

rocks of Ca-alkaline and K-Ca-alkaline compositions. The modal, lithic grains and pebbles composition of the Val Gardena sandstone and conglomerate support such interpretation.

MLAKAR, I. (1979, 1980, 1981, 1982, 1983, 1985): Geologic factors of Hg, Cu and U mineralization (in Slovene). - Geological Survey of Slovenia, Ljubljana.

PUPIN, J.P. (1980): Zircon and granite petrology. - Contrib. Mineral. Petro., 73: 207-220, Heidelberg.

PUPIN, J.P. (1985): Magmatic zoning of Hercynian granitoids in France based on typology. - Schweiz Mineral Petrogr. Mitt., 65: 29-56, Zürich.

Fans in the NE - Tauern Window (Austria)

SLACZKA, A.* & HÖCK, V.**

*Geological Institute, Jagiellonian Univ. Cracow, Poland, ** Institute for Geology, Univ. Salzburg, Austria

The northeastern end of the Penninic Tauern Window between the Fusch valley in the west and the Kleinarl valley in the east is built up by a variable sequence of rocks. In the north the dominating rocktype is the Klammkalk, an elongated body, thick in the east up to at least 1000 meters; it thins out dramatically between Rauris valley and Fusch valley. Within the Klammkalk, but increasing towards the south, intercalations of black and green phyllites are common. Between Kleinarl valley and Rauris valley there is a large, approximately up to 1000 m thick intercalation of black phyllites, quartzitic schists and finegrained breccias, separating a thinner southern layer of Klammkalk from the thicker northern layer. South from the main body of Klammkalk the rocks are dominated by lens-like dolomite breccias, black phyllites, chlorite-quartz-schists and last not least turbiditic sandstones with phyllites. The dolomite breccias and complexes of turbiditic sandstones form also elongated lenses several kilometers long. The southern continuation is built up by black phyllites.

The age of the whole sequence is still debatable. Finding of scarce crinoids (not determinable) in Klammkalk suggest Jurassic to Lower Cretaceous age. From black phyllites associated with the southern Klammkalk and black phyllites associated with the southernmost quartzites and breccias spores of Early to maximum Middle Cretaceous age were described.

Our investigations concentrated on the lens-shaped dolomitic breccias and the turbiditic sandstones. The breccias form several individual lens-shaped elongated layers, which merge in the vicinity of the Großarl valley into one relatively thick breccia complex. The individual layers consist of several thinner beds usually up to 50 cm in thickness. The boundaries are generally flat but are occasionally uneven, probably representing channelfills. In some cases beds are contorted, that could be best explained as effect of syndimentary slumping or sliding. Most of them are matrix supported breccias and display a gradation. As a conclusion we assume on the base of the observed structures that rocks represent massflow deposits and created a local channelized submarine fan. The dolomitic breccias are concentrated in the east, between the Kleinarl valley and the Gastein valley, farther to the west they occur also. However, they create only local lenses becoming smaller towards the west, but locally increasing again. Complimentary with the decrease of the breccias towards the west we observe an increase in turbiditic sandstones. They vary from generally medium bedded to thick bedded. Quite often the clastic layers display a sharp, uneven lower boundary with small, broad channels and the gradate upwards into mudstones. Some of the beds display a gradation of grains. In many cases it is possible to detect an original upright position. In some cases we observed bottom current structures such as flood marks and dragmarks (PREY 1975, 1977). The current structures suggest a source area to the SW.

A similar lens-like distribution of dolomite breccias with also similar internal structures can be observed in the Matrei Zone

between the Matreier Tauern valley in the west and the Leiter valley in the east. They are in analogy to the breccias in the northern part again intercalated by black phyllites. Turbiditic sandstones were not found until now, but in comparable position chlorite bearing quartzites occur highly folded and recrystallized. HÄUSLER (1988) described from the Hippold nappe and the Radstadt nappe very similar lithologies and structures, which he interpreted as fans.

Our findings suggest that the clastic sediments in the northeastern Tauern Window formed along a large passive continental margin to the south of the Penninic Zone, which was the deposition area of the Northern Calcareous Alps and of the Lower Austroalpine deposits of the Radstädter Tauern: This margin was dissected by large listric faults forming local extensional basins separating various swells and eventually flooded by oceanic crust (e.g. Reckner, Matrei Zone). On both sides of the Tauern Window one can find big, often elongated blocks of dolomite and limestone. At least a part of them represent olistolites derived from the southern carbonate platform of the Northern Calcareous Alps. The clastic fans were probably supplied from uplifted and tilted blocks from the same area. In that time the basinal, pelagic or hemipelagic sediments were represented by the black shales and sandy marls.

Reservoirqualitäts-Vorhersage im nordwestdeutschen Rotliegenden

SOLMS, M.*, STRAUSS C.***, GLOVER, B.W.*** & KELLY, S.***

*Solms Geological Consultant (SGC), Lehrte, **BEB Erdgas & Erdöl GmbH, Hannover, ***Shell Exploration and Production, Aberdeen, U.K.

Schlechte Reservoirqualität (R_Q) ist häufige Ursache für Fehlbohrungen im nordwestdeutschen Rotliegenden. Innerhalb maturaer Kohlenwasserstoff-Provinzen wie dem nordwestdeutschen Rotliegend-Becken ist es deshalb zwingend notwendig, existierende Modelle und Strategien so weiterzuentwickeln, um Risiko und damit auch die Kosten bei der Erschließung des Restpotentials zu minimieren. Das Poster präsentiert 2 Play-Modelle und zur RQ-Vorhersage im nordwestdeutschen Rotliegenden:

1. Das „Paläocharge-Retention-Modell“: Während primäre Lithofazies lediglich die Ablagerung eines potentiellen Netto-Reservoirs bestimmen, wird die Erhaltung des Porenraums durch quasi-Inhibierung schädigender diagenetischer Prozesse innerhalb der KW-Säule eines Paläofeldes kontrolliert. Das vorgestellte Modell erklärt die Entfärbung primär rot gefärbter, gut sortierter Sandsteine im NW-deutschen Rotliegenden durch KW-induzierte Fe³⁺-reduktion, oft verbunden mit Erhaltung des fröhdiagenetischen Tonminerals Chlorit. Der Übergang zwischen grauen Sandsteinen und roten, hämatitischen Sandsteinen ist oft stratigraphisch diskonform und mit einer RQ-Verschlechterung verbunden. Reservoirbereiche mit Chloritdiagenese sind i.d.R. durch eine horizontale Grenze von unterlagernden illitisierten Abfolgen abgetrennt. Die Übergangszone beider Bereiche ist durch Chlorit/Illit-Vergesellschaftungen repräsentiert. Die meisten Sonden des nördlichen Fairways produzieren aus chloritischen Graufolgen. KW-Remigration/ Leakage führt dagegen zur diagenetischen Schädigung ehemals gasgefüllter Träger, oft verbunden mit intensivem authigenen Illitwachstum.

Wichtige Faktoren der RQ-Vorhersagestrategie im durch das „Paläocharge-Retention-Modell“ beschriebenen Play sind ein möglichst exaktes 3D-Abbild von Temperatur- und Charge-Geschichte, verbunden mit fundierten Vorstellungen zur Strukturbildung des Prä-Salinars. Eine geostatistische Permeabilitätsvorhersage (aus seismischen Attribut- oder Impedanzkarten) ist daher nur unter Einbezug der Paläocharge-relevanten Daten aus Referenzbohrungen sinnvoll.