

## 6 Deposit Type (Item 10)

The Black Fox mineralization is an Archean age, lode gold deposit located within the Abitibi greenstone belt. The characteristics of this deposit type include; greenstone host rocks and gold-bearing quartz-carbonate veins. The veins occur as two main types. The first are arrays and stockworks along faults and shear-zones with a quartz-carbonate laminated fault-fill. The second are widely distributed extensional veins within carbonatized metamorphosed greenstone rocks. These deposits are typically associated with crustal scale compressional faults with a vertical extent of  $\leq 2$ km and limited metallic zoning (Dubé and Geosselin, 2007).

The Black Fox deposit lies along the DPFZ, a major, east-west trending, deep-seated, crustal fault zone. The DPFZ and its numerous splays are associated with many past and current producing gold mines and gold deposits in the Porcupine Camp. The Stock and Aquarius gold deposits are located immediately west of Black Fox and the Holloway and Holt-McDermott Mines are located immediately to the east. Each of these deposits hosts approximately the 800k to 1Moz-Au. The Black Fox deposit is situated midway between two major mines, the Dome-Hoyle Pond and the Holt-Holloway. The Dome-Hoyle Pond deposits located within the same structural regime 65km west, have shown that gold bearing structures can be traced to 1,600m below surface where they remain open at depth. The Holt-Holloway Mine, located approximately 45km to the east has been developed down to 1,200m below surface.

There are several different styles of mineralization in the deposits associated with the DPFZ. The gold mineralization is structurally controlled, in a variety of geological settings. Alteration types include pyritic ankerite-sericite  $\pm$  silica-albite altered mafic volcanics, green carbonate fuchsitic altered ultramafic volcanics with quartz stockworks, pyritic, porphyritic to syenitic felsic intrusives and multiple stages of quartz veins with free gold. Much of this variation is found at Black Fox (Prenn, 2006).

## 7 Mineralization (Item 11)

Gold mineralization at Black Fox occurs mainly within an ankerite alteration zone 1km along strike and 20m to 100m wide. This alteration envelope occurs primarily within komatiitic ultramafics and lesser mafic volcanics within the outer boundaries of the DPFZ. In some areas, the auriferous zones occur as concordant zones which follow lithological contacts and have been subsequently deformed to slightly discordant zones that are associated with syenitic sills. Other auriferous zones occur in quartz veins and stockworks discordant to lithology (Hoxha and James, 2007).

The three main styles of gold mineralization observed at Black Fox are:

- Low-sulfide mineralization associated with abundant quartz veining and quartz stockwork within strong ankerite-fuchsite altered ultramafic volcanic rocks;
- Mineralization hosted within mafic volcanic units associated with >5% pyrite and minor to moderate quartz veining; and
- Mineralization hosted by silicified felsic dikes.

The first style is low sulfide mineralization occurring within quartz-rich portions of the AUV and CGR rock types. This includes the green carbonate alteration of the “Main Zone”. The typical host is the ankerite-fuchsite altered ultramafic volcanic rocks, commonly found throughout the DPFZ. Quartz veining and quartz stockwork show multiple phases of veining and structural episodes. This is illustrated by cross-cutting veins, chloritic slip surfaces in the quartz veins, and breccia textures. Visible gold is common in high-grade areas (Hoxha and James, 2007).

The second style of mineralization is hosted within mafic volcanic units coded as BMV or MV. This style is referred to as the “Flow Zones”. It is typically associated with >5% fine-grained pyrite, minor to moderate quartz veining and a strong bleaching may be present. The quartz veins are typically parallel to foliation, and visible gold is characteristically absent. This style of mineralization is common in the footwall portion of the DPFZ. It has been tested mainly by the eastern part of the 235 Level underground drilling (Hoxha and James, 2007).

The third style of mineralization is hosted in silicified felsic bodies. These include both quartz-feldspar porphyries and finer grained units which are possibly syenitic in origin. Mineralization in the felsic units is associated with increased silicification, pyrite and some quartz veining all associated with a fracture foliation. In the middle and hanging wall portions of the DPFZ, felsic-hosted mineralization can be correlated from hole to hole over short distances. In the footwall portions, blocks and lenses of felsic material are encountered which do not correlate from hole to hole (Hoxha and James, 2007).

According to Hoxha and James (1998) there have been 15 separate mineralized structures identified within the ankerite envelope. The two main gold-bearing zones of their classification are the A1 at the hanging wall contact and the C0 located at the footwall contact. The other smaller zones located between these two generally have less continuity and width and represent parallel, mineralized shears and faults.

Previous underground mining indicates that sub-horizontal, mineralized bodies located within the “Main Zone”, can be up to 15m thick and very high grade. This suggests that zones of

dilation were produced during episodes of structural movements. The majority of the other mineralized zones and quartz veins are 1 to 5m in width (Hoxha and James, 2007).

At least three generations of structurally controlled quartz veining have been identified in the underground workings. Quartz veins and stockwork zones within the main mineralized envelope are concentrated along shear/fault zones. These structures parallel the main mineralized envelope suggesting they are responsible for the location and formation of the mineralization. The presence of sigmoidal vein structures, multiple quartz injections and re-sheared vein material with chloritic slips indicate complex and repeated structural movements during a cyclic brittle-ductile deformation period. In the quartz stockwork zones, gold mineralization can be erratic possibly related to certain vein sets carrying gold, whereas others are barren (Hoxha and James, 2007).

Prenn (2006) states that “Gold mineralization has been encountered in drill core at depths of 700m below surface to date and, since the host ankerite zone appears to continue further down, it is reasonable to expect that additional mineralization will be encountered with deeper drilling”

## 8 Exploration (Item 12)

*This section is partly excerpted from the Technical Report Black Fox Project Matheson, Ontario Canada by N. Prenn of Mine Development Associates, August 14, 2006 and has been standardized to this report.*

*“The Apollo exploration drilling continued from previous campaigns on 12.5 to 25m fence lines. Two main emphases included, infill delineation of existing mineralization, and to explore for areas of new mineralization. In 2004, a 1,250m long exploratory underground drift (4m x 4m) was developed in the hanging wall down to 235m below the surface, to establish drill stations for an underground drilling program. The underground drilling program consisted of 75,700m of diamond drilling from 371 core holes. Surface drilling continued and by the end of 2006, Apollo had completed 825 diamond drillholes on the property, totaling 212,095m.*

*During the spring of 2003, Apollo Gold Exploration, Inc. contracted with Quantec Geophysical, Inc., Toronto, Ontario, to complete an IP survey covering the entire property. Lines were spaced every 200m with 100m dipole spacing. This survey has shown many chargeability and resistivity anomalies along both the DPFZ and the northwest projection of the Ross Fault. The Ross Fault is the host for the Ross Mine, located approximately 7,500m southeast of the Black Fox mine. In addition to these, a number of north-south trending anomalies were found. The intersections of these trends are considered to be prime exploration targets. It appears that the data from the earlier Noranda magnetic survey will also be valuable in defining exploration targets. The highly magnetic anomalies may help in mapping the basalt and ultramafic units on the property. In addition to this, low magnetic trends may be indicative of hydrothermal alteration that destroyed the magnetic qualities of the surrounding rocks. Figure 8-1 illustrates the results of the geophysical survey.*

*The initial portion of the Apollo surface drilling program concentrated on finding new ore zones below the Black Fox known Resources, along strike and adjacent to the known zones. The targets were the intersection of secondary faults with the DPFZ and also dilation zones within it. The mineralization is so tightly controlled by structures that a hole a few meters away could miss a high-grade zone. Fans of NQ-size drillholes were drilled to test for new ore shoots. The fans were spaced approximately 25m along strike and the intersections of the holes with the DPFZ were planned to be approximately 25m apart. The result of this program was the identification of a number of small, high-grade ore shoots that generally plunge at a 20° to 40° angle to the southeast or southwest, along the DPFZ. This is consistent with the intersection of two 45° to 70° dipping faults or with a zone of dilation along a fault that has both horizontal and vertical movement. Many of these ore shoots are still open with depth. A near-surface portion of high-grade mineralization was drilled on 12.5m spacing to improve the definition of this higher-grade mineralization”.*

