Foreword

The Barrandian area in central Bohemia is well known to the international geoscience community because of the richness of its Cambrian to Devonian fossils and its exceptionally instructive and easily accessible outcrops.

The geological and paleontological investigation of this area has a tradition spanning over two hundred years, which was highlighted by the magnificent work of Joachim Barrande (1799–1883), after whom the area was named. Barrande spent 50 years of his productive life studying the fossils of these rocks (between 1832 and 1883), and made this area known worldwide by his works printed between 1846 and 1887.

The application of modern stratigraphical methods has contributed substantially to our knowledge of the Barrandian. Detailed investigation of the often richly fossiliferous strata has enabled this area to be used as a testing region for new stratigraphical methods and approaches. This particularly concerns the principle of defining chronostratigraphic units by means of stratotypes. In fact, the first internationally accepted stratotype, that of the Silurian-Devonian boundary at Klonk near Suchomasty (with an auxiliary section at Karlštejn), was accepted and ratified by the International Stratigraphic Commission and the International Union of Geological Sciences in 1972 (see the official document of the Committee on the Silurian-Devonian boundary and Stratigraphy, presented by D. J. McLAREN, published in Geological Newsletter 1972, No. 4).

The procedure of selecting this first standard system boundary became a model for establishing other standard global boundary sections and points (GSSP) of the geologic past (see McLAREN 1977, International Stratigraphic Guide 1976, 1994).

After the standardization of the Silurian-Devonian boundary, this example was followed by the establishment of other global stratotype sections and points in this area. In 1981 the Subcommission on Devonian Stratigraphy selected the parastratotype (auxiliary stratotype) of the Lower-Middle Devonian boundary in the Barrandian (Prastav quarry near Praha-Holyně), and in 1983 the Subcommission on Silurian Stratigraphy approved the lower boundary of the uppermost series of the Silurian System – the Přídolí – at the Požáry quarry near Praha-Řeporyje as the global stratotype (ratified in 1984, see BASSETT 1985).

Progress was also made within the Lower Devonian: the Lochkovian and Pragian stages were accepted as standard Lower Devonian stages by the Subcommission on Devonian Stratigraphy in 1983 (following the proposition of the Prague Symposium of 1958), and the Lochkovian-Pragian boundary stratotype at Praha-Velká Chuchle was ratified by the International Stratigraphic Commission and IUGS in 1989 (see CHLUPÁČ – OLIVER 1989, OLIVER – CHLUPÁČ 1991).

Although all global stratotype sections, and their auxiliary reference sections, were studied in detail by biostratigraphic methods, other geoscience disciplines gradually became involved. These include magnetostratigraphy, event-stratigraphy, cyclostratigraphy, ecostratigraphy, and systematic paleontology. During all of these studies, it was felt that sedimentology and geochemistry had been insufficiently applied (significant sedimentology studies had been carried out only at the Silurian-Devonian boundary stratotype at Klonk).

Consequently, a new project of sedimentological and geochemical studies of the Barrandian global stratotypes and their auxiliary reference sections was established in 1999. The first phase of this work was accomplished as the master's theses of Pavel Čáp, František Vacek, and Tomáš Vorel within the Institute of Geology and Paleontology, Faculty of Science, Charles University, Prague. This work was conducted under the leadership of Prof. RNDr. Ivo Chlupáč, DrSc., and in collaboration with Doc. RNDr. Zdeněk Kukal, DrSc. of the Czech Geological Survey in Prague. The diploma theses of all three candidates were successfully defended in 2001 at Charles University, and the results of this first phase of investigation is the main subject of the present paper.

Further work will be carried out as individual joint projects between Charles University and the Czech Geological Survey in Prague. The overall goal of this project is to bring all the Silurian and Devonian global stratotypes of the Barrandian, and their important auxiliary reference sections, together with sections of particular chronostratigraphic significance. All this should serve for the better understanding of stratigraphic standards from the widest possible application of various geoscience methods.

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