DETAILED PROFILE OF KEY MINERALS OF ANDHRA PRADESH

I. GOLD

Gold is a precious metal used mainly in international bullion for money transaction, making jewellery and to a lesser extent in electronic industry and medicine. The greenstone belts (Dharwar) occurring in the western part of the state bordering Karnataka host the gold mineralisation. The important greenstone belts are Ramagiri-Penakacherla, southerm extension of the Kolar, Kadiri, Veligallu, Jonnagiri and Gadwal. Gold occurs as native metal or associated with the sulphides in the meta-basic and acidic volcanics, BIF, quartzite and granitoids.

Ancient mining activity is evidenced at several places in the form of workings, pounding marks and crushed dupes of quartz. The main deposits are confined to Anantapur, Chittoor and Kurnool districts.

Anantapur District

The Ramagiri-Penakacherla Schist Belt extends over a strike length of 100 km in the District. There are a good number of gold prospects in this belt, which can be grouped broadly into two fields viz. (i) Ramagiri Gold Field (RGF) and (ii) Bhadrampalle Gold Field (BGF). Ancient mining activity is recorded in both the fields. Gold mining was carried out during 1905-27 in Ramagiri area by M/s. John Taylor & Sons Ltd.

Ramagiri Gold Field

The gold field is about 16 km long and divided into four blocks viz. Chennabhavi, Kottapalle, Om Pratima-Gantlappa and Jibutil. Auriferous zones associated with sheared grey to smoky quartzcarbonate veins were emplaced in the quartz-chlorite schist/quartz-sericite schist. The exploration carried out by the GSI and IBM has indicated a reserve of 0.7 Mt with an average grade of 7 g/t in the Om Pratima-Gantalappa block.

The BGML is producing gold from Yeppamana mine in this block since 1984. In Kottapalle Block, north of this mine, a probable reserve of 0.11 Mt with an average grade of 2.65 g/t over an average width of 1.41 m was estimated up to 165 m depth.

Surface manifestations of mineralization in the form of wall rock alterations and sulphide minerals were recorded at several places. Pounding marks are noticed NNE of Konapuram indicating ancient gold mining activity in the area. An auriferous quartz vein extending over a strike length of 150 m with gold content of 2.48 g/t and profuse base metal mineralization with concentration of Cu up to 17.20% and Zn up to 0.10% is recorded 1 km northeast of Cherlapalle.

Bhadrampalle Gold Field

In the northern part of the schist belt auriferous quartz veins with ancient workings are found in two areas. In Bhadrampalle area, exploration carried out revealed that the lodes have smaller lengths. A reserve of 0.023 Mt of ore with an average grade of 4.13 g/t of Au over an average width of 1.21 m up to 75 m depth for the main lode and 0.36 Mt with 2.34 g/t of gold over a width of 1.00 m up to 80 m depth for the northern lode has been estimated. In Ramapuram area, preliminary exploration has led to estimation of 0.07 Mt of ore up to a maximum depth of 70 m for four lodes over widths varying from 1.29 to 1.56 m and gold content ranging from 1.28 to 11.39 g/t.

Investigations for establishing auriferous zones were carried out at several places such as Penukonda, Kuderu and Venkatapalle. In Penukonda and Kuderu areas, quartz ankerite veinseemplaced into
granite have been found to contain gold. In Venkatampalle area, gold mineralisation is found on the western margin of the schist belt with granites. In Veligallu Schist Belt, evidence of crushing for gold (pounding marks in the form of saucer shaped depressions) has been recorded at Marrukommadinne. The Kadirip Schist Belt (75 x 2.5 km), situated about 50 km north of the Kolar Schist Belt, comprises essentially acid volcanics. Anomalous gold values have been found in shear zones traversed by quartz and pegmatite veins around Verepallipeta and Erradoddi.

Chittoor District

The southern part of the N-S trending 80 km long and 2 to 8 km wide Kolar Schist Belt is exposed over a length of 16 km in this district and is marked by a number of old workings. Gold mineralisation in this belt was established by the GSI at Chigaragunta, Mallappakonda, Bisanattam, Kudithinapalle and Avulatippanapalli.

In Chigaragunta Block, auriferous zones associated with mafic and felsic volcanics have been found over a length of 2.5 km. A reserve of 4.19 Mt with grade ranging from 4.2 to 5.22 g/t of Au over widths ranging from 1.46 to 12.05 m was estimated. The deposit is under exploitation by the BGML.

In Mallappakonda Block, auriferous zones associated with BIF are lensoid, parallel and en-echelon occurring over a strike length of 400 m. A reserve of 0.65 Mt of ore with an average grade of 4.3 g/t was established.

In Bisanattam Block, both GSI and MECL carried out investigations for gold. Bisanattam, an old mine located 5 km south of the Kolar Gold Field, was producing gold during 1893–1902 and 1943–1951. The mineralised zones found in fissile amphibolite are lensoid, parallel and en-echelon indistinction and vary in width from 1 to 3 m. About 0.13 Mt of ore with a grade of 5.1 g/t was established in this block. The deposit was being mined by BGML, which has been closed down.

In Kudithinapalle Block, located 3 km south of Bisanattam Mine, gold mineralisation in quartz reefs is hosted by both homblende schist and Champion Gneiss. The quartz reef is about 100 m long and 2 to 3 m wide. A reserve of 0.48 Mt of ore with an average grade of 1.2 g/t was established. Molybdenum is also found in the quartz veins. Besides, auriferous quartz veins are located at several places in the schist belt, important ones among them being those at Gollapalle, Attinattam, Salachintanapalle, Avulatippanapalle etc. Occurrences of gold and old workings associated with BHF and ferruginous quartzite are reported from Kalahasti area. The rock types form a part of the Nellore Schist Belt.

In the 60 km long Veligallu Schist Belt, old workings for gold are noticed at Tsadukonda, Gandlapalle and Mallayyakonda. Sulphide minerals (mostly pyrite and rarely arsenopyrite) and native sulphur were noticed in the old working (adit) within the BIF (gossanised) in the Mallayakonda hill, where gold values assayed from 25 ppb to 72 ppb. The schist belt extends further north into Anantapur and Cuddapah districts. Gold mineralisation is found in BIF.

Kadapa District

A part of Veligallu Schist Belt passes through the Cuddapah District. Sporadic old workings and gold values have been recorded in BIF and associated schistose rocks in Gandimadugu, Tumukunta and Errakonda areas. In Tellakonda block, a brecciated and sulphide-bearing quartz reef which extends over a strike length of 600 m with a width varying from 5 to 12 m has been established by digging 12 trenches (TLT-1 to TLT-2) at 50 m interval with gold values ranging from 25 ppb to 1.29 ppm. Gold values of 0.1 ppm in Pulivendla Quartzite and 0.30 to 13.00 ppm in drill core and surface samples west of Gandi are reported from Gulcheru Quartzite. Anomalous gold values of 25 to 170 ppb are recorded.
from Gulcheru Formation and 25 to 440 ppb from Vempalle Formation. The associated elements are U, Ag, Z, Mo, V, Ni, Co, Cu and Pb. Gold is noticed to be rich in the Uranium rich samples.

**Kurnool District**

In the 25 km long and 5 km wide Jonnagiri Schist Belt gold mineralisation is found associated with sulphide bearing quartz veins traversing the metabasalt, meta-rhyodacite, sheared granodiorite and meta-tuffs. A number of old workings are located in the area. In Dona Temple Block, north-east of Jonnagiri, gold mineralisation was established over a strike length of 1700 m with 0.64 to 6.58 g/t of Au over a width of 1.13 to 1.68 m. In Dona East Block, significant gold mineralisation associated with sheared granodiorite has been established by the GSI. A reserve of 7.77 Mt averaging 1.79 g/t of 31.2 m thickness up to 180 m depth over a strike length of 450 m was established. In Dona north block a reserve of 0.0098 Mt averaging 3.92 g/t averaging 1.81 m thickness over a strike length of 335 m was established. In Dona south block 1.104 Mt with an average of 1.16 to 6.28 g/t with a thickness of 1.22 – 5.38 m over a strike length of 170-480 m was established.

A new schist band delineated north of Jonnagiri Schist Belt in the Aspari area over a strike length of 3.5 Km and width of 2.7 km has shown gold values ranging from 30 ppb to 451 ppb. In southern part of the Gadwal Schist Belt around Chetlamallapuram, a few gold values maximum up to 2 ppm with copper up to 2.6 % have been recorded.

**Nellore District**

Along the south western margin of the Nellore Schist Belt between Palanchchuru and Pallepadu eight blocks are identified viz. (1) Palanchchuru (2.5km x 500m) (2) Konetirachapalem (5.5 km x 600m) (3) Tirumalapudi (1.5 km x 1 km) (4) Jayampu (2.5 km x 1 km) (5) Vakyam (2km x 2 km) (6) Sirirampalle (1.5 km x 1 km) (7) Petegunta (1km x 1km) and (8) Virayapalem (4 km x 1km) in which anomalous gold values ranging from 30 ppb to 212 ppb were recorded.