

## Hydro-Jex<sup>®</sup> Technology

### Historical Operation and Gold Recovery via Hydro-Jex at Newmont's Lone Tree – MC-West – Phase 1/2 Heap Leach Pad

Dr. Thom Seal, P.E. while acting as the Metallurgical Manager for Newmont's Nevada heap leach operations, plus Hydro-Jex<sup>®</sup> inventor and project manager had 4 holes of 140 ft depth drilled, sampled and prepared for Hydro-Jex<sup>®</sup> stimulation in early October-06. The average grade of the drill hole samples, collected at 5 ft intervals was 0.0104 Au T oz/ton AuFA (gold by fire assay-Troy oz/short ton) and 0.00633 Au T oz/ton AuCN (cyanide soluble gold on a pulverized sample split leached with high CN and modeled), **Figure 1**. Actual metallurgical balance gold recovery from the Hydro-Jex<sup>®</sup> stimulation and re-leaching operations are found in **Figure 2** measured in Au T oz/day production. The total gold produced was 5,779.72 T oz which equates to 10.32 troy oz/foot drilled, stimulated and re-leached via the Hydro-Jex<sup>®</sup> technology in 8 fall and winter months with weather related down time (gaps in production). While re-leaching continued after mid April-07, additional holes were stimulated and leached, masking the gold production from the original LT 1-4 holes.

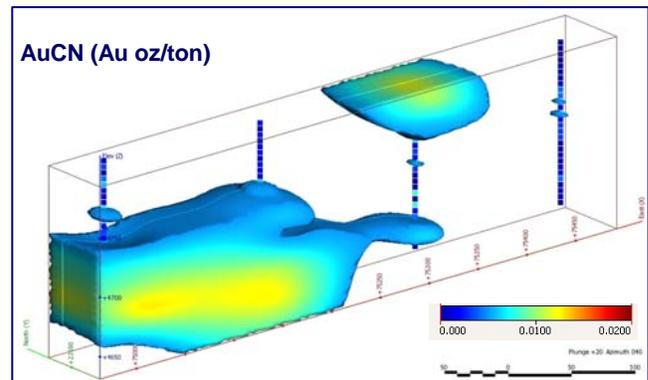


Figure 1 – AuCN values in Lone Tree Drill Splits and re-

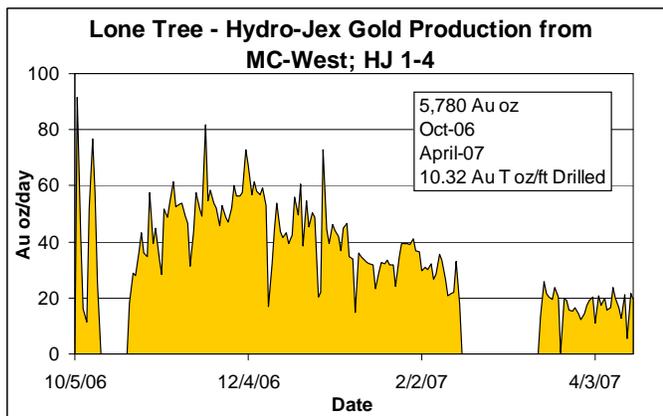


Figure 2 - Lone Tree HJ 1-4 Gold Recovery oz/day

leaching operation recovered 80% of the AuCN value placed this would yield a inventory AuCN value of 0.00633 Au T oz/ton which is the average drill hole analysis. Then the calculated AuCN quantity in the Hydro-Jex<sup>®</sup> impact zone equates to 7,591 Au T oz. Thus the Hydro-Jex<sup>®</sup> technology recovered 76.14% of the contained AuCN in 8 winter months, with down time. **Model Hydro-Jex<sup>®</sup> recoveries are anticipated to recover 85% of the AuCN values in the impact zones in a 2 year stimulation and re-leach cycle for this type of ore.** Thus the 8 month Hydro-Jex<sup>®</sup> operation recovered about 90% of the expected recoverable gold in this 8 month winter period. **Remember if you are to drill and sample a heap to determine the inventory, it cost very little extra to drill a Hydro-Jex<sup>®</sup> well and assay the drill samples!** These models and assumptions are based on actual drill hold data and gold production for the MC West pad at the Lone Tree Mine. The drill hole samples do not reflect the actual gold found in a heap, which is not homogenous, but merely reflects the values sampled. Inferences of gold grade and model recovery based upon holes drilled, which are 160 to 200 ft apart is but a model prediction. Material permeability, gold and rock size distribution greatly influence the efficiency and kinetics of gold leaching and could lead to variances in the predicted model recovery from one ore type to another.

**Recovery Model Assumptions:** Various observations have shown that the Hydro-Jex<sup>®</sup> technology stimulates a radius of about 85 ft which impacts additional material with solution to about 100 ft radius. This impacts an estimated volume of the heap calculated: 4 x 140 ft holes to be about 23,876,100 ft<sup>3</sup>, or nearly 1.3 million tons of ore. Assuming a ore place head grade of 0.033 Au T oz/ton AuFA and a ratio of 95% (Ratio AuCN/AuFA) yields a AuCN grade of 0.032 Au T oz/ton AuCN (near 1 gram/ton). The grade could have been higher but with a lower ratio yielding an equal AuCN value.

If the Lone Tree surface solution application leaching operation recovered 80% of the AuCN value placed this would yield a inventory AuCN value of 0.00633 Au T oz/ton which is the average drill hole analysis. Then the calculated AuCN quantity in the Hydro-Jex<sup>®</sup> impact zone equates to 7,591 Au T oz. Thus the Hydro-Jex<sup>®</sup> technology recovered 76.14% of the contained AuCN in 8 winter months, with down time. **Model Hydro-Jex<sup>®</sup> recoveries are anticipated to recover 85% of the AuCN values in the impact zones in a 2 year stimulation and re-leach cycle for this type of ore.** Thus the 8 month Hydro-Jex<sup>®</sup> operation recovered about 90% of the expected recoverable gold in this 8 month winter period. **Remember if you are to drill and sample a heap to determine the inventory, it cost very little extra to drill a Hydro-Jex<sup>®</sup> well and assay the drill samples!** These models and assumptions are based on actual drill hold data and gold production for the MC West pad at the Lone Tree Mine. The drill hole samples do not reflect the actual gold found in a heap, which is not homogenous, but merely reflects the values sampled. Inferences of gold grade and model recovery based upon holes drilled, which are 160 to 200 ft apart is but a model prediction. Material permeability, gold and rock size distribution greatly influence the efficiency and kinetics of gold leaching and could lead to variances in the predicted model recovery from one ore type to another.

## Metal Recovery Solutions, Inc.

The Hydro-Jex<sup>®</sup> technology was invented and developed by Thom Seal, who joined **Metal Recovery Solutions, Inc.** as the CTO, then as the president & CEO today. We can now provide the technology and know-how in 3-D leaching to allow heap leach operators to:

- Improve recovery (significant enhanced Au-Ag oz/foot for each stimulation well)
- Reduce rinsing time and closure expenses



**Metal Recovery Solutions, LLC** is based in Nevada and applies proven technologies to enhance the recovery of precious metals. We partner with mining customers throughout the western United States, through use of the Hydro-Jex<sup>®</sup> technology, to generate added revenue. Flexible financial arrangements are available. For information on Hydro-Jex<sup>®</sup> please contact our CEO, Thom Seal, (H) 775-753-3650, (Cell) 510-418-5779, (email) [tseal@unr.edu](mailto:tseal@unr.edu)

