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Preliminary evaluation of uranium resources in Productora's Prospect, Chile

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This paper presents information obtained on Productora's prospect that allows a preliminary evaluation of uranium resources of Sub –Productora´s prospect 1 which contains the largest amount of resources from the prospect.

The Productora's prospect is an area of hydrothermal alteration of elongated shape 3 km long and 0.5 - 0.8 km wide and oriented N 10 ° W with an incipient internal zonation of quartz-sericite, silica, chlorite, epidote . This is located in an area of 192 km2 called Sector Estación Romero, near to the city of Vallenar, III Region of Chile.

This primary uraniferous mineralization is scarce and finely disseminated, it is consist by davidita (Fe+2, Re, U, Ca, Zn, Th)6 (Ti, Fe+3, U, Cr)5 (O, OH)36; probably submicroscopic uraninite (U+41- x , U+6x) O2 + x that occurs in contact zones of rhyolite intrusive bodies and related metasomatic processes and superimposition of hydrothermal alteration , with introduction of free silica and feldspar pertita.

The secondary mineralization consists of torbernite (Cu (UO2)2 (PO4)4 • 8-12 H2O) , autunite (Ca(UO2)2 (PO4)2 • 10 - 12H2O) , uranotile (CaO 2UO3 2SiO2 • 6H2O), uranotilo α (Ca(H2O)2 (UO2) (SiO4)2 • 3H2O , fosfouranilite (Ca(UO2)4(PO4)2 (OH)4 • 8H2O) , cuprosklodowskita (Cu(UO2)2 (SiO3)2 (OH)2 • 5 H2O) and renardite Pb (UO2)4 (PO4)2 (OH)4 • 7H2O) ,this is located in the contact zone of rhyolite and diorite dikes permeating both rocks.

During exploration geochemistry studies of residual soil magnetometry and spectroscopy were performed. In the 8 selected subsectors detailed radiometric and mineral exploration work was carried out.

In anomalous sectors detailed radiometric measurements were performed on a grid of 5 x 5 m, covering 38 hectares. Based on these results was scheduled and dug trenches totaling 1,031.9 m with varying depths and a total of 16 tasting depths between 2.0 and 15.0 m. In this work 576 samples were taken at constant length of 0.15 meters, which were analyzed for U, Cu and Mo, where mobile uranium content was between 7.0 and 1,820 ppm.

The surface geological data, from surveys conducted (trenches, shafts and tastings), and subsurface information (drilling), together with the analytical and radiometric data allowed to define the existence in the prospectus of 18 veins. These veins have run under 50 meters and varying thicknesses from 0.1 to 3.5 meters and lenticular form.

Using a cut-off grade of 295 ppm U3O8 thicknesses of the ore bodies were determined considering the direction and dip of the mineralized structures and the direction and inclination of the drilling and/or recognition. Considering a density of 2.2, it was calculated for the sub- Productora´s prospect 1, by the method of horizontal plants and cross sections, the following resources:

Category Tonnes Grade ppm U3O8(t)
Measured 36,452 580.3 21.1
Indicated 16,377 557.8 9.1
Infered 3,168 464.0 1.4

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