

SAUDI ARABIA

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In its second full year of operation, the Saudi Geological Survey (SGS) worked on a range of projects of the types common to most national surveys, such as geohazards, geologic mapping, and maintenance of the national geological database, in addition to the investigation of specific mineral deposits and general resource assessments. In exploration, SGS focused on industrial minerals, and base and precious metals.

Industrial Minerals

Kaolin deposits were investigated in the Wasia Formation at Jabal ash Shahbah and Darb Sa'd, 250 km southeast and 60 km northeast, respectively, of Riyadh. The majority of samples collected along a 200 km belt at Jabal ash Shahbah contained 15-30% Al_2O_3 and <4% Fe_2O_3 , and firing tests indicate that this deposit is suitable for tile manufacture. Somewhat better results (13.7-36% Al_2O_3) indicate that clay along a 90 km stretch of Wasia Formation at Darb Sa'd is suitable for tile and sanitary ware manufacture. Small lenses of bauxite were encountered during the clay exploration but are probably of marginal interest only.

Rocks in Al Madinah area in northwestern Saudi Arabia include a large amount of granite, the weathered and eroded products of which have been investigated as sources of feldspar. Exploration concentrated on 16 zones of feldspathic sand located in wadis in the area. A large sampling programme is in progress after test sampling and processing revealed that the sand was a viable source of commercial feldspar. In bench-scale testing, the sand was upgraded by the magnetic separation of dark minerals resulting in a purified mixture of feldspar (50-55%) and quartz (45-50%), named 'silspar', that is suitable as raw material in the ceramics and glass industries.

Arenites in the Saq Sandstone south of Tayma, northwestern Saudi Arabia, were investigated for

silica sand. The favourable rock unit was tested by 50 core-holes down to 30 m for a total core length of 1,152 m, the results of which show that high-quality silica sand 30 m thick underlies an area of 208 km². Reserves are estimated at 6.24 million m³, and further assessment, leading to a feasibility study, is planned.

Base and Precious Metals

The target of metallic mineral exploration at Musayna'ah, a 40 x 50 km area between Al Madinah and Ha'il in the northern Arabian Shield was copper-magnetite occurrences in greenstone. After examination of the region, work concentrated on Jabal al Hamrah prospect and sampling in four trenches yielded encouraging results of as much as 2% Cu. Preliminary work in the Ablah group at Wadi Yiba in the southern part of the Arabian Shield began a reassessment of the potential for stratiform copper deposits in metasedimentary rocks involving trenching and sampling. Grades of more than 6% Cu were obtained, and further trenching, drilling, and mapping are planned for 2002. Sampling at Jabal al Gharabah confirmed earlier indications of copper and nickel, but the results were not encouraging (0.084% Cu; 0.69% Ni), and further work is not envisaged.

Reconnaissance in the Ar Rayn area in the western part of the shield, a continuation of work started in 1999, involved site visits to prospects to determine their deposit characteristics and selected sampling for geochemical and petrographic studies. Deposit types include low-temperature gold-quartz veins, porphyry copper, copper-gold in magnetite and volcano-sedimentary massive sulphide occurrences. A detailed deposit-model report is in preparation.

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