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Geological modelling and resource estimation of Lemajung, Kalan, West Kalimantan

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Lemajung is a uranium potential sector in Kalan Basin-West Kalimantan which contains at least 48 mineralization zones hosted in metasiltstone. Three styles of mineralization are present; vertical west-east lens associated with tourmaline, west-east open fracture filling dipping 70° to N which parallel with the foliation, and N100°E - N130°E open fracture filling dipping 60° to NE. Previous resource estimation in Lemajung done in 1995, resulted 680 tons of U3O8 in the indicated resource category, averaging 0.056%. No geological modeling works conducted prior to resource estimation due to limited computer code available in that time. The estimation applied the 2D krigging statistical approach with 25 x 25 m block model size and 50 m searching radius.

On the current research, uranium resource evaluation based on existing 38 rock core drilling and 7 open holes drilling. Geological modeling and resource estimation performed under Surpac v.6.3 computer program. First step, database composed for collar, survey, geology, and assay. Topography digital terrain model made based on topography map with the scale of 1:2.000. Sections are created for manual ore body correlation with the result of 51 ore mineralization planes which areparallel to foliation. Due to complex and irregular dimension of mineralization, the two other types of mineralization can not be modeled and were ignored. The maximum thickness of ore is 8.58 m, directed N250E to N270E, and dipping 60° to sub-vertical. Inverse distance estimation (IDE) statistical approach then applied for resource estimation. The IDE using specific ellipsoid shape for analysis of each mineralization plane. The bearing of ellipsoid ranges from 55 to 90°, dipping from -30 to -40°, and plunging from 0 to -40.27°. To top cut the outliers, a confidence interval was applied. The size of block model on the estimation is 4 x 4 x 2 m, with sub-blocks of 0.50 x 0.50 x 0.25 m. The searching radius for measured and indicated resource is 25 m and 50 m respectively and the cut-off grade 0.01%. The estimate of uranium resources is 169 tons U3O8 in the measured resource category and 39.5 tons U3O8 int the indicated resource category.

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