**LITHOLOGIC LOG**

<table>
<thead>
<tr>
<th>Lithology</th>
<th>Depth</th>
<th>Surveys, Tests, Shows, Etc.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interbedded Flows of Basalt/Tuff</td>
<td>0-802'</td>
<td>Ran 9 5/8&quot; J-55 &amp; cmt'd 1/2&quot; ; Run 45'</td>
</tr>
<tr>
<td>Basalt &amp; Andesite Flows</td>
<td>802'-960'</td>
<td>Fresh Water Flow 300 gallons per min., Slightly Gassy</td>
</tr>
<tr>
<td>Tuff/Coal Intbd</td>
<td>960'-1020'</td>
<td>Cont Fresh Water Flow</td>
</tr>
<tr>
<td>Tuff, Firm</td>
<td>1020-1170'</td>
<td>Increase mud from 9.3 to 10.5 lbs/gallon</td>
</tr>
<tr>
<td>Andesite/Tuff &amp; Welded Tuff</td>
<td>1170'-1370'</td>
<td>Tr Blu Grn and Gold Fluor No Cut</td>
</tr>
<tr>
<td>Tuff, Firm</td>
<td>1370'-1990'</td>
<td>Ream and Jar Tight Hole Pack Off</td>
</tr>
<tr>
<td>Coal/Tuff</td>
<td>1990'-2060'</td>
<td>Tight Hole, Caving Formation</td>
</tr>
<tr>
<td>Tuff, Firm</td>
<td>2060'-2306'</td>
<td>Tr Pet. Vapors No Cut No Fluor 4°-3949°</td>
</tr>
<tr>
<td>Coal/Tuff</td>
<td>2306'-2325'</td>
<td>Loss of Circulation/ Cont. Loss, 2° at 5130', POOH and twist off at 1498', Back off 3 tool Jets and Fish, set plug at 3200' and K.D.</td>
</tr>
<tr>
<td>Tuff, Firm</td>
<td>2325'-2550'</td>
<td></td>
</tr>
<tr>
<td>Clay/Tuff</td>
<td>2550'-3210'</td>
<td></td>
</tr>
<tr>
<td>Tuff Welded in Part</td>
<td>3210'-3280'</td>
<td></td>
</tr>
<tr>
<td>Claystone, blk, carb</td>
<td>3280'-3260'</td>
<td></td>
</tr>
<tr>
<td>SS/Conc/Tuff, Intbd, carb</td>
<td>3260'-3650'</td>
<td></td>
</tr>
<tr>
<td>SS, Tuff, Intbd</td>
<td>3650'-3840'</td>
<td></td>
</tr>
<tr>
<td>Andesite/SS</td>
<td>3840'-3995'</td>
<td></td>
</tr>
<tr>
<td>SS, green, fractures</td>
<td>3995'-5136'</td>
<td></td>
</tr>
<tr>
<td>TR Conglomerate near bottom</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
# Lithologic Log

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<th>Lithology</th>
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<tr>
<td>SS, Volcanic Derived</td>
<td>3330'-3360'</td>
<td>KOP 3327’, TR ORNG MIN FLUOR NO CUT, DRILL DIRECTIONAL HOLE</td>
</tr>
<tr>
<td>Tuff/Sltstn, Carb</td>
<td>3360'-3560'</td>
<td>8° N25W @ 3418’, 7.75° N72°W AT 3518’, CHROM = 90% C1, 6.1% C2, 3% C3, TR C4.</td>
</tr>
<tr>
<td>SS/Tuff, BLK/DKBRWN, Carb/Carb Sltstn</td>
<td>3560'-3680'</td>
<td>Fluor in cuttings Blue Green / STRMNG BLU WH CUT, Fluor in mud, BLU YEL, all cuts very</td>
</tr>
<tr>
<td></td>
<td></td>
<td>fast, CHROM = 85.7% C1, 7.3% C2, 4.14% C3, 1.67% C4, 1.7% NO4, TR C5 PENTANE PLUS, 7.25°N660’</td>
</tr>
<tr>
<td>Sltstn/SS/Tuff, Very Carb</td>
<td>3680'-3965'</td>
<td>Continued Fluor in cuttings, no Fluor in mud, Fluor Blu-Wh/Fast Blue-White STRMNG Cuts,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>7.75°-N18W AT 3762’, RAN ELECTRIC LOGS AND SET 7” CSG w/870 SAX CEMENT @ 3953’, DRILL AHEAD/6 1/8” BIT, 8° AND N12W AT 3987’ (END OF CONTROLLED SURVEY DEVIATION).</td>
</tr>
<tr>
<td>Andesite/Volcanics</td>
<td>3965'-4000’</td>
<td>8° at 4103’.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Complete loss of circulation, returns gained after add of LCM</td>
</tr>
<tr>
<td>SS/Clay and Sand, GCC WRST, FN/Med Grain, Tuffaceous</td>
<td>4000'-4520’</td>
<td>Loss of circulation/20-30% fluid return</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Deposit mud and cuttings in formation, drilling blind</td>
</tr>
<tr>
<td>SS/InTbDD Tuff, welded in part</td>
<td>4540'-4625’</td>
<td>Slight returns 20%M</td>
</tr>
<tr>
<td>SS/Sltstn, Fractures/Calcite Crystals, Bypass Shaker at 4660’</td>
<td>4625'-4770’</td>
<td>Volcanics, RYOLITE, Andesite, InTbDD/ TUFFS</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CHROM = 68.6% C1, 23.5% C2, 7.8% C3, 60% returns</td>
</tr>
<tr>
<td>No Returns</td>
<td>4770'-5225’</td>
<td>Cont Loss of Drill Fluids</td>
</tr>
<tr>
<td>Sand/Tuff, WH</td>
<td>5225'-5315’</td>
<td></td>
</tr>
<tr>
<td>Volcanics, RYolite, Andesite, InTbDD/ Tuffs</td>
<td>5315'-5455’</td>
<td></td>
</tr>
<tr>
<td>Tuff/Sltstn, Carb in Part</td>
<td>5455'-5550’</td>
<td></td>
</tr>
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<td>Lithology</td>
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<tr>
<td>--------------------------------------------------------------------------</td>
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<td>-----------------------------------------------------------------</td>
</tr>
<tr>
<td>Andesite/SS and Tuff Intbdo Porphericitic Andesite, Rewrkd Tuff, Sandy Tuff</td>
<td>5550'-5710'</td>
<td>Cont. loss of drill fluids</td>
</tr>
<tr>
<td>Andesite, Hard, Tuff, Welded</td>
<td>5710'-5870'</td>
<td>Cont. loss of drill fluids</td>
</tr>
<tr>
<td>SS/Sand/Clay and Tuff, Wh/Blue, Siliceous and Calcite</td>
<td>5870'-5935'</td>
<td>A/A</td>
</tr>
<tr>
<td>Volcanics/SS, Andesite, Tuff, Kao Clay</td>
<td>5935'-6045'</td>
<td>Loss of fluids about 10%</td>
</tr>
<tr>
<td>Volcanics, Altered/SS Zeolitic, Calcite, Green Altered Sand Grains</td>
<td>6045'-6145'</td>
<td>Calcite seams along fractures</td>
</tr>
<tr>
<td>Volcanics, Andesite/Altered Minerals</td>
<td>6145'-6325'</td>
<td>Returns of about 95%</td>
</tr>
<tr>
<td>Metamorphics, Shist</td>
<td>6325'-6410'</td>
<td>Returns of 98%</td>
</tr>
<tr>
<td></td>
<td>6410'-6539TD</td>
<td></td>
</tr>
</tbody>
</table>