INITIAL TEST WELL CONDITIONING AT NOPAL I URANIUM DEPOSIT
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Objectives

Field efforts conducted over the last 3 years

EarthVision\textsuperscript{1} Software – 3D Field Model

Drilling / Coring, Geophysical Well Logging and Casing Installation

Initial Sampling / Conditioning

Nopal I geologic setting is similar to Yucca Mountain – rhyolitic tuff, unsaturated zone, semi-arid climate

Geologic units at Nopal I include the Nopal, Coloradas Tuff, Pozos Conglomerate and Cretaceous Limestone ~ 44 Ma and Older

Uraninite deposit ~ 8±5 Ma

Mining during 1960-1985

Test Drilling/Coring - 2003
View of Nopal I mine from near PB-4

Water level was measured ~ 220 m below level 0+00

Level “0+10” Meters

Level “0+00” Meters

PB 1

PB 2

PB 3
Nopal I Benches and Boreholes

View from ridge to the north
Nopal I Initial Drilling Goals/ Locations

- Drill one continuously cored well and two additional boreholes to a depth 20 m below the water table
- Collect rock and water samples for analyses
- Monitor Water Quality and Levels over time
- Provide Data to Supplement the conceptual model for Peña Blanca, Nopal I

(Pearcy et al, 1995)
Preliminary EarthVision© - 3D Model w/o Geophysical Logging Data

Greater than 0.03 % U Contour to -1+00 meter level w/ cut away

0+00 meter Level – old Nopal I mine records – assayed % U
Preliminary EarthVision® 3D Mining Data

Data inputs limited to 5 drift levels w/o geophysical log input
Geophysical Logging

- Parameters measured included gamma ray, density, normalized gamma ray density, neutron, temperature and caliper.
- The increase in gamma signal near the limestone contact is of unknown source and age.

Geophysical logs were then run in each of the boreholes and one of the nearby water wells, designated PB-4, located approx. 5 km ESE and down-gradient (assumed).
Preliminary EarthVision® - 3D model

Geophysical log estimates add to data set

0.04 (blue), 0.09, 0.12 and 0.14 % (red) U Contours
Note: PB-1 and PB-2 appear to be linked and PB-3 is somewhat independent. Pumped 590 l @ ~3.5 l/min resulting in a 3.4 m drawdown.
PB-2 Conditioning

PB2 Pumping (12/07/03)

<table>
<thead>
<tr>
<th>PB2 Conditioning</th>
<th>Day 1</th>
<th>Day 2</th>
<th>Day 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Volume Pumped</td>
<td>132</td>
<td>302</td>
<td>321</td>
</tr>
<tr>
<td>Observed Drawdown</td>
<td>10.1</td>
<td>13.4</td>
<td>15.8</td>
</tr>
</tbody>
</table>

pH decrease indicated successful conditioning
Note: PB-3 pumping showed negligible effects on PB-1 and PB-2. Pumped ~738 L @ ~3.5 L/min resulting in 0.3m drawdown.
PB-4 shows near steady state pH conditions
Pumped ~265 l @ ~3.5 l/min resulting in 1.5 m drawdown
Field test performed only on PB-3 sample showing gamma constituents in water

- Household sponge used as water filter during PB-3 pumping
  - After pumping 870 liters (230 gal) of water at ~ 3.8 liters per min in 8 hours the activity had raised to 2.74 mR/hr
  - Upon return the next morning, the activity was back at background at .075 mR/hr.
Conclusions

- EarthVision© - 3D modeling of early mining data ore concentrations combined with Geophysical log gamma log data illustrates possible ore distribution.
- During the conditioning of PB-1, PB-2 and PB-3 approximately 757 liters (~200 gal) of water withdrawn from each hole indicates not all wells communicating and a complex system.
- Pump rates of 3.5 l/min caused drawdown in all wells.

Questions?