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Ankara, Turkey

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IMPROVING THE ORE EXTRACTION RATIO IN SOLUTION MINING

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Abstract

Kazan Soda Elektrik, a member of Ciner Group, has been producing soda ash (Na_2CO_3) and sodium bicarbonate (NaHCO_3) from trona mineral ($\text{Na}_2\text{CO}_3 \cdot \text{NaHCO}_3 \cdot 2\text{H}_2\text{O}$) since September 2017 by using solution mining method at Kazan Soda Trona Mine Site located in Ankara, Turkey. In this mine site, while most of the leaching units were constructed as tunnel type units, some of them were designed as panel type units. The main purpose of this approach was not only to provide maximum underground safety, but also to evaluate advantages and disadvantages between the tunnel and panel type leaching units in terms of mine safety and mineral extraction ratio. As mainly known, if only tunnel type caverns are preferred, mine safety will be high, but it will not be so possible to increase ore extraction ratio. Researches carried out at Kazan mine site have indicated that the extraction ratio might be increased by redefining the pillars and injection points between panel type units. During first stage mining operations, positive contributions of panel type units to ore extraction were monitored closely and tested, then, advantages-disadvantages were discussed with detailed comparisons and finally it was concluded that they might work with higher efficiency without compromising mining safety. In this context, panel type units consist of two tunnel type units constructed close to each other, where injection points are shifted relative to each other for efficiency gain. The results indicate that panel type units should be preferred as much as possible to increase the total ore extraction ratio.

Key words: Solution mining, units, caverns, panel, tunnel, extraction ratio