

Status of the exploration for polymetallic nodules in the German license area

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In July 2006 the German Federal Institute for Geosciences and Natural Resources (BGR) signed a contract with the International Seabed Authority concerning the exploration of polymetallic nodules in the Pacific. The area of interest covers 75,000 km² in the Pacific Nodule Belt between the Clarion and Clipperton fracture zones. Previous research in the German license area is almost exclusively based on the exploration activities in the late 1970s undertaken by a consortium, including the participation of German companies (i.a. Preussag), that engaged in offshore research and the development of a mining system for the exploitation of nodules. A successful pilot mining project followed in the early 1980s, however the subsequent price decline prevented the beginning of commercial extraction. After the retreat of the German industry, the BGR inherited the archived exploration data.

Currently the BGR is preparing the first cruise (October-November 2008) for detailed exploration in the licensed area including precise bathymetric mapping and a survey of the geographical distribution and regional abundance of the manganese nodules as well as their chemical composition using state-of-the-art equipment and methods with optimal detection limits.

Concurrently, the German Ministry of Economics commissioned the BGR to plan a series of projects regarding the technological and economical development of deep-sea mining and the processing of polymetallic nodules. The overall assignment addresses the central components of raw material recovery from polymetallic nodules, including (1) an economic analysis of ore recovery from mining to smelting with consideration of future market trends, (2) exploration technology (acoustic detection system) for polymetallic nodules, (3) concepts for the extraction of nodules, and (4) the development of a specific metallurgical processing technology for polymetallic nodules. Although technological solutions were already available 25 years ago, all points mentioned above require complete re-evaluation considering the substantial technological advance over the past decades.