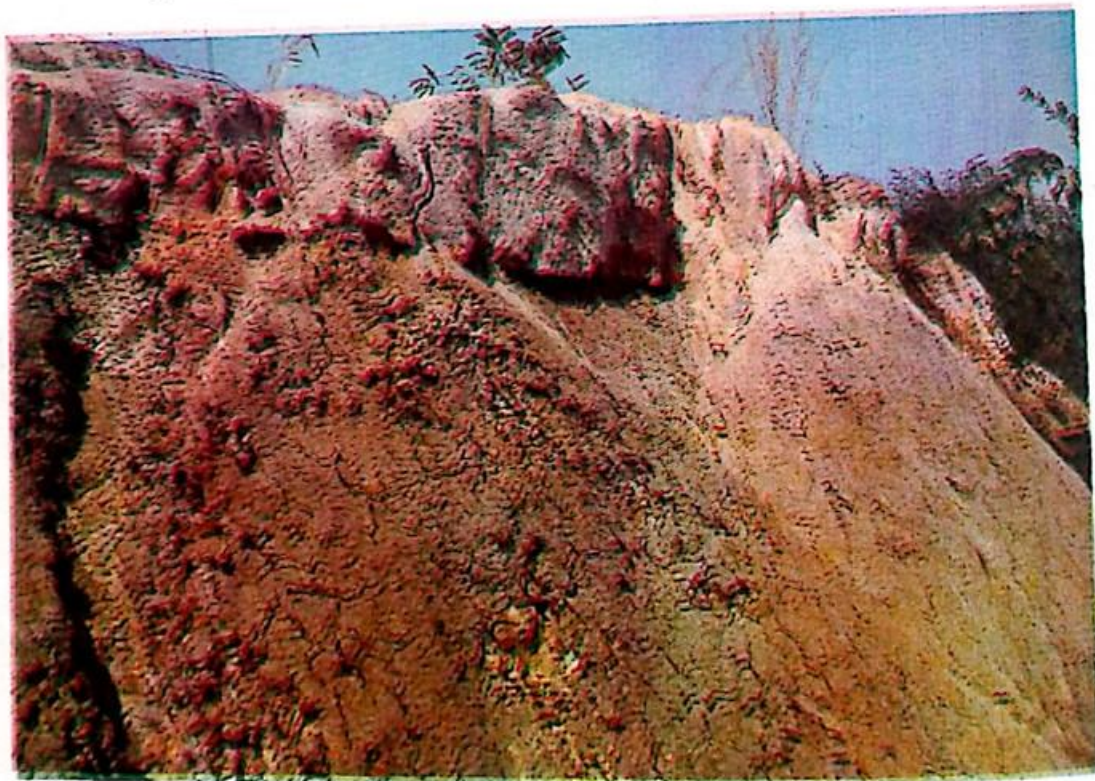


Road-cut view of the Batati Formation at Kandi near Gulu

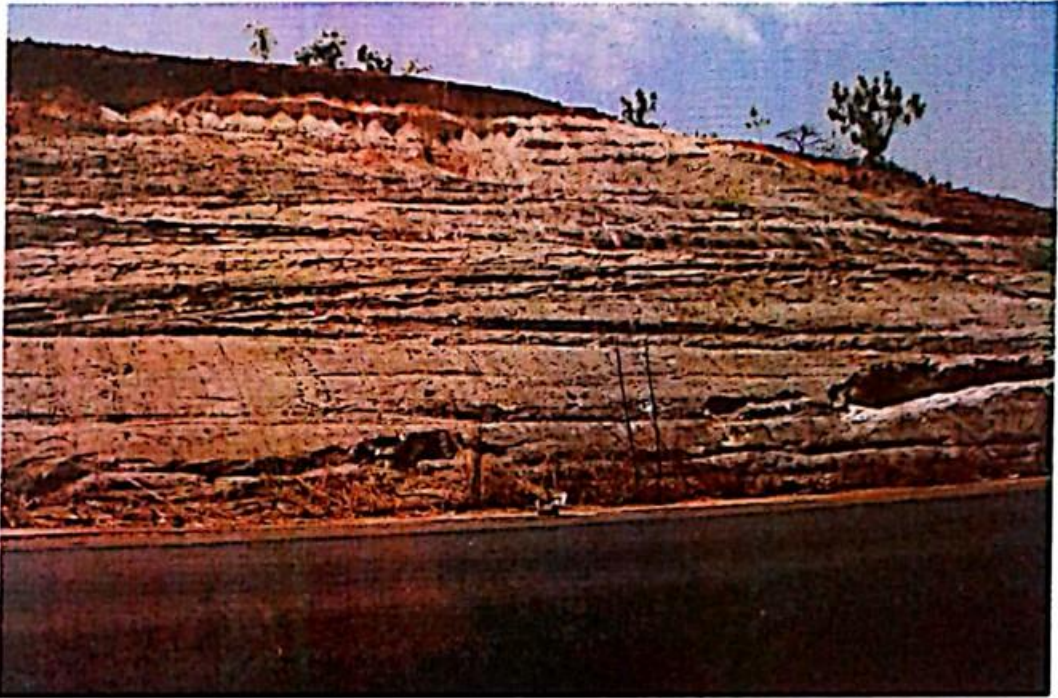




Assessing the geological situation at the end of work at Pattishabakolo



Clays, claystones/shales, siltstones and fine grained sandstones of channel, flood plain and sub-marine facies of the Patti Formation exposed at Gada-Biyu



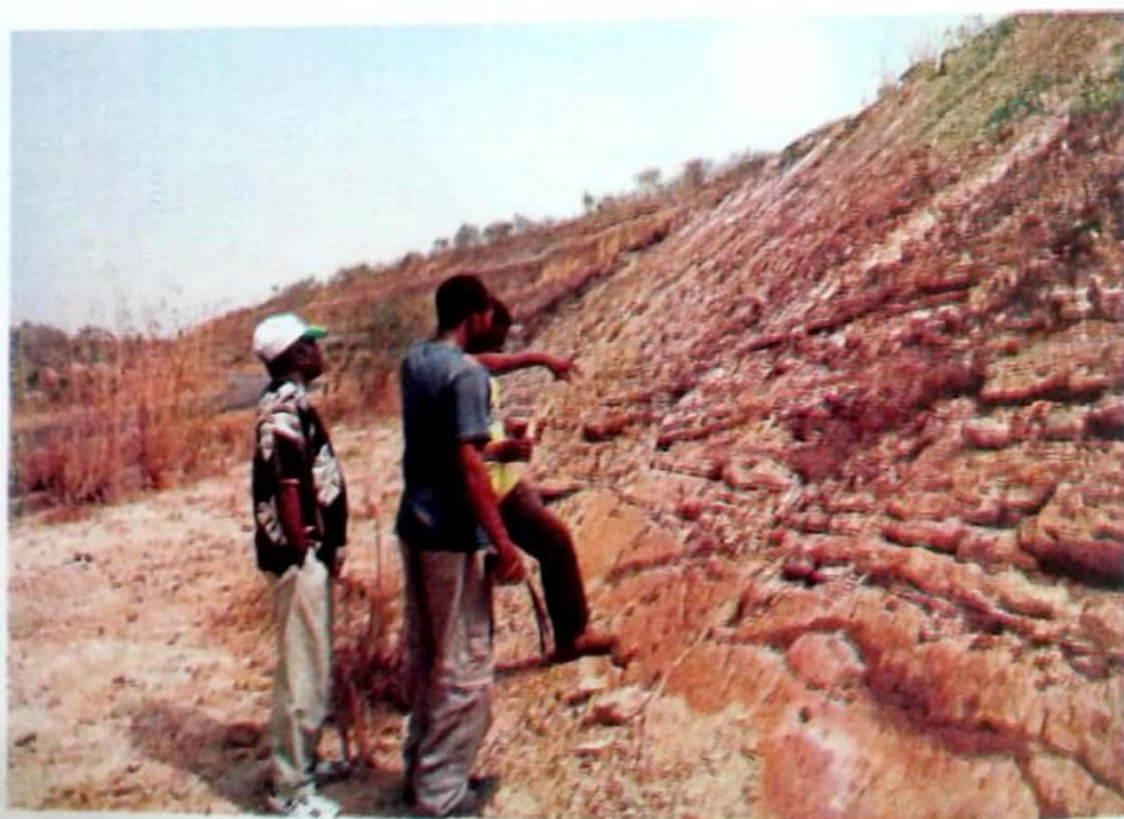
Channel sandstone facies of the Patti Formation exposed at Abaji on the Abuja-Lokoja expressway



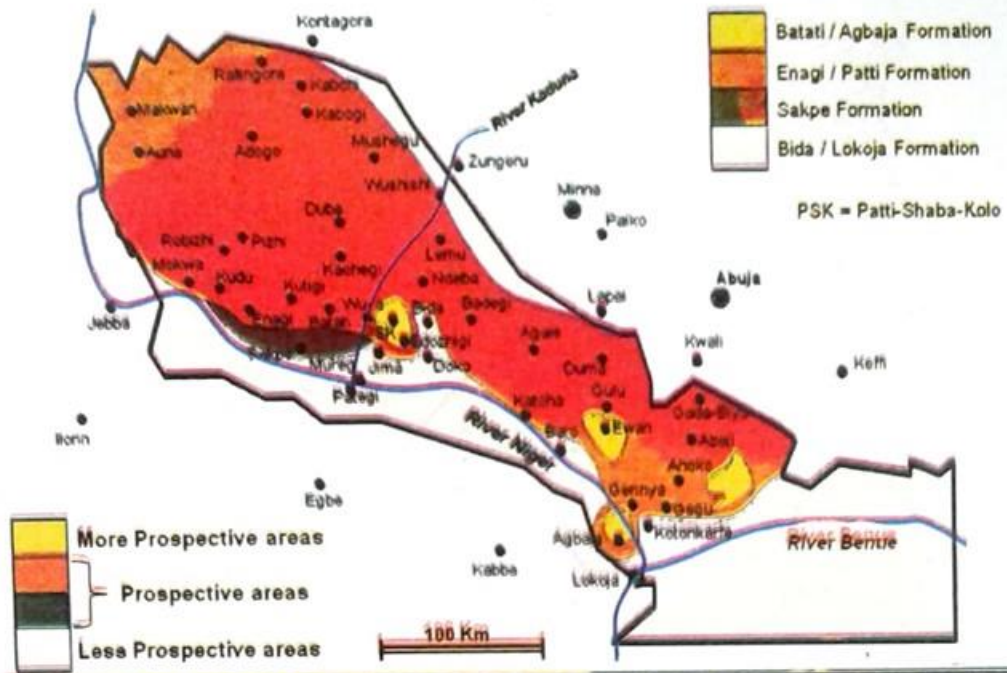
Dark marine shales (Ahoko Shales) of the Patti Formation exposed at Ahoko, 40km north of Lokoja on the Abuja-Lokoja expressway. The Ahoko Shales correlating with the Kudu Shales constitute the major source rocks for hydrocarbon generation in the Bida Basin.



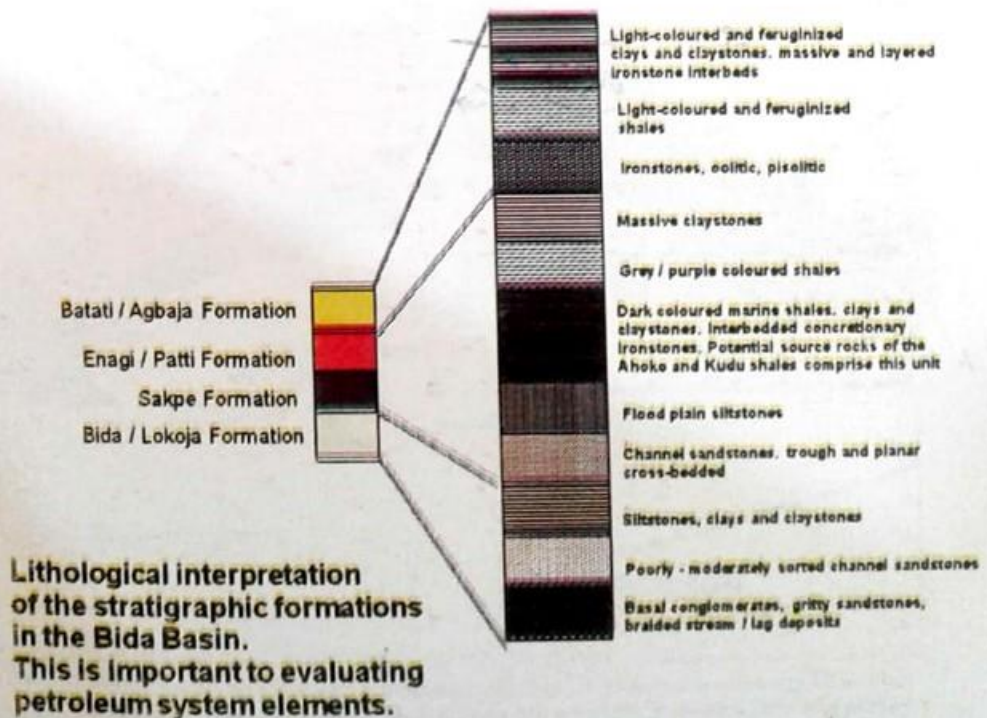
Mapping and logging the anoxic facies of the Ahoko Shales at Ahoko. Note the deposition of thick light-coloured oxic to suboxic shale, claystone and siltstone facies on top of the Ahoko dark shales

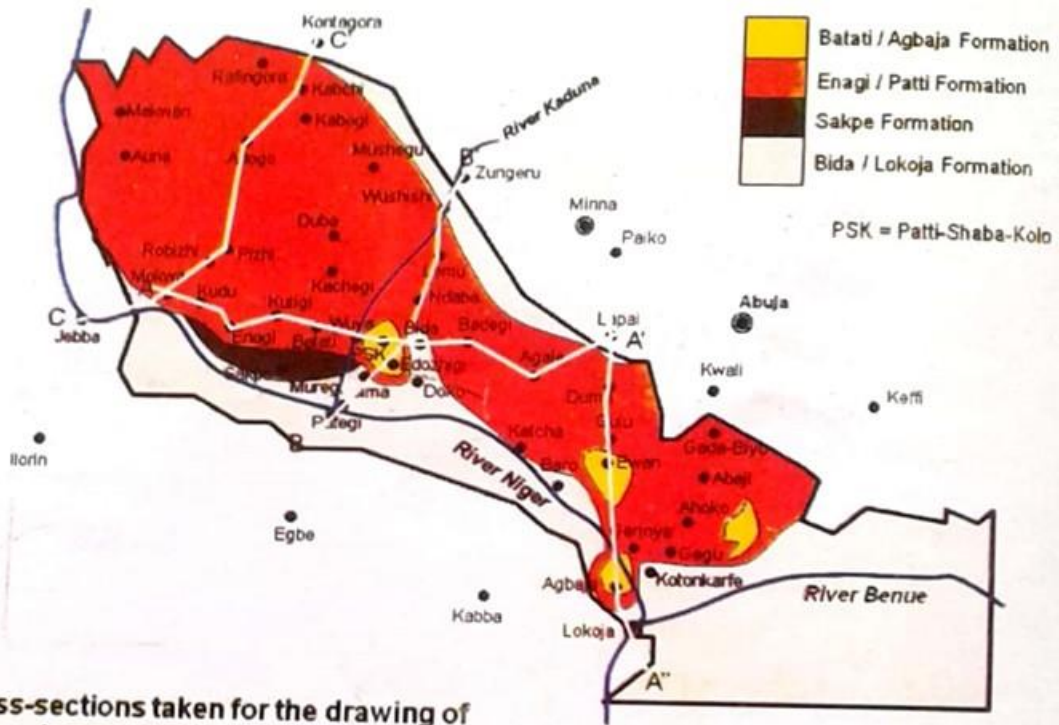


Mapping and logging of the Patti Formation (Enagi Formation equivalent) at Gerinya

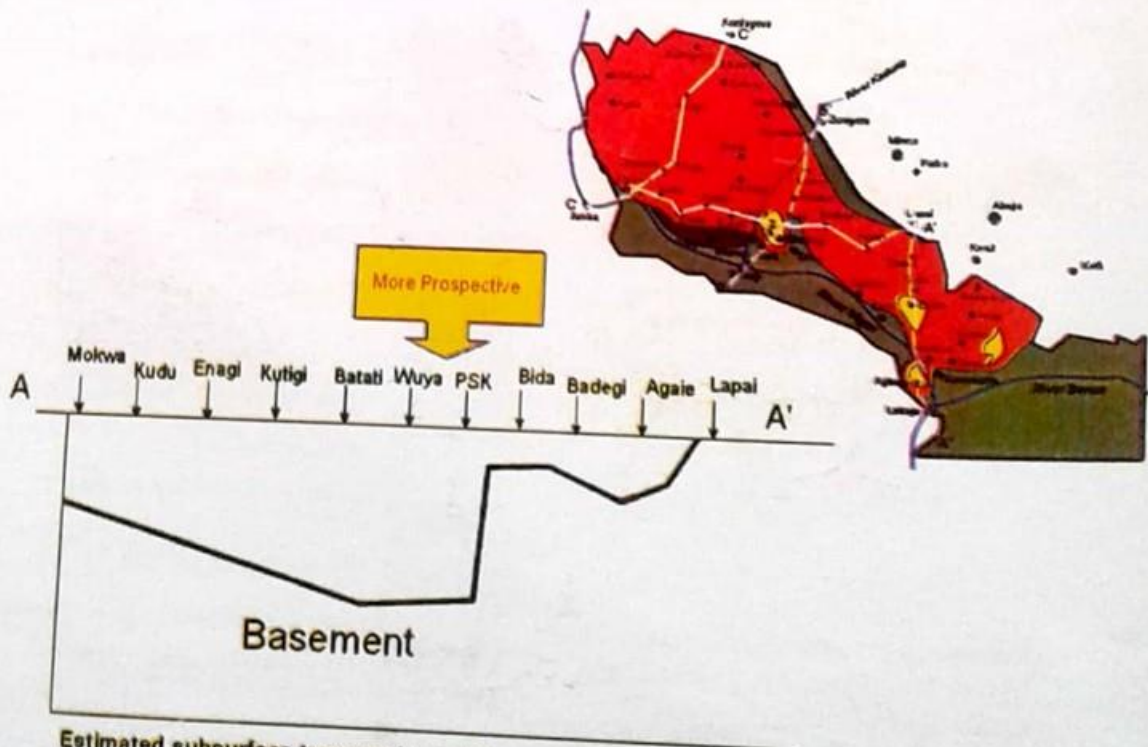


Constructed preliminary geological map of the Bida Basin based on the surface geological mapping carried out. The formational boundaries may change slightly with detailed mapping. The Batati Fm (yellow) may be more wide-spread than the inliers indicated, but the indicated are areas of definite occurrence which co-incidentally are also the bright spots for wild-cat drilling

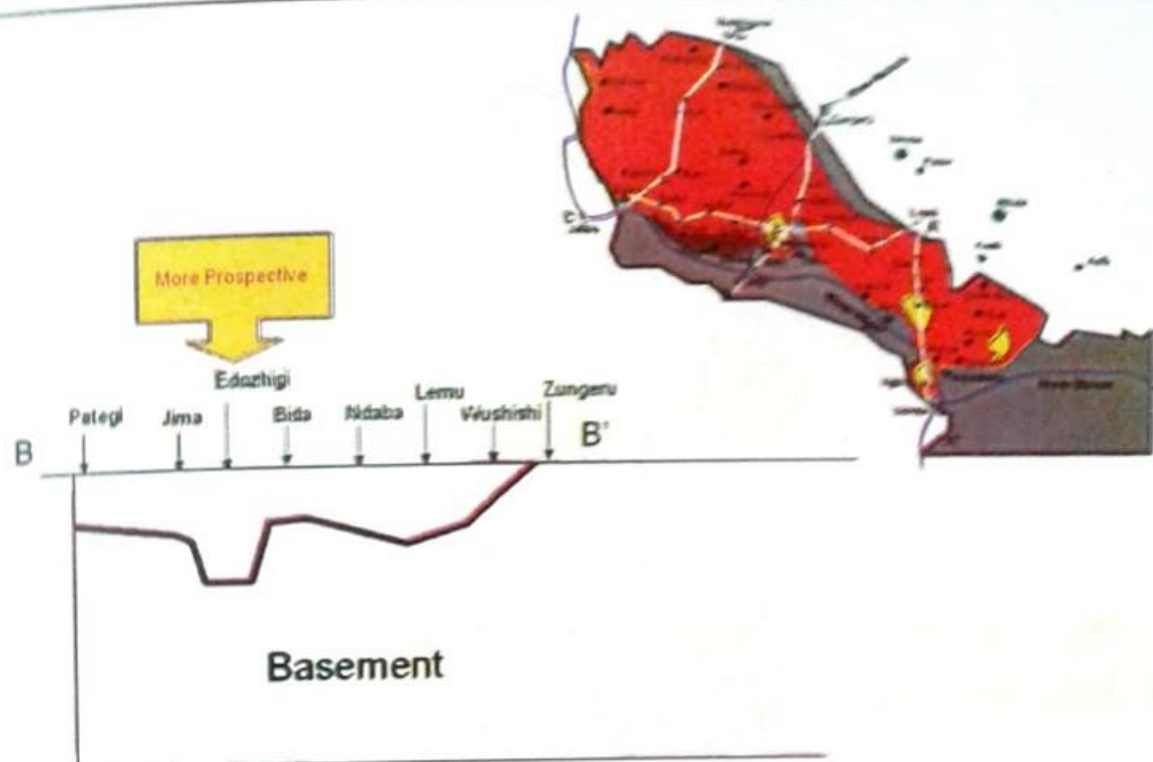




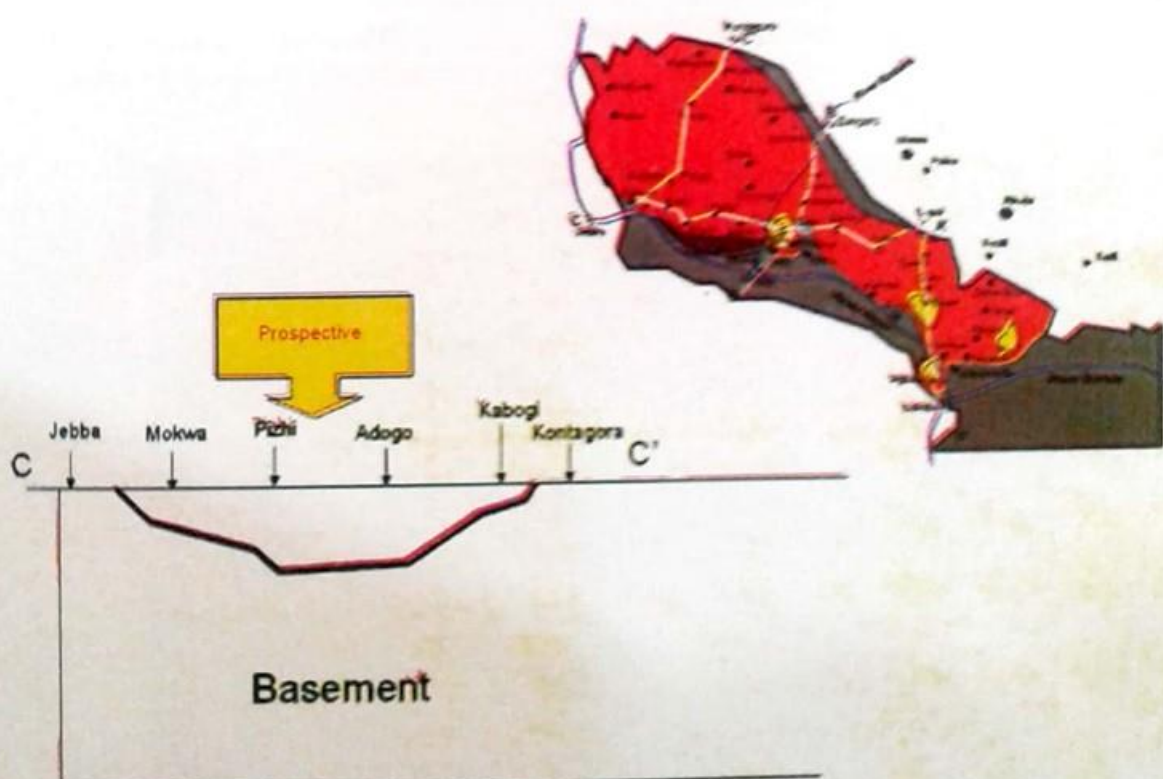
Cross-sections taken for the drawing of subsurface topography, assessment of relative sediment thickness and delineation of prospective areas across A-A', B-B', C-C', and A-A''



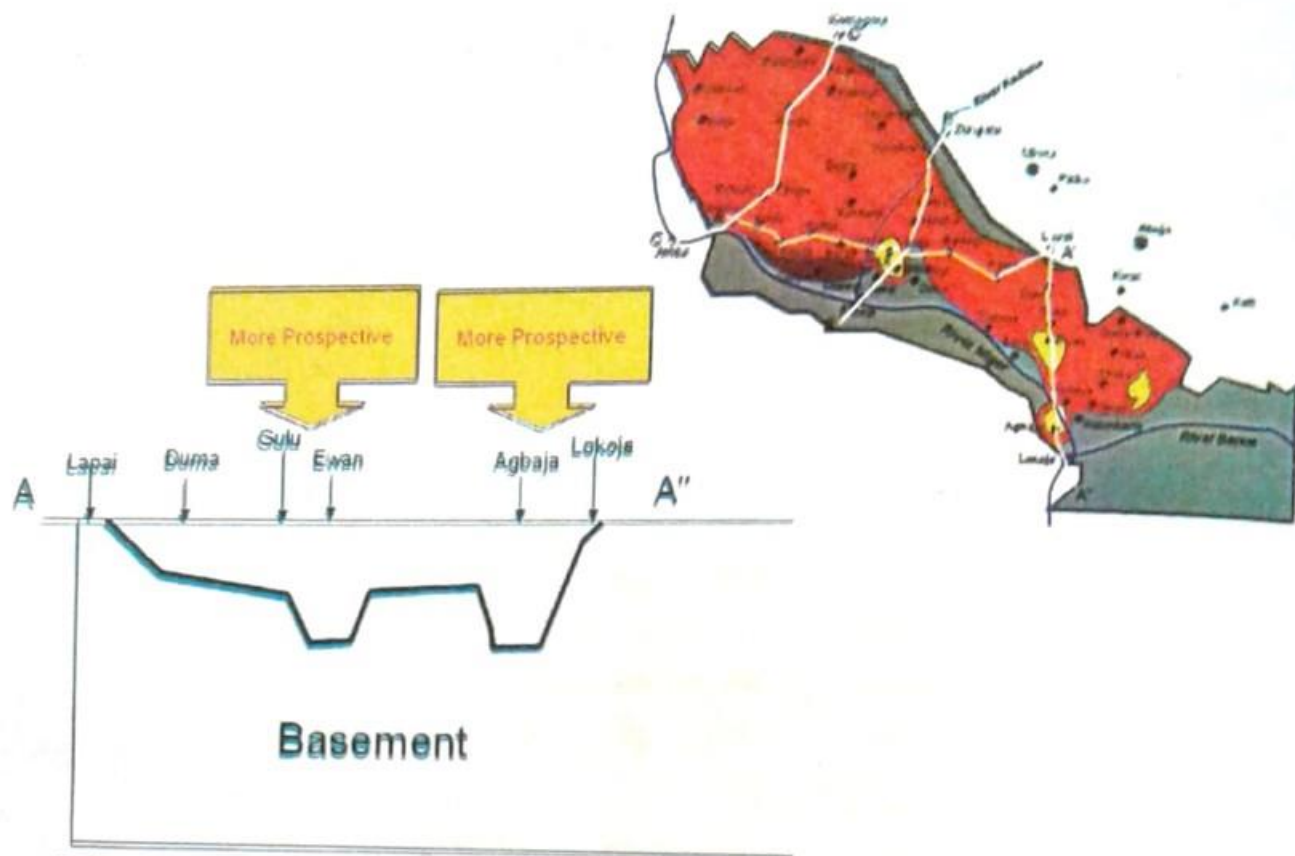
Estimated subsurface topography, relative sediment thickness and delineation of prospective areas for the section A-A': Mokwa - Lapal



Estimated subsurface topography, relative sediment thickness and delineation of prospective areas for the section B-B': Pategi - Zungeru

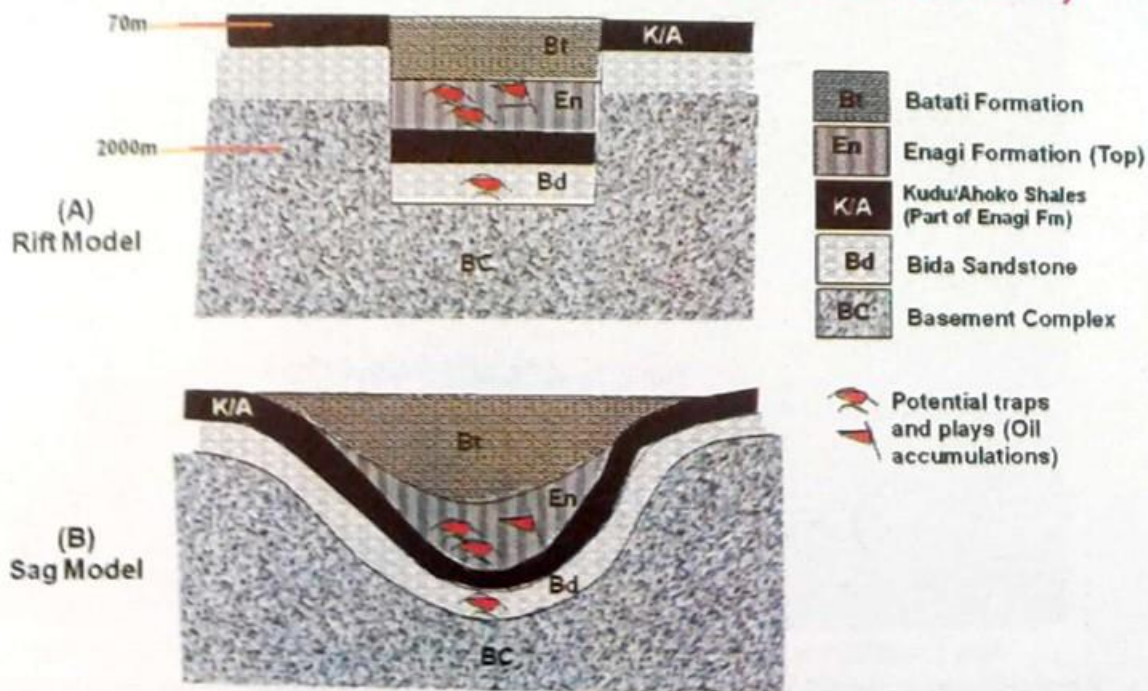


Estimated subsurface topography, relative sediment thickness and delineation of prospective areas for the section C-C': Jebba - Kontagora



Estimated subsurface topography, relative sediment thickness and delineation of prospective areas for the section A-A': Lapai - Lokoja

SHALLOW WELL DRILLING FOR SAMPLE COLLECTION (AT AGAIE AND KUDU)



Depiction of depositional and tectonic models that moved the source rock facies of the Kudu and Ahoko Shales to or near the surface that enabled collection of samples through drilling of shallow wells



The Agaie drilling operation commenced with a courtesy visit to the Emir of Agaie



His Excellency the Deputy Governor of Niger State was also at the Emir's Place in Agaie to witness commencement of the drilling operation at Agaie



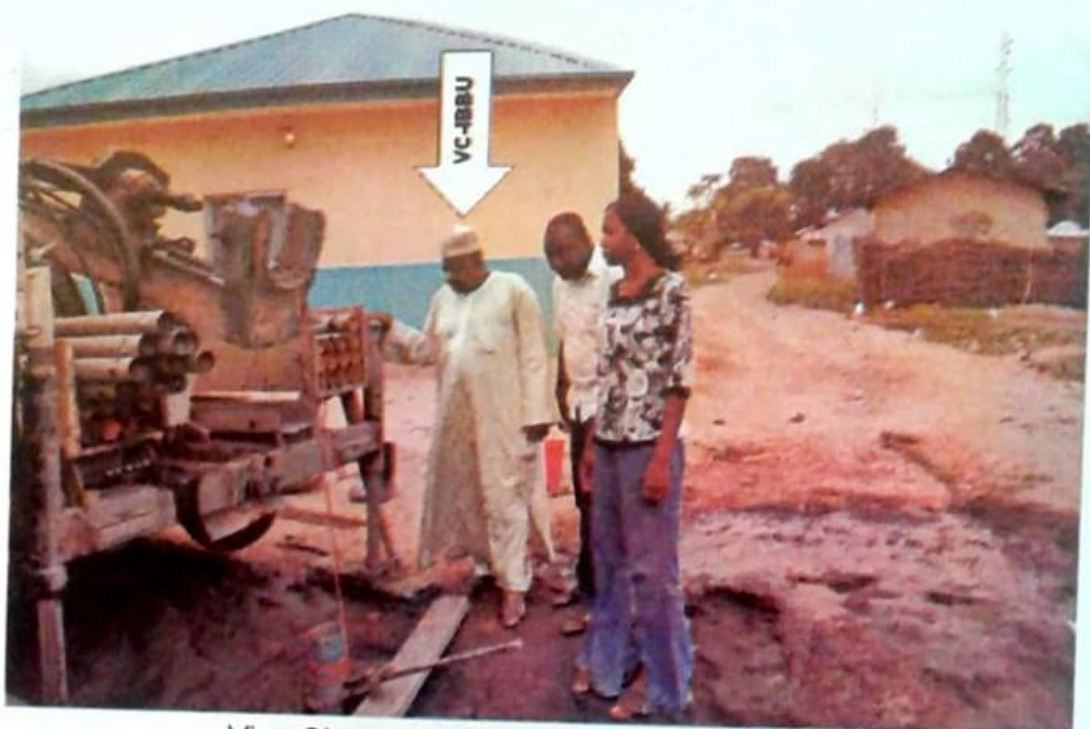
Drilling operation in progress at Agaie. Note that rocks recovered are pale greyish sandstone and siltstone. Potential source rocks were not penetrated in the Agaie drilling operation



Samples collected from the Agale well are pale greyish sandstone and siltstone



Agale site operation engineer explains some operational issues to Bida Basin Project Coordinator, Prof. Nuhu Obaje



Vice Chancellor IBB University, Lapai,
Prof. I. A. Kolo inspects drilling operation at Kudu. Note dark shales recovered.
These are the envisaged petroleum source rocks.



Vice Chancellor, IBB University and Chairman Technical Sub-Committee (GCBBB),
Prof. Ibrahim Kolo, inspects samples collected from the Kudu drilling operation



Dark~coloured muds / shales (potential petroleum source rocks) recovered at shallow depths in the Kudu-1 well



Dark-coloured muds / shales and oil slicks recovered from the Kudu-1 well

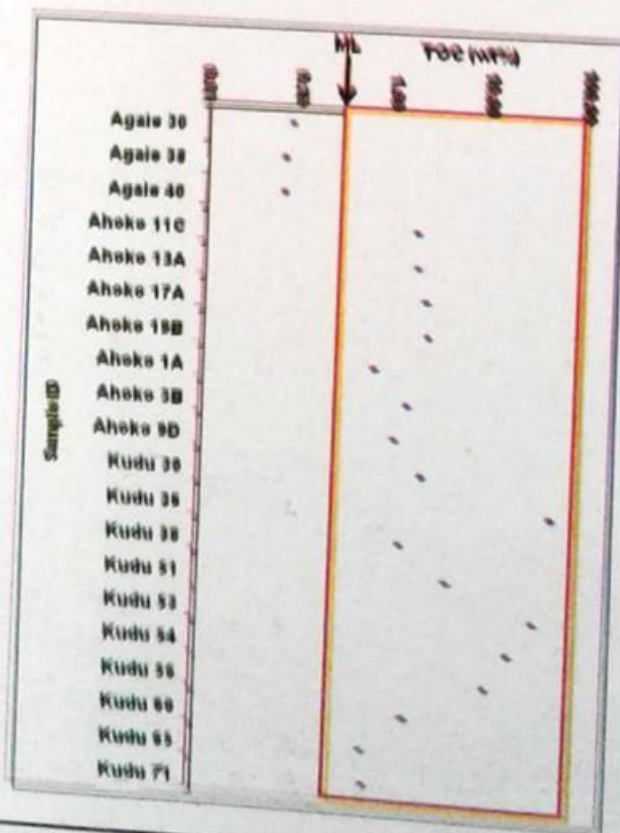
GEOCHEMICAL ANALYSES OF SAMPLES AND INTERPRETATION

Rock Eval pyrolysis results of some selected samples from the Bida Basin

Well ID	Sample Type	Loco TDC	RI			Tmax (°C)	ID	OI	S2/S3	S1/TOC *100	PI
			S1	S2	S3						
Agale 30	Well	0.09	0.05	0.08	0.28	403	96	337	0.3	60	0.38
Agale 38	Well	0.07	0.06	0.11	0.24	342	149	324	0.5	81	0.35
Agale 40	Well	0.07	0.03	0.09	0.44	404	138	677	0.2	48	0.23
Ahoko 11(O)	Outcrop	1.84	0.04	0.76	1.00	419	41	54	0.8	2	0.05
Ahoko 13(A)	Outcrop	1.90	0.05	0.48	1.28	418	25	87	0.4	3	0.09
Ahoko 17(A)	Outcrop	2.40	0.06	1.83	1.23	423	76	54	1.5	2	0.03
Ahoko 19(B)	Outcrop	2.56	0.08	2.10	1.02	423	82	40	2.1	3	0.04
Ahoko 1(A)	Outcrop	0.76	0.03	0.29	0.24	418	41	34	1.2	4	0.09
Ahoko 3(B)	Outcrop	1.60	0.05	0.85	0.88	418	53	55	1.0	3	0.08
Ahoko 9(D)	Outcrop	1.23	0.04	0.37	0.39	418	30	32	0.9	3	0.10
Kudu 30	Well	2.41	0.12	3.78	0.83	424	157	34	3.0	5	0.03
Kudu 38	Well	54.10	0.52	27.24	3.64	396	135	16	8.9	1	0.01
Kudu 38	Well	1.45	0.08	2.41	0.53	425	167	87	4.5	6	0.03
Kudu 51	Well	4.62	0.24	18.59	1.10	430	402	24	18.9	5	0.01
Kudu 53	Well	36.09	1.54	102.17	6.80	413	268	17	15.5	4	0.01
Kudu 54	Well	21.28	0.77	57.97	4.81	418	268	23	11.9	4	0.01
Kudu 56	Well	12.84	0.49	32.61	3.17	422	234	23	10.3	4	0.01
Kudu 60	Well	1.82	0.11	3.56	0.46	422	193	25	7.7	6	0.03
Kudu 65	Well	0.87	0.05	0.72	0.34	427	168	51	2.1	7	0.08
Kudu 71	Well	0.73	0.07	1.51	0.37	420	213	70	2.7	10	0.04

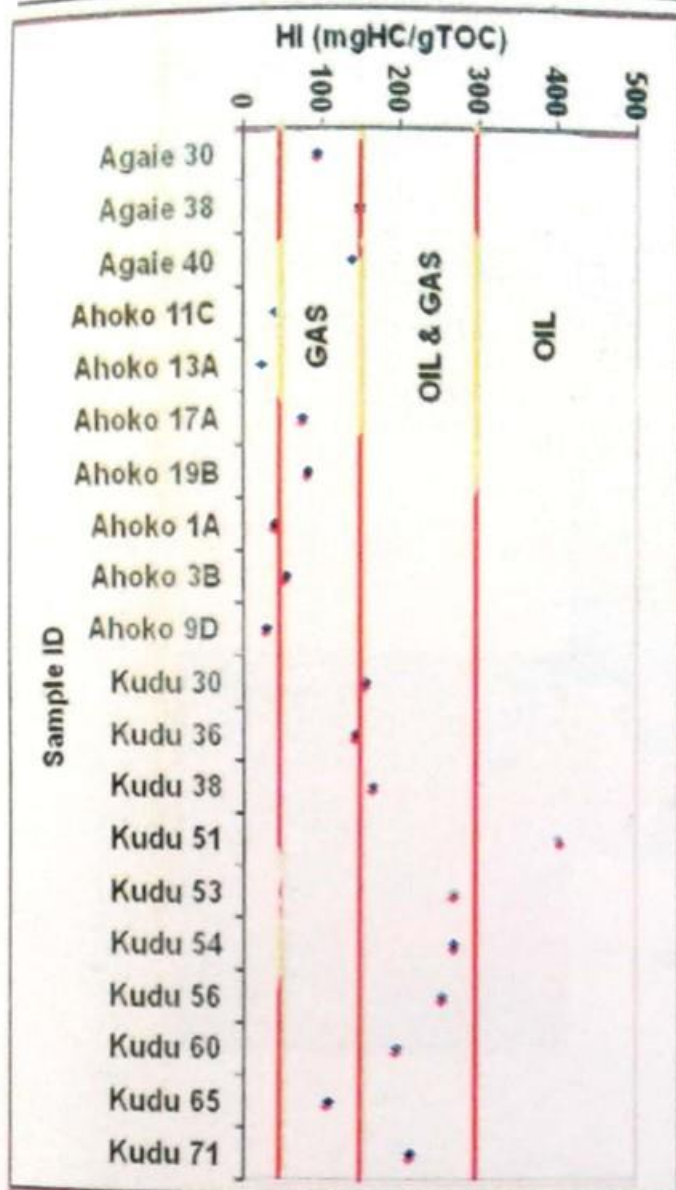
Notes:
 *1 - not reported or omitted value for Total TOC - Total Organic Carbon, wt %
 S1 - volatile hydrocarbon (C1-C10) content, wt %
 S2 - aromatic hydrocarbon content, wt %
 S3 - carbon dioxide content, wt %
 RI - Rock-Eval Index = (S1+S2)/S3
 Tmax - maximum pyrolysis temperature, °C
 ID - Index of Diagenesis = (S2/S3) x 100
 OI - Oxygen Index = (S2/S3) x 100
 S2/S3 - ratio of aromatic to aliphatic hydrocarbons
 S1/TOC *100 - percentage of volatile hydrocarbons in total TOC
 PI - Petroleum Index = (S1+S2)/S3

Program:
 E - Rock-Eval
 G - normal
 S1/S2 - low temperature S2 checks
 S2/S3 - high temperature S2 checks
 S3/S4 - low temperature S3 peak
 S4/S5 - high temperature S3 peak
 LECO - TOC or Loss on Ignition
 RI - Programmed pyrolysis in
 TOC on Rock-Eval instrument
 S1/S2 - Programmed pyrolysis in
 S1/S2 on Rock-Eval instrument
 EXT - Extended Rock
 NORM - Normal Preparation



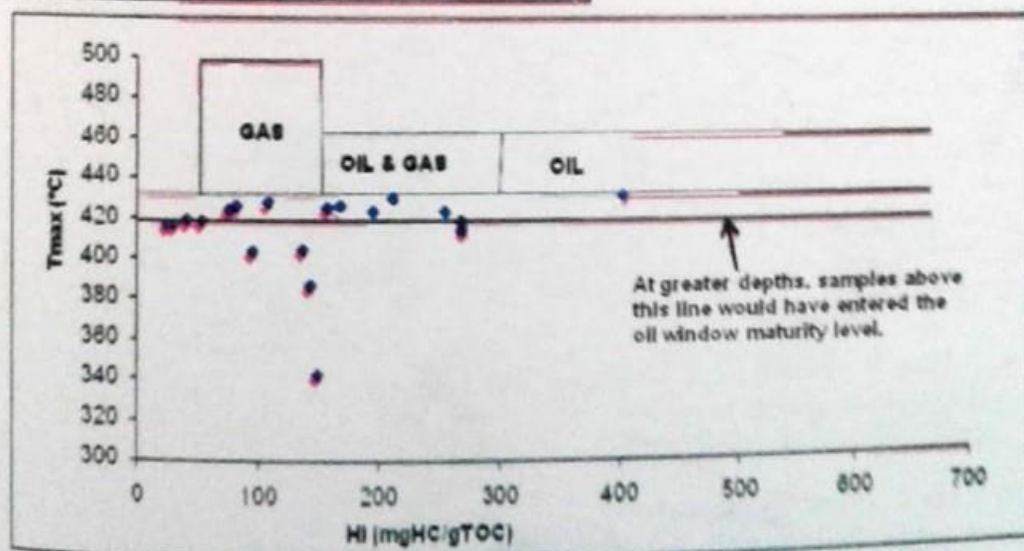
Plot of TOC values against samples from the Bida Basin. Agale and Kudu samples are from shallow wells with the numbers against them indicating the depth in meters. Ahoko samples are from outcrop. All the samples from Ahoko and Kudu have met the minimum TOC value limit for hydrocarbon generation (making up 85% of all the samples).

ML = Minimum limit for hydrocarbon generation.
 TOC = Total Organic Carbon.



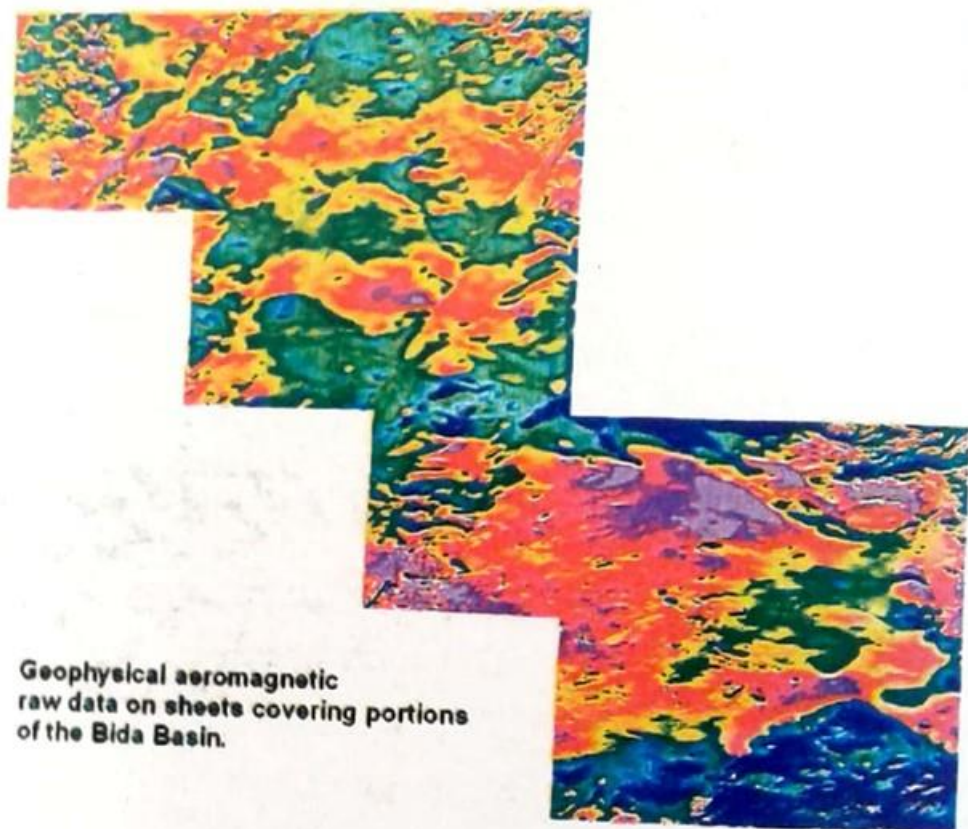
Plot of HI values against samples from the Bida Basin. Majority of the samples plot within the Gas and Oil & Gas fields.

HI = Hydrogen Index



Plot of HI versus Tmax values of samples from the Bida Basin. Most of the samples are late immature to early mature (early oil window). At greater depths, most of the samples would have entered maturity in the Gas and Oil & Gas fields.

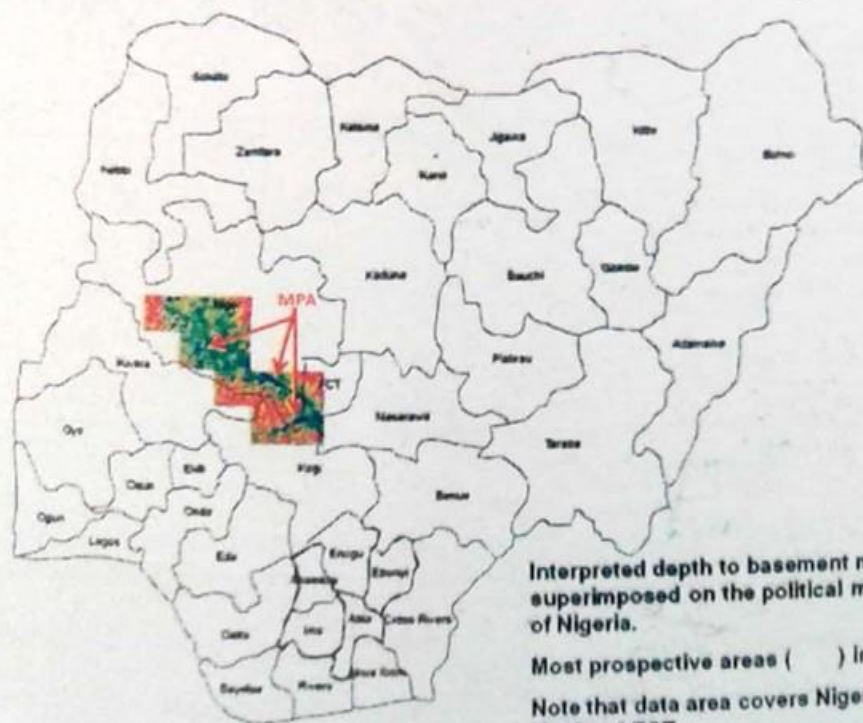
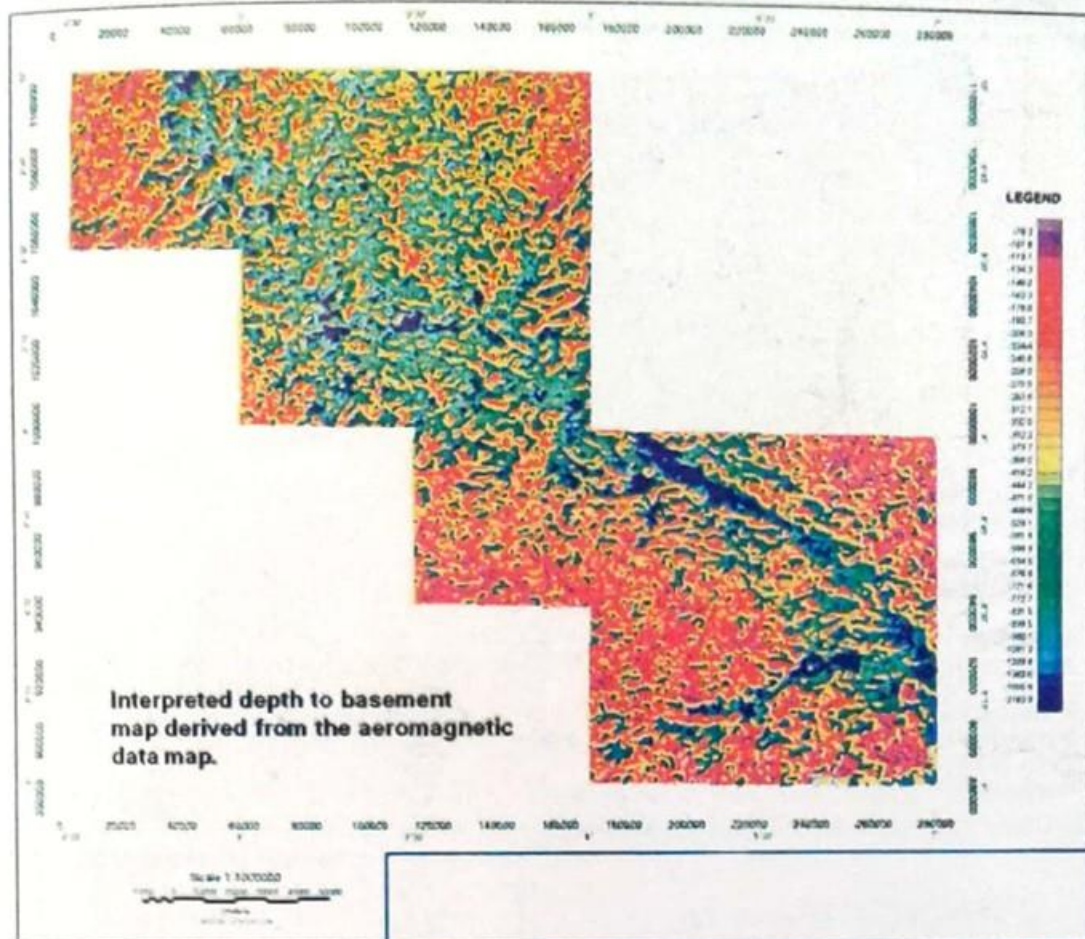
GEOPHYSICAL AEROMAGNETIC DATA ACQUISITION AND INTERPRETATION



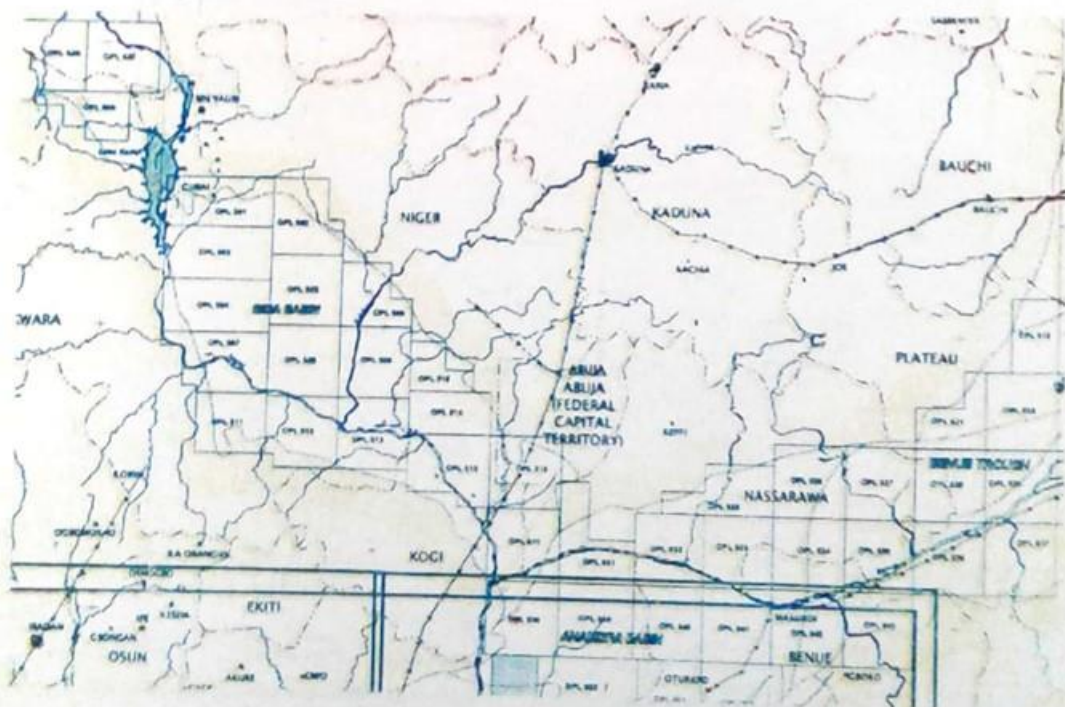
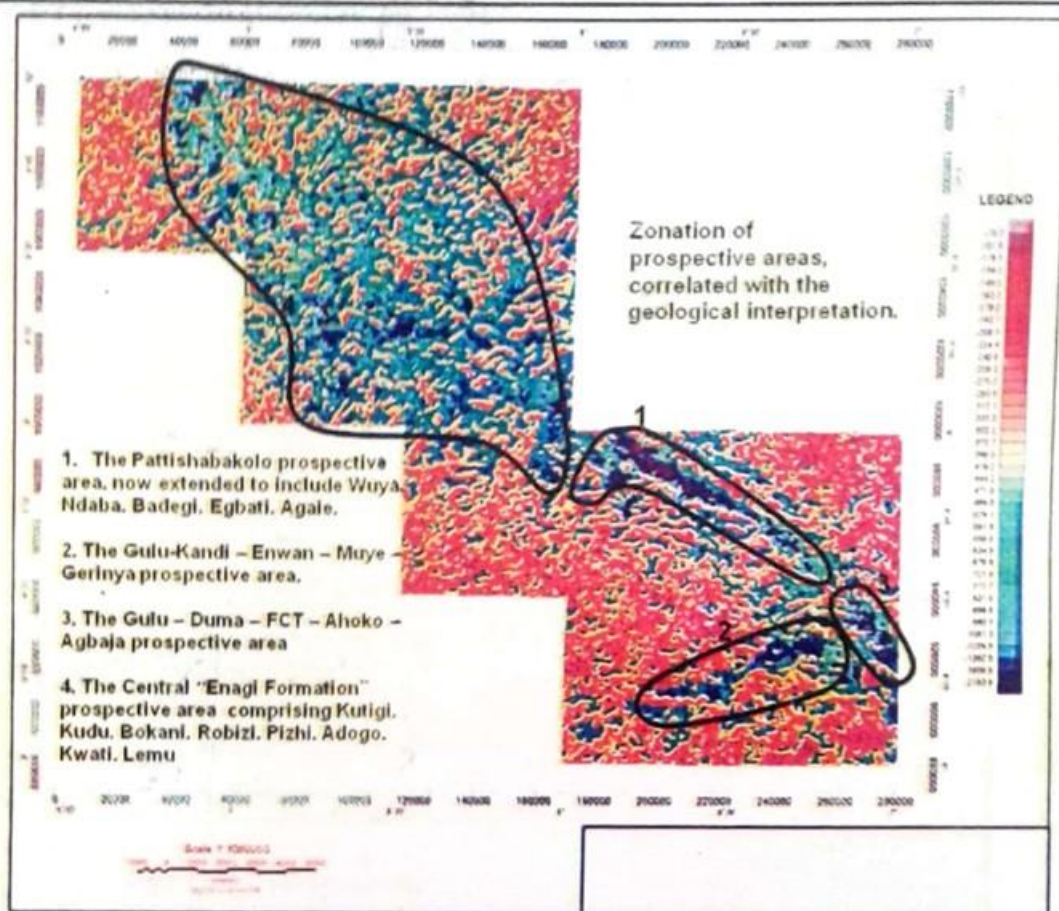
Geophysical aeromagnetic raw data on sheets covering portions of the Bida Basin.



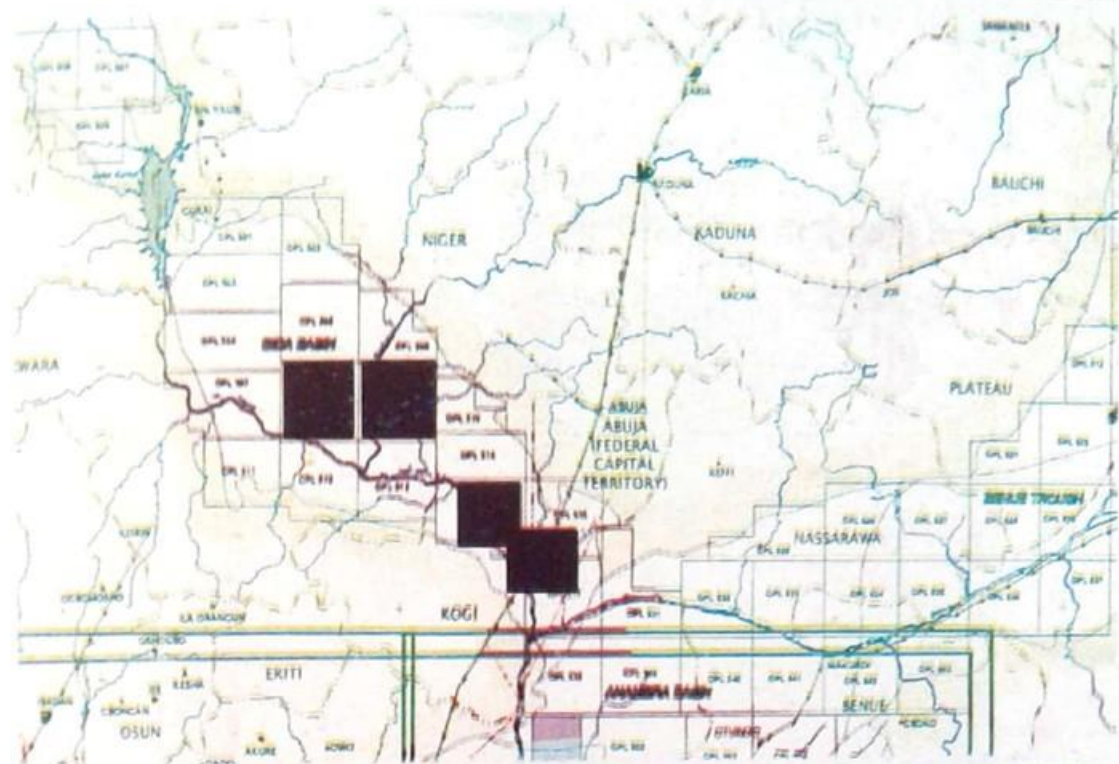
Geophysical aeromagnetic raw data on sheets covering portions of the Bida Basin superimposed on the political map of Nigeria. Note that data area covers Niger, Kwara, Kogi and FCT.



Bida Basin Hydrocarbon Research Project in Pictures

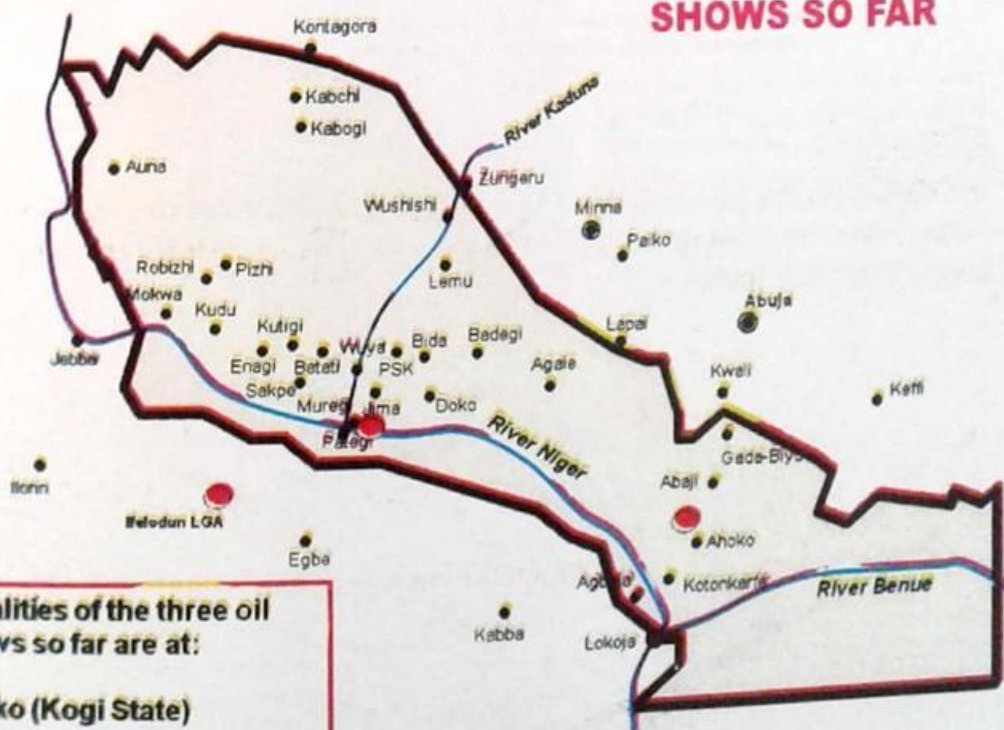


Demarcated blocks / acreages / OPLs by the DPR over the Bida Basin available for acquisition during bid-round processes or through special allocation



When juxtaposed against the geological map, cross-sections and geophysical aeromagnetic maps, juicy and more prospective acreages can be identified during a bidding round process.

LOCALITIES OF THE THREE OIL SHOWS SO FAR



Localities of the three oil shows so far are at:

Ahoko (Kogi State)

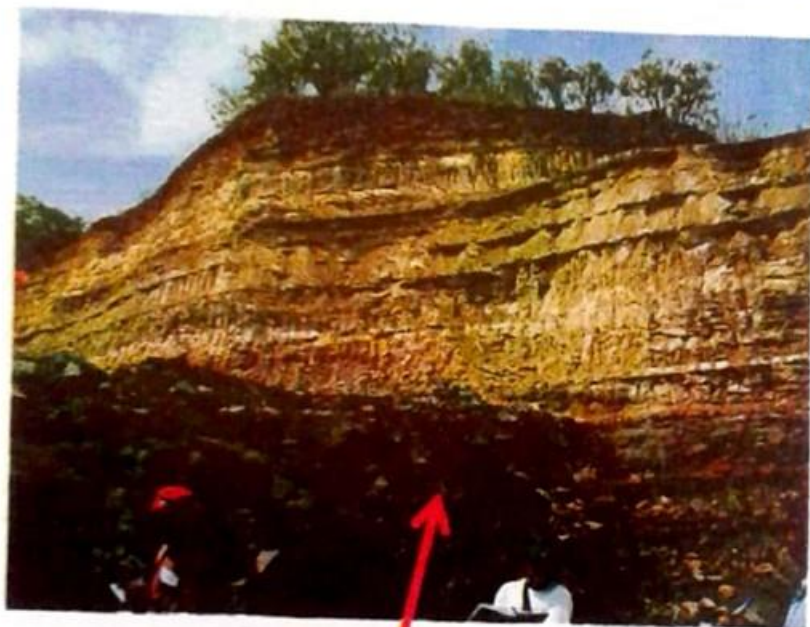
Muregi (Niger State)

Ifelodun LGA (Kwara State)

Interpretation

Ahoko:

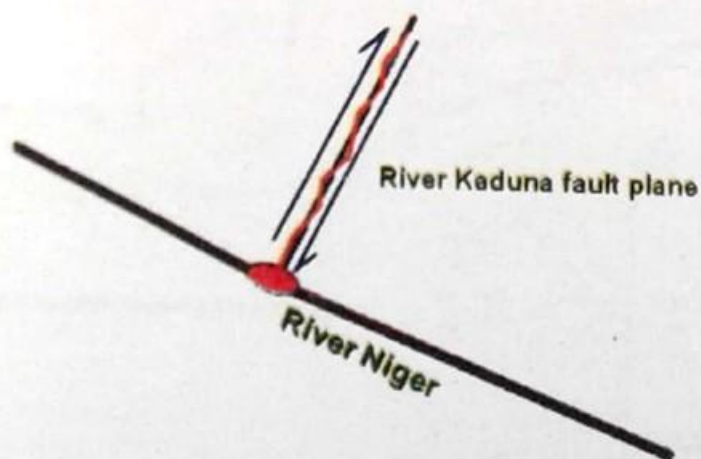
The major source rocks for hydrocarbon generation in the Bida Basin (the Ahoko black shales of the Patti Formation) are exposed at Ahoko



Source rock facies (dark shales and clays) of the Patti Formation at Ahoko near Lokoja in the Southern Bida Basin

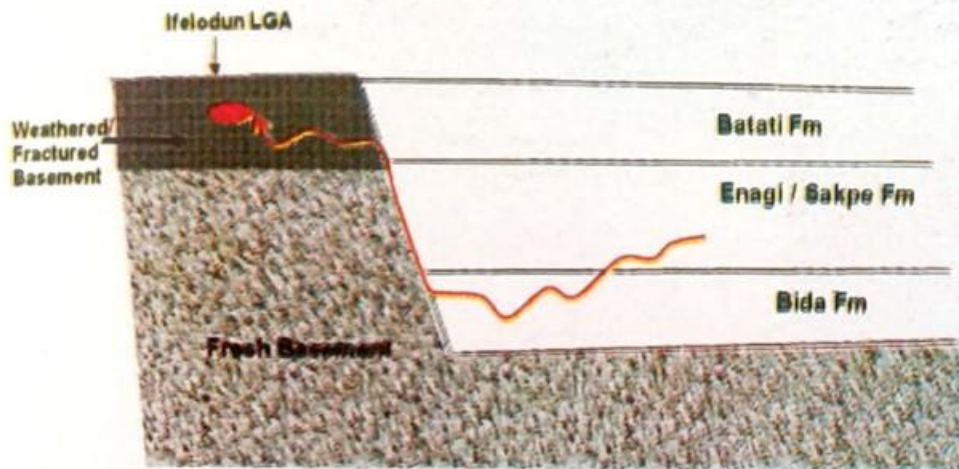
Muregi:

Muregi is at the inter-section of major fracture / fault zones of the River Kaduna joining the River Niger, allowing for hydrocarbon migration along the fault plane



Ifelodun (Kwara State)

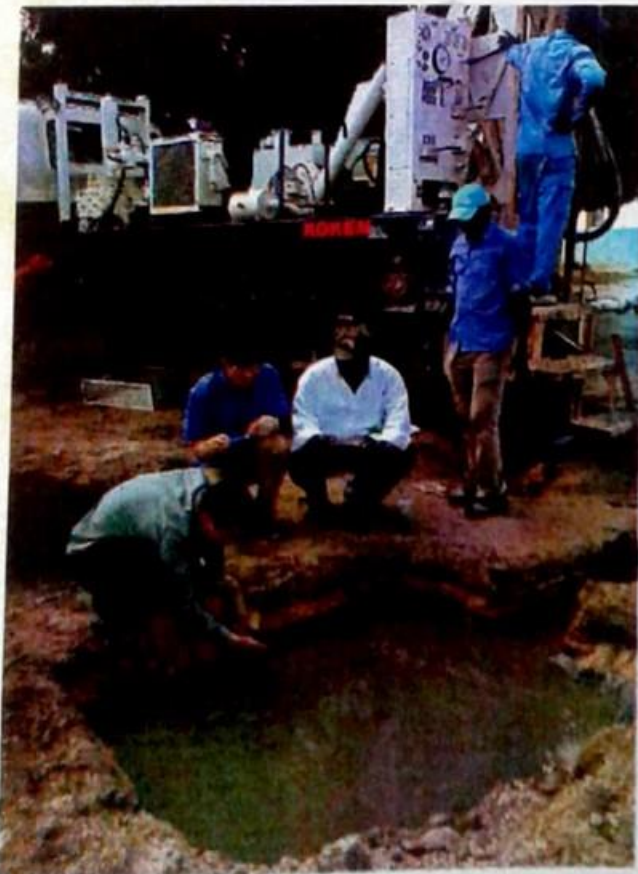
Similar to Kolmani-River-1 basement barrier, hydrocarbons generated from sediments of the Bida Basin may have migrated through the sediments, terminated against the basement and moved up along the sediment-basement boundary plane into the fracture weathered basement where it is encountered as oil shows in water wells. There is no accumulation in the basement of Kwara State but in the sedimentary rocks of the Bida Basin in Niger or Kwara State.



Head of Geological Operation of the Shekang Group of China observes oil slicks on water during a second drilling of shallow well at Kudu in June 2014. Drilling was entirely water-based. No diesel nor any chemical used.



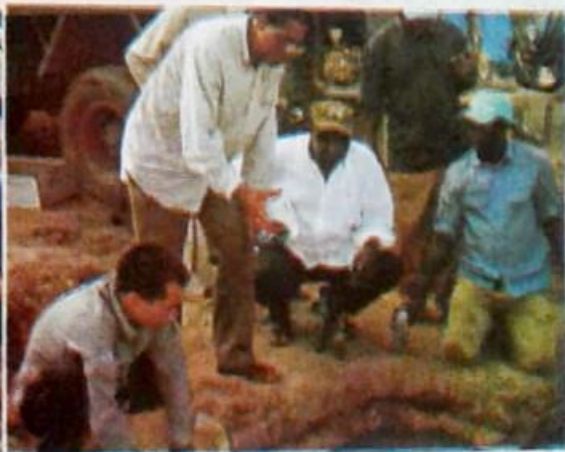
Some members of the visiting Shengkang Group of China who visited on a fact finding mission on the Oil and Gas potentials in the Bida Basin. Niger State Honourable Commissioner for Mining and Resources Mall. Lawal Abbas Mohammed 1st from right



Shengkang Group of China continues further observations and assessment of the oil slicks/ spread on top of the water. Niger State Honourable Commissioner for Mining and Mineral Resources (in white shirt) joins in the observation and assessment.



Shenkang Group of China continues further observations and assessment of the oil slicks/ spread on top of the water. Niger State Honourable Commissioner for Mining and Mineral Resources (in white shirt) joins in the observation and assessment.



Chinese Shenkang Group, Honourable Commissioner (in white) and Prof. Ojabe continue assessment and collection of oil samples for further analysis



All is well that ended well. Chinese Group Chief Geologist, Honourable Commissioner, Director General of Niger State Oil and Gas Agency / Special Adviser to the Governor on Oil and Gas (Engr. Y. Y. Sani in brown caftan), Senior Special Assistant to Niger State Governor on Oil and Gas (Engr. Habib Panty in red caftan and green face cap) and community leaders at 2nd phase drilling sites exchanging pleasantries.

PRELIMINARY CONCLUSIONS

1. From the preliminary geological map prepared, prospective areas, ranked as Less Prospective, Prospective and More Prospective are discernable.
2. Pattishabakolo, Edozighi, Kandi and Enwan make up the More Prospective localities (geological bright spots) in the Northern Bida Basin.
3. Prospective localities include the areas around Adogo, Auna, Pizhi, Duba, Kachegi, Kutigi, West of Kudu near Mokwa, Ndaba, Badegi, Agaie, Gulu, and Muye. Agbaja, Ahoko, Gegu-Beki and Gerinya constitute the Prospective to More Prospective areas in the Southern Bida Basin.
4. Geochemical data show that mainly gas and some oil would have been generated within the Prospective and More Prospective sections in the basin.
5. Geophysical aeromagnetic data evaluation indicates a depth of more than 2,000m (> 2 Km) within the identified prospective areas.

POSTSCRIPT

Presentation to DPR

A presentation of the report on the Bida Basin Hydrocarbon Exploration Research Project was made to the Department of Petroleum Resources (DPR) at its Lagos office on 12th February 2014 for technical audit and peer review queries. Presentation was well received. DPR advised that same presentation be made to NNPC/NAPIMS/FES to enable full scale detailed exploration by NNPC in partnership with IBBU and Niger State Midland Petrogas Resources Ltd (MPRL). DPR would advise Government accordingly to facilitate allocation of the identified prospective acreages. It also advised that investors can be scouted for to carry out seismic acquisition on the prospective areas. Generally, more data needed to be generated, geophysical, geochemical, sedimentological, to enable better reserve estimation modeling and selection of appropriate drilling locations for wild-cats.

Chinese Investors

The Shengkang Group of China visited Niger State in the period 12th – 16th June 2014. They were taken round to prospective areas in the Bida Basin. Additional one shallow well (Kudu-2) was drilled at Kudu during the period to enable a further and on-the-spot assessment of the oil streaks reported in the earlier drilling exercise (Kudu-1). In the presence of members of the Shengkang Group, the oil streaks were encountered at depths of 44-60m. Samples were collected by the Shengkang Group for further analysis in China. The Group expressed general satisfaction with the preliminary basinal assessment.

Further Data Generation

The more data that can be generated, the more investors' confidence is upgraded. In line of this and in order to meet the MOU agreement with Energy Commission of Nigeria, Technical Committee/IBBU will need to drill two more data collection wells (cores) at Makera (near Kontagora) and at Mokwa. Energy Commission will drill at Gaba and Duba. Samples will be analyzed sedimentologically and petrophysically to generate reservoir/oil kitchen data and organic geochemically to generate further source rock and migration data. Naturally, seismic data should be acquired over the identified prospective areas. Availability of these data will attract more investors to acquire exploration blocks in the Bida Basin. The basin would also have been hugely de-risked.



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