

Ongoing Discovery in the Gold Deposits at Dead Bullock Soak, Tanami Orogen, Northern Territory: The Emergence of a World-Class Gold Camp

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The Paleoproterozoic sedimentary rock-hosted gold deposits at Dead Bullock Soak have grown incrementally since their discovery by North Flinders Mines in 1989 to recently achieve the milestone of 12 Moz production plus current reserve and resource. This endowment places the Dead Bullock Soak gold camp in a select group of about 25 sedimentary rock-hosted orogenic gold deposits hosting in excess of 10 Moz of gold worldwide, according to Newmont's global gold deposit database.

Historic production and current reserves and resources at Dead Bullock Soak are centered around the axial zone of the moderately ESE plunging Dead Bullock Soak anticlinorium. The gold deposits are hosted by Fe-rich and locally carbonaceous siltstones, lesser mudstones, and fine-grained sandstones of the Dead Bullock Formation. Although structurally controlled, the vein-hosted coarse gold and lesser disseminated sulfide-associated mineralization are essentially stratabound. Moderately E plunging, plunge-continuous (i.e., >2-km plunge length) ore shoots form at the intersection between favorable stratigraphic horizons and corridors of broadly 70° → 160°-trending, cm-scale sheeted quartz-chlorite-K-feldspar veins.

Over the past 10 years the Dead Bullock Soak Gold Camp has doubled in size, from a 2004 endowment of ~6 Moz, localized mostly in the Callie ore shoot, to the current >12 Moz, of which Callie comprises 7.7 Moz. Although a lesser portion of this addition has come from the growth of Callie down-plunge, a critical contributor to this success has been the discovery of additional ore shoots, such as the Auron shoot (2006; >4 Moz) and, more recently, the emerging Federation South shoot (2013; >>0.5 Moz). Both Auron and Federation South are blind to surface, and all ore shoots remain open down-plunge.

Ongoing discovery at Dead Bullock Soak has been the result of an evolving understanding of the camp-scale structural controls on shoot localization. The persistence of exploration geologists and their management when interpreting the nuggety signature of the ore at the exploration stage has also been critical to the progression of "mineral inventory" through to reserve.

Despite the addition of 1 Moz of reserves and 1.5 Moz of resource net of depletion in the last two years, the practical and financial constraints of adding ounces at depth necessitate a shift in the focus of exploration toward new lateral targets. Future discoveries will be facilitated by camp-scale 3-D prospectivity analyses aided by targeted research with strong practical outcomes. Research goals of interest include the incorporation of a wider understanding of the structural architecture of the mineral system and an improved knowledge of the key physiochemical characteristics of ore-hosting horizons.