

A DISCUSSION OF NEW RESULTS FROM CONTINUOUS GASOMETRIC DETERMINATIONS OF CARBONATE IN CUTTINGS AND CORES FROM DRILL HOLES, BY SCHETTLER, VOL. 52 (2) p. 93-99

B.M. ABBOTT¹⁾

The technique described had obvious merits as an aid to subsurface correlation studies in sequences of carbonate evaporites. However there are several basic controls that should be employed, and the limitations of the technique realized.

Firstly the method is only really applicable to deposits that are of essentially precipitated carbonate. These are probably the minority, most carbonates owing their origin to the physical accumulation of carbonate material formed by bio-chemical processes, i.e. algae, molluscs, and coelenterates (Bathurst 1971). This introduces a problem, in these mixed accumulations as the calcium carbonate will exist in three forms, high and low-magnesium calcite and aragonite. Thus the magnesium content of the sediment will vary from the first instance.

Cementation will add large quantities of low-magnesium calcite, the exact composition depending upon the environment, i.e. subareal or submarine.

Shinn et al (1964a, 1964b) have shown that dolomitization in these mechanically deposited biochemical carbonates is concentrated along areas of greater permeability, resulting in anomalous local results. Secondary dolomitization is again selective taking advantage of primary structures.

Turning to the method of analysis itself, some problems arise. The reactions involved are temperature dependant, as is the solubility of CO₂ in water; care must therefore be taken to ensure that similar experimental conditions exist when conducting the analyses.

The weight of the sample must be known precisely as must the nature of insolubles present, as both will effect the volume of CO₂ liberated. Finally the form of the carbonate crystals will effect the rate of the reaction as it is controlled by both their size and orientation.

In conclusion the method is a useful addition to existing logging techniques but should be employed with caution.

REFERENCES

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Gundsätzlich erkläre ich mich mit den Ausführungen von Mr. B.M. Abbott einverstanden und ich bedanke mich für die Hinweise. Zu ähnlichen Gedanken sind wir auch in Diskussionen mit anderen Kollegen gekommen. In der Zwischenzeit haben aber die Kabonatslogs und die Reaktionslogs eine zunehmende praktische Bedeutung erlangt. Selbst in mächtigen Algendolomiten – wie dem Zechstein-Hauptdolomit – sind die Logs nicht mehr wegzudenken.

Was die Durchführung der Methode selbst anbetrifft, muss ich Mr. Abbott auch rechtgeben. Geringe Temperaturschwankungen können die Ergebnisse beeinflussen. Deshalb ist hier grosse Sorgfalt notwendig. Auch die Gewichte müssen sehr genau ermittelt werden. Die Kristallformen dürften keine so grosse Rolle spielen, da das Material gemörsert wird. Kluffmaterial wird nach Möglichkeit ausgelesen und gesondert untersucht.

H. Schettler

¹⁾ Burmah Oil (North Sea) Ltd. London and Dept. of Earth Sciences, The Open University, Milton Keynes, Bucks.