Title
An Energy-Dispersive X-Ray Fluorescence Analysis of Obsidian Artifacts from Shellmound Sites near Puerto Peñasco, Sonora, Mexico

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LETTER REPORT

AN ENERGY-DISPERSIVE X-RAY FLUORESCENCE ANALYSIS OF OBSIDIAN ARTIFACTS FROM SHELLMOUND SITES NEAR PUERTO PENASCO, SONORA, MEXICO

2 November 2005

Dr. Jonathan Mabry
Desert Archaeology, Inc.
3975 N. Tucson Blvd.
Tucson, AZ 85716

Dear Jonathan,

As expected, most of the artifacts from these sites were produced from obsidian from the Los Vidrios domes up the Rio Sonoita (Shackley 1988, 2005). However, two do not match any sources in Southwest North America. Sample PP-5 exhibits a chemistry with low Rb and relatively high Sr that is similar to a number of sources across the Gulf of California on the east side of the Baja California peninsula such as Valle del Azufre and Isla Angel de la Guarda (Shackley 2005; Shackley et al. 1996). The elemental concentrations do not match any of these in the particular, however. It is quite possible that there are sources in Sonora that remain unknown that match the composition of these artifacts.

The samples were analyzed with a Spectrace (ThermoNoran) QuanX EDXRF spectrometer in the Archaeological XRF Laboratory, University of California, Berkeley. Instrumental methods can be found at http://www.swxrflab.net/anlysis.htm. Analysis of the USGS RGM-1 standard indicates high machine precision for the elements of interest (Govnidaraju 1994; Table 1 here).

Sincerely,

M. Steven Shackley, Ph.D.
Director

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http://www.swxrflab.net/
REFERENCES CITED

Govindaraju, K.

Shackley, M.S.


Shackley, M.S., J.R. Hyland, and M. de la L. Gutiérrez M.

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Table 1. Elemental concentrations for the archaeological samples. All measurements in parts per million (ppm).

<table>
<thead>
<tr>
<th>Sample</th>
<th>Ti</th>
<th>Mn</th>
<th>Fe</th>
<th>Rb</th>
<th>Sr</th>
<th>Y</th>
<th>Zr</th>
<th>Nb</th>
<th>Source</th>
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<tr>
<td>PP-1</td>
<td>2440</td>
<td>264</td>
<td>7520</td>
<td>121</td>
<td>8</td>
<td>26</td>
<td>110</td>
<td>15</td>
<td>unknown</td>
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<tr>
<td>PP-2</td>
<td>812</td>
<td>282</td>
<td>7440</td>
<td>151</td>
<td>5</td>
<td>46</td>
<td>157</td>
<td>14</td>
<td>too small</td>
</tr>
<tr>
<td>PP-3</td>
<td>1131</td>
<td>220</td>
<td>11390</td>
<td>232</td>
<td>16</td>
<td>50</td>
<td>211</td>
<td>23</td>
<td>Los Vidrios, SON</td>
</tr>
<tr>
<td>PP-4</td>
<td>924</td>
<td>239</td>
<td>9774</td>
<td>211</td>
<td>15</td>
<td>75</td>
<td>200</td>
<td>21</td>
<td>Los Vidrios, SON</td>
</tr>
<tr>
<td>PP-5</td>
<td>1211</td>
<td>289</td>
<td>8686</td>
<td>82</td>
<td>60</td>
<td>26</td>
<td>170</td>
<td>7</td>
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<td>PP-6</td>
<td>992</td>
<td>198</td>
<td>10110</td>
<td>207</td>
<td>13</td>
<td>60</td>
<td>204</td>
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<tr>
<td>RGM-S1</td>
<td>1638</td>
<td>313</td>
<td>12805</td>
<td>148</td>
<td>109</td>
<td>26</td>
<td>214</td>
<td>2</td>
<td>standard</td>
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