Route descends to Klosterneuburg, the capital of the Babenbergs (1106--1156) with a monastery dating from that period. The main building is in a baroque style emulating the Escorial. The road to Tulln crosses the Greifenstein Nappe of the Flysch Zone. Based on nannofossils, the Greifenstein Beds belong to the youngest flysch sediments (Middle Eocene) but are poor in foraminifera.

THE GAS FIELD HÖFLEIN

P. Seifert, ÖMV-AG, Vienna

Höflein 1 found natural gas with an underlying liquid phase of hydrocarbons. Eleven other exploration drillings defined the limits of the field. It has an extension of nearly 12 km^2 between the villages Hadersfeld and Höflein and the river Danube, northwest of Vienna.

The gas-bearing reservoir at a depth of 2750 m is the "Doloquarz-arenitserie" on top of the Dogger sequence. This sediment consists of sandy dolomites with porous chert layers. The whole Mesozoic sequence is structured by post-Jurassic faults with a NE-SW trend (see fig 12). Therefore the gas-bearing column in the exploration drilling varies between 20 and 70 m. Höflein is the first gas field with an economic value which was found in the Autochthonous Mesozoic below the overthrusted belts of the Alps.

References: Grün, 1984

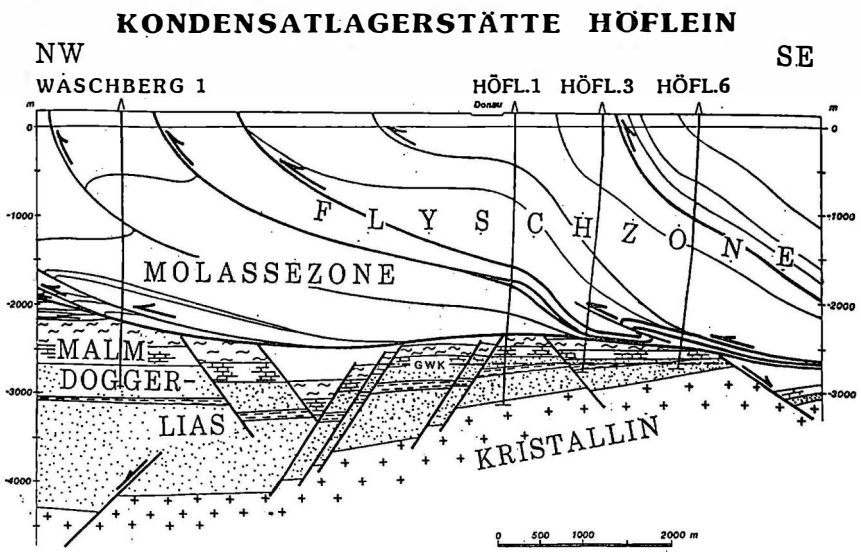

Fig. 12: Geological section of the ÖMV-AG gas field Höflein

Drill Site HÖFLEIN 1:

During 1983 the exploration drilling Höflein 1 was drilled at the river Danube north of Vienna. It was to examine the stratigraphy of this area and reach the high zone of the Autochthonous Mesozoic which was identified by reflexion seismic measurements. The Flysch Zone in the area of Höflein consists of two overthrusted nappes of Paleocene to Early Cretaceous age. The sediments consist of turbidite sequences with alternate bedding of sandstones to calcareous sandstones and marlstones with claystone intercalations. Calcareous sandstones, light brown pelagic limestones, and black claystones represent the basal part of the flysch sediments (Early Cretaceous).

A thin series of red and green marlstones of Eocene age is overthrusted by the Flysch. "Sandstreifenschlier", the thin bedded series of calcareous sandstones and marlstones of the Molasse zone, was found between 1950 and 2500 m. From a depth of 2504 m Höflein 1 drilled through the sequences of the autochthonous Mesozoic: Grey marlstones and light brown limestones of Malmian age, sandy dolomites, black claystones and grey sandstones of Dogger and Lias age. The Paleozoic crystalline basement of the Bohemian Massif was reached at 3245 m depth.

Stratigraphy:

0 - 25 m	Quarternary
25 - 1900 m	Flysch
	25 - 620 m Late Cretaceous
	620 - 940 m Eocene-Paleocene
	1740 - 1900 m Early Cretaceous
1900 - 1951 m	Helvetic nappe ("Buntmergelserie") Eocene
1951 - 2504 m	Subalpine Molasse - Early Miocene (Ottnangian-Eggenburgian)
2504 - 3245 m	Autochthonous Mesozoic
	2504 - 2733 m Malm Marlstones + Limestones
	2733 - 2943 m Dogger Dolomites, Claystones, Sandstones
	2943 - 3245 m Dogger-Lias Sandstones
3245 - 3298 m	Crystalline Paleozoic

STOP 3:

* Hagenbachklamm, gorge S of St. Andrä, eastern wall of the creek, 100 m S of the entrance. Mapping point no. 114 of Brix.
* Flysch Zone, Greifenstein Nappe, Altlengbach Beds, Maastrichtian.
* References: Brix, 1961, 1970
  Grün, 1970

Not very well exposed outcrop, yet important due to its rich fauna. Grey to

dark-grey soft marls are interbedded in a sequence of sandstone. The following species are described by Grün: Psammosphaera fusca, Saccammina placenta, Psammosiphonella div. sp., Kalamopsis grzybowskii, Reophax duplex, Ammodiscus infimus, Glomospira irregularis, Glomospirella gaultina, Rzehakina div. sp., Trochamminoides div. sp., Recurvoides, and Plectina.

The road follows the overthrust of the Flysch Zone on the disturbed Molasse to the W, ascending again from Königstetten to the summit of the Flysch at the Dopplerhütte.

STOP 4:

* Old quarry at the Dopplerhütte.
* Flysch Zone, northern border zone of the Greifenstein Nappe, Wolfpassing Beds ("Neokomflysch"), Early Cretaceous.
* References: Bertle, 1970
  Brix, 1961
  Plöchinger & Prey, 1974 (point I/5)

Calcareous flysch development with 30 to 50 cm thick limestone layers and thin intercalations of black-grey and grey clays. The limestones contain considerable quartz sands and show graded bedding. Chert nodules are common in the upper part. The sequence is folded and strongly dipping. The microfauna is poor, consisting mainly of radiolaria, a number of hedbergellids, trochollnas and certain rotaliids. The nannoflora, with Nannoconus steinmanni and Zeugrhabdotus embergeri allows this formation to be dated as Early Cretaceous.

Dopplerhütte: parking lot, sight-seeing point. From this vantage point one can see the Molasse Basin north and south of the Danube, and in far NW the Bohemian Massif is visible. The lower hillsides are formed by silty clays and conglomerates of the disturbed Molasse. At this site the Alpine range bends to a NE Carpathian direction. The Flysch Zone is transformed to the W, north of the Danube by a fault where the Danube has entered the Vienna Basin since Pliocene times. From here the excursion returns through the Flysch Zone nappes and passes the deep well Mauerbach 1.

DRILL SITE MAUERBACH 1a:

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The exploration drilling Mauerbach 1a (drilled in 1964 by the ÖMV-AG, the Austrian National Oil and Gas Company) is situated 3.5 km south of the northern margin of the Flysch Zone, south of the front of the Alpine thrust fold belt. The borehole demonstrates the nappe structure of the Flysch (mainly Late Cretaceous and Early Tertiary turbidite sandstones intercalating with argillaceous and calcareous layers) and its overlapping on the Molasse Zone.

The borehole reached a depth of 3487.3 m in the Paleozoic crystalline of the Bohemian Massif (fig. 13).