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Douglas H. Underhill¹ (1) Consultant, Vienna, Austria

Analysis of Uranium Supply to 2050

In 1999 uranium production supplied 55% of the 61,000 tU used by the nuclear industry to generate 16% of the world electricity supply. The balance was primarily met by draw-down of existing inventory. Based on a WEC-IIASA study, it is estimated that by 2050 annual requirements could increase to 177,000 and 283,000 tU respectively, in the mid and high cases, and fall to 52,000 tU in the low case. Cumulative requirements for the three cases are 3.39, 5.35 and 7.58 million tU.

The IAEA uses these projections in its new report "Analysis of uranium supply to 2050" to describe how both Known and Undiscovered resources, supplemented by secondary supplies, could fuel reactors to 2050. While secondary supplies (including inventory, blended down warhead material, Mixed Oxide, reprocessed uranium, and re-enrichment of tails) equaling from 9 to 13% of the high to mid requirements, are important over the next 10 to 15 years, they have little long term impact. The objective of this analysis is evaluating the role of 125 known uranium deposits supplying Market Based Production - produced at or below market price to satisfy demand not met by other sources. The analysis uses individual deposit resources, production cost (ranging from low (or=\$13/lb U₃O₈) to very high (\$50/lb U₃O₈)) and capability, and timing, for annual supply-demand balancing.

It is concluded Known resources exist to meet much of the projected requirements. However, nuclear power will have to rely on very high cost resources, unless significant exploration efforts are successful in discovering new large, low-cost deposits.