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THERMOGENIC PETROLEUM GAS FOUND IN TUBE WELLS OF SAGAR DISTRICT BUNDELKHAND REGION, M.P.δ

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ABSTRACT

The discovery of the natural petroleum gas has been reported from the tubewells in the Garhakota and Rahatgarh tahsil of Sagar District in M.P. The leakages of the natural petroleum gas is occurring in arenaceous, argillaceous and calcareous rocks of Rewa and Bhander group of the Vindhyan Super Group. Theses leakages are containing the 72-99% methane alongwith the helium, oxygen, nitrogen and CO2 gases.It is **a rare discovery** from the such an older rocks of (**EARLY PROTEROZOIC**) the **Vindhyan Super Group** in the geological history (>500 m.y. old). As per the Geo-chemical analysis of the petroleum gas done by the scientist of NGRI Hydrabad, suggested that this gas collectde at Piparia containg the Methane -43.6 per mil w.r.t. PDB ,Ethane -24.9 per mil w.r.t. PDB and the gas samples collected at Rahatgarh and Mirkheri containg Methane -54.9 per4 mil w.r.t. PDB and Ethane -26.4 per mil w.r.t. PDB. The presence of Ethane gas in both the samples and value in the range of -24.9 and -26.4 indicate the thermogenic source for these gases. Thermogenic in origin.

INTRODUCTION :

In the month of March 2007 a Natural Petroleum gas has been discovered in Piparia-Bhutoli villages are near Chinnoaa in Garhakota Tahsil in Sagar District, and Batiyagarh village in Damoh District in the agricultural fields of Sri Bhagwan Singh Yadav and Sri AshaRam Patel,Sri Uday Ram Yadav, Sri Sarju Patel and Sri B.S.Yadav have digged the bore well in the aranaceous, argillaceous and calcareous limestone rocks of the Rewa and Bhander Group of the Vindhyan Super Group upto the depth of 260' -- 340' on the bank of II order stream on the western flanks of the Sonar river, which is located in the southern catchment area of the Ganga river system. Actually the land owner got the ground water at the depth of 340 ft., but the well was dried up in the month of Jan.2007. One day morning, when the labourers were working in the field and they tried to burn the bidi, they have observed the air/ gas coming out the well has started burning. The owner has come in contact with the author for the further suggestion about the natural gas, I have visited and analysed the gas , and found that this gas in burning in blue colour flame and reported the matter in the local newspaper Dainik Bhaskar and the ONGC, Petroleum Minister, Govt. of India and. Chief Minister, Govt of M.P Bhopal.After confirmation of the gas the owner has started using this gas for his domestic purposes, i.e. for cooking the meals and he has tried to filled the LPG gas cylinders with this gas. using the locally available nosal, plastic tube and volve etc..

In the same time another agriculture landowner Sri. AshaRam Patel who has digged the bore well 15 years ago a 240 feet deep bore well. Located 500 m away from Mr. Yadav well is also drilled up, there was no water for the irrigation and the well was completly dry.

Mr.Patel has also observed the air/ gas coming out the well has started burning petroleum gas and he has observed that the flame was about 3-5 m high flame high from the

ground,. The site was studied by me in great detail and reported the new to the news paper and the District administration C.M. Govt of M.P,The Governor of M.P.,The President of Inida, Tghe prime Minister of India, Petoleum Minister, ONGC, G.S.I Kolkatta, KDMIPE Dehradun and NGRI, Hyderabad..The owner has heared the whistle/ sound of the gas which is coming out of the bore well through small pipe at the distance of about 200 m distance.

In 1993 also author has discovered the occurrence of natural Petroleum gas in the Borewell of Sri Liladhar Tiwari in Rahatgarh who is continuously using this gas for his daba/ hotel on way to Bhopal the state highway SH 26. In this well also after drying of the well has started pouring the air/ petroleum gas, who is in contunuous using for the hotel chulha.

Observation:

A letter has been written to Sri Jokan Ram, Executive Director, Head, K.D.M.I.P.E of ONGC, Dehradun and reported the occurrence of petroleum gas in the Sagar area, and requested him to send the team of the expert to investigate the discovery of the petroleum gas. He has sent Dr,N.K.Tiwari and Sri Pankaj Sharma on 8th May 2007 for investigation. So along with the team of ONGC and author, Prof. Arun K. Shandilya has visited thePiparia-Bhutoli and Rahatgarh area. We have observed that the petroleum gas is coming out from the bore well of Sri Bhagwan Singh Yadav' agriculture field. The pipe of the borewell was connected through the plastic pipe, which was giving thebubling in the bucket of water. Then we have observed that this air cum gas coming out the bore well is burning in blue colour flame, we have tested in the burner also and the photograph has been taken. In the start the villagers were affraid of any disaster or calamities due to burnibg the gas in the field. Thanks god there was no houses or forest nearby the well site.

The ONGC expert Dr.N.K.Tiwari and Shri Pankaj Sharma alongwith Prof.Shandilya have collected the samples of gas, soil, and water for the geochemical analysis at all the three site of petroleum gas leakages from the bore well.e.i. at Piparia Bhutoli, Rahatgarh and its surrounding areas

In the month Jan.2008 a letter has been written to the Dr. P.M. Tejale Director General Geological Survey of India, Kolkatta and to the V.P. Dimri, Director, National Geophysical Research Institute,Hyderabad regarding the further investigation of the natural gas under the joint collaboration with this University. A team of scientists- Dr.A.M.Dayal, Assistant Director ,Dr.D.J.Patil,, Dr.Ravi Shrivastava of NGRI, Hydrabad as visited the petroleum gas leakage tubewells in Rahatgarh and Garhakota tahsils Dist. Sagar and collected the gas samples for the geo-chemical analysis and isotopic studies. The samples were collected fronm the following localities-

(1) Piparia Bhutoli :- These tubewells falls under the panchayat and P.O. chanaua tahsil Garhakota dist. Sagar, M.P.(survey of India toposheet no. 55M/1) It is accessible by a 3 Km Village road from town Garhakota around 45 km East of Sagar on way to Damoh. The leakage of petroleum gas is reported from 08 tubewells in the month of march 2007.

These bore/tube wells varying in the depth from 260 to 400 ft , with top 60 ft is of 8" diam with plastic casing, and rest of well is od 6" diam.SSSSS

(1)epth 340 feet) of Shri Bhagwan singh Yadav (lat: 23^{o}47'59.2"N, long 79^{o}05'29.6" E, Elevation 448m).

(b): The tubewells

(depth 400 feet) of Shri Asha Ram Patel S/o Shri Ghappu Patel (lat: 23^{0}48'20" N, long: 79^{o}50'20.7" E, Elevation 450m).

(2) Rahatgarh:- This village is located 40km West of Sagar on way to Bhopal Road. In the borewell of Shri Leeladhar Tiwari (Tiwari Dhawa: lat: 23^{o}57'15.7" N, Long: 79^{o}25'03"E, Elevation 484m), the tube well is situated on the deccan trap - vindhyan contact. The leakage of petroleum gas is reported since 1993.

(3) Meerkhedi:- This tubewell (lat: 23^{o}45'56"N, Long:78^{o}18'9.6"E, Elevation 440m) from where gas seepage was occurring belongs to Shri Dhan Singh. The area falls in the

toposheet of India No. 55 I/5. This tube well is the eastern extremity of village meerkhedi, 13 km of Rahatgarh on way to Vidisha. This tube well pouring the petroleum gas sinse 1984 having enormous bubbling in the water. The tube well is located on the contact of daccan tram basalt and vindhyan sand stone (Inlier).

GEOLOGY:

The present natural petroleum gas leakages has been discovered in the dried bore / Tube wells. Located on the rocks of Sandstone, shale and limestone rocks of the Rewa and Bhander Group of the Vidhyan Super Group as the basement rocks. These petroliferous rocks are overlain by the Lameta bed in the western part of the Pipariya and Bhutoli area in Garhakota tahsil. On the western part of present area is overlain by the rocks of Upper Cretaceous Deccan Trap Basaltic flows, which are intercalated with intertrappean limestone.The area were the leakages of pertoleum gas has been discovered located on the alluvial soil cover.The Deccan Trap Basaltic rocks are exposed west of the Chinnoua village in Garhakota Tahsil .The dips of the rocks are 10 - 15 toward SE.The topograghy is more or less flat with some low lying areas near the stream.

The Rahatgarh and Mirkheri areas are covered mostly by the Basaltic flows of Deccan Traps. except few inliers of the rocks of Rewa Group and Bhander Group of the Vindhyan Super Group. The Deccan Trap basalt rocks are mostly covered by the black soil..

The Generalised straigraphic succession are as follows-

_AGE	FORMATION
RECENT TO SUBRE CENT/ QUATERNARIES	ALLUVIUM SOIL BLACK SOIL
UPPER CRETACEOUS	DECCAN TRAPS BASALTIC FLOWS
LOWER CRETACEOUS	LAMETA FORMATION
PROTEROZOIC	REWA/BHANDER (SANDSTONE,SHALES,and LIMESTONE)

GEOCHEMICAL ANALYSIS:

On the basis of the newspaper reporting and on the request of author to the ONGC has sent the officers of the KDM Institute of Petroleum Exploration, ONGC Dehradun have visited the site and collected the samples of natural petroleum gas, water, and soil for the purpose of geochemical analysis from the above four locatiobs . The samples were analysed in the geochemical laboratory of KDM IPE Kaulagarh Road, ONGC,Dahradun. The finding of the geochemical analysis of the natural gas, water, and soil are as follows-

S.N.	Bore Well	Chemical Composition % (v/v)						Isotopic Values (‰)
		He	O_2	N_2	CO_2	C_1	C_{2+}	$\partial^{13} C_1$
1	Pipariya Bhatoli	0.34	1.63	24.87	0.93	72.14	0.01	-61.5
2	Rahatgarh	0.72	0.65	14.37	0.28	84.00	0.02	-54.0

The Oil and Natural Gas Commission Dehradun has concluded with, The seepaged gases of Pipariya Bhatoli and Rahatgarh are predominantly methane (72.14%-84 % in Pipariya Bhutoli and 99% in Tiwari Dhaba, Rahatgarh Bore well and are devoid of higher

hydrocarbons. the hydrocarbon gases seem to have predominance of bacterial methane. The pressure of both the seepages is extremely low. As per the owners, the quantity of gas is diminishing day-by-day. The results this time of methane is concerned. Genetically the seepage gases from Pipariya Bhatoli and Rahatgarh seem to be different from thermogenic gases encountered in exploratory well jabera-1, drilled by ONGC in Disst. Damoh(M.P.).

In January 2008 in Bhutoli village further land owner bore the well up to 400 ft. deep there is huge quantity of natural gas has been reported to governmental agencies.In the Fab.2008 two villagers at Pipariya- Bhutoli have drilled two more tube wells upto the depth of 300- 350 feet about 600-700 m away from the earlier wells in the shales and sandstone rocks of Lower Bhander they couldnot got the ground water, but there is leakages of natural gas, which is also giving the blue flame.

CONCLUSION:

In my opinion the natural petroleum gas in containing the higher amount of methane(72-99 %), and remarkable content of Helium, oxygen,,nitrogen, and carbon di oxide, it suggests that it must have been formed at higher temperature condition at deeper horigen in the PreCambrian Vindhyan sedimentary basin. The reservoir must be lying below theground at least 500 m or more. The present leakages of natural gas releasing through many of hairline cracks/ fracture in the sandstone, shales and limestone rocks of the Rewa and Bhander group group, rocks of the Vindhyan Super Group.

It is remarkable to note that Pipariya- Bhutoli villages of Garhakota tahsil is about 40 km in tghe east of Sagar town,and the another tube well at Rahatgarh tube well site is about 40 km. west of Sagar Town, means the 80 kmX 10 km belt must be containing a large reservoir, through the minor cracks/ fractures the natural petroleum gas in the tube well is pouring in the Sagar.district.

The whole Sagar area have to be investgated in the great detail for the gas reserve estimation by the help of Geophysical methods, i..e.,-Seismic, gravity, magnetic methods. For the detailed investigation the research proposal has been submitted to the Ministry of Petroleum and natural Gas,Shastry Bhawan,NewDelhi, ONGC,Dehradun, and Geological Survey of India, 27 Jawahar Lal Nehru Road,Kolkatta for the financial assisatnce.

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