

Paper Number: 235

Deep seated occurrence of coal below the Upper Gondwana Litho-units in the Bayyaram Area, Godavari Valley Coalfield, Khammam district, Telangana State, India

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The Gondwana sedimentary succession in the Godavari Valley of India are disposed in a series of grabens or half grabens whose development had been controlled by the lithological in-homogeneities of the basement. The Permian lithostratigraphy is of prime importance for coal exploration, mainly Barakar and Lower Kamthi formations which host economically viable coal deposits. There are variations in thickness as well as lithofacies of the Gondwanan sedimentary rocks from one basin to another. The Bayyaram area falls within the Manuguru coal belt, which lies in the south-eastern margin of the main Godavari Basin. The Maleri and Kota formations are exposed in the Bayyaram area, which is down-dip with respect to the Kondapuram mining block. The occurrence of two correlatable coal seam zones in the Barakar Formation, namely the "A" and "No. I Seam", and six correlatable coal-seam zones in the Lower Kamthi formations ("VI", "V", "IV", "III", "II" & "I") have been established by drilling up to a depth of 728.00 m and the borehole was closed within the Barakar Formation due to insurmountable drilling problems. These deep seated coal seams in the Bayyaram area are regionally correlatable with the Barakar coal seams, which are being mined in Kondapuram mines at shallow depth, and also the Lower Kamthi and Barakar seams established in the Pagaderu area, at comparatively shallow depth.

Based mainly on fossil evidence it is very well established that there is an unconformity between the Lower and Upper Gondwana groups sequence. But in the boreholes below the Maleri Formation the ferruginous pebbly sandstone occurs, which is part of Upper Kamthi Formation. It appears that the full sequence of Upper Kamthi is therefore not developed in this area and hence this ferruginous sandstone and conglomerate, which normally occurs at the base of the Upper Kamthi Formation denotes the contact between the Lower and Upper Gondwana succession, which may be traced down dip towards the Bayyaram area. Silicified wood is also reported in the Kota Formation, which is exposed in the north-western part of Bayyaram area. Plant fossils of *Glossopteris* and *Gangamopteris* are also recorded from the borehole cores, mainly from the argillaceous sequence of the Lower Kamthi and Barakar formations. Borehole data in this area shows a gradational contact between all the lithostratigraphic units of the Lower Gondwana Group.

