<table>
<thead>
<tr>
<th>ELEV (FT)</th>
<th>ROCK TYPE</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>621.5</td>
<td>Fresh, slightly vesicular, medium dark gray (A4), aphanitic, medium strong, BASALT</td>
<td></td>
</tr>
<tr>
<td>624.5</td>
<td>Soil interbed</td>
<td></td>
</tr>
<tr>
<td>629.0</td>
<td>Slightly weathered, vesicular, dark gray (N3), aphanitic, medium strong, BASALT</td>
<td></td>
</tr>
<tr>
<td>635.0</td>
<td>Drillhole log continued on next page</td>
<td></td>
</tr>
</tbody>
</table>

**NOTES**
- Water Level Instrumentation

**Golder Associates**
- LOGGED: Compiled By Bailey
- CHECKED: W G
- DATE: 1/20/92
**Record of Drillhole WO-2**

**Description:**

- Fresh, slightly vesicular, dark gray (N3), aphanitic, medium strong, BASALT
- Slightly weathered, vesicular, grayish red (5R4/3), aphanitic, medium strong, BASALT
- Mottled, very dusky red (10R2/2) and gray (N3)
- Thin line SAND intercepts trace silt
- Dense, moderately yellowish brown (10YR5/4), fine SAND, little silt, interbedded with thin (<1 ft) silty clay to silty clay with thin (<0.3 ft) interbedded sand (LACUSTRINE DEPOSIT)

**Graphic Log:**

<table>
<thead>
<tr>
<th>Depth (ft)</th>
<th>Elevation</th>
<th>ROD</th>
<th>Fracture</th>
<th>Type and Surface Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>640</td>
<td>97</td>
<td></td>
<td></td>
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<tr>
<td>650.4</td>
<td>650</td>
<td>6</td>
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<tr>
<td>660.2</td>
<td>660</td>
<td>7</td>
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<tr>
<td>680.1</td>
<td>680</td>
<td>10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>700.1</td>
<td>700</td>
<td>12</td>
<td></td>
<td></td>
</tr>
<tr>
<td>710.1</td>
<td>710</td>
<td>13</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Notes:**

- ROD through point load index not applicable in soils at 693.9 to 694.0

**Logging:**

- Compiled by Bailey
- Checked: W G
- Date: 1/20/92
RECORD OF DRILLHOLE WO-2

BORING METHOD: Triple Tube Coring
DRILLING DATE: 7/30/91
DRILL RD#: Universal 1500

PROJECT: EAGNPR DrxnID
PROJECT NO: 913-1091.303
LOCATION: NPR - INEL

DATUM: MSL
COORDINATES N: 688355.83
E: 312180.83
AZIMUTH: NA
INCLINATION: -90°

COLLAR ELEV: 4929.27

ROCK TYPE
DESCRIPTION

13 100
Dense, moderate yellowish brown (10YR5/4), fine SAND, some silt and silty clay (LACUSTRINE DEPOSITS)

ELEV
DEPTH
FT
PT
FUZZED
ROD
FRAC TURES/FOOT
DISCONTINUITY DATA
NOTE

720.0
One slickensided planar, polished shear plane

721.0

731.0

741.0

751.0

761.0

785.0

FRESH, vesicular, dark gray (N3), apharitic, medium strong, BASALT
Few Fe-oxide concretions at contact
772.0-785.0: Large vesicles (>1/4 inch) common

779.0: Grades to slightly vesicular, strong

784.0-784.3: Vesicular horizon oriented perpendicular to core axis

792.0

Drillhole log continued on next page

DEPTH SCALE: 1 in. = 10 ft.
DRILLING CONTRACTOR: Tonto
DRILLER: Gillespie/Riley

Compiled By Bailey
LOGGED: lMocker
CHECKED: MGW
DATE: 1/20/92
### Record of Drillhole WO-2

**Project:** EPA GNPR Drift/Wetland Mitigation at Noonail Pond, NJ 913-1091.303  
**Drilling Method:** Triple Tube Coring  
**Drilling Date:** 8/29/91  
**Drill Rig:** Universal 1500  
**Datum:** MSL  
**Coordinates:** N: 668355.83 E: 312180.83  
**Azimuth:** 00°  
**Collar Elev:** 4929.27  
**Inclination:** -90°

#### Rock Type and Description

<table>
<thead>
<tr>
<th>Elevation (ft)</th>
<th>Depth (ft)</th>
<th>Rock Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>681.5</td>
<td>32</td>
<td>Hard, laminated to massive, moderate reddish brown (10R6/4B), clay with some silt and some fine sand laminations (LACUSTRINE DEPOSITS)</td>
</tr>
<tr>
<td>897.5</td>
<td>34</td>
<td>Dense, thinly laminated, moderate yellowish brown (10YR6/4B), fine to medium grained sand with little clay laminations (LACUSTRINE or FLUVIAL DEPOSITS)</td>
</tr>
<tr>
<td>902.5</td>
<td>N/A</td>
<td>Dense, moderate yellowish brown (10YR6/4B), thinly laminated (&lt;1/4 inch) silty clay with trace fine sand (LACUSTRINE or FLUVIAL OVERBANK DEPOSITS)</td>
</tr>
<tr>
<td>907.5</td>
<td>38</td>
<td>Fresh, vesicular, dark gray (N3), aphanitic, medium strong, BASALT</td>
</tr>
</tbody>
</table>
| 917.5         | 37         | 914.4: Gradational change to minutely vesicular basalt  
916.0: Strong  
920.9-923.0: Slightly vesicular horizon  
931.0: Gradational change to vesicular basalt |
| 937.5         | 39         | Dense, moderate reddish brown (10R6/4B), baked, partially indurated silty sand  
Slightly weathered, vesicular, grayish red (5G4/2), aphanitic, medium strong, BASALT  
934.3: Gradational change to fresh, dark gray (N3)  
938.6: Gradational change to slightly vesicular  
940.0: Changes to strong |
| 947.0         | 41         | Fresh, vesicular, dark gray (N3), aphanitic, strong, BASALT  
956.0: Gradational change to slightly vesicular |

**Notes:**  
Run 32  
Rec 9.09.0  
ROD through point load index not applicable for soils at 931.8 to 932.6
RECORD OF DRILLHOLE WO-2

BORENG METHOD: Triple Tube Coring
DRILLING DATE: 8/2/91
DATUM: MSL
COORDINATES N: 698355.83
AZIMUTH: NA
COLLAR ELEV: 4929.27
E: 312186.83
INCLINATION: -90°

ROCK TYPE

DESCRIPTION

- Fresh, slightly vesicular, dark gray (N3), aphanitic, strong, BASALT
- Massive, very stiff, medium reddish orange (10R6/8), Silt with trace clay (EOLIAN DEPOSIT)
- Slightly weathered, vesicular, dark gray (N3), aphanitic, medium strong to strong, BASALT
- At 1000.0 grades to vesicular Basal cooling contact

DEPTH SCALE: 1 in. = 10 ft.
DRILLING CONTRACTOR: Tonto
DRILLER: Gillespie/Riley

RGD through point load index not applicable for soils at 1000.8 to 1001.2

Golder Associates
LOGGED: Compiled By Bailey
CHECKED: W G
DATE: 1/20/92
<table>
<thead>
<tr>
<th>DEPTH (FT)</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1040</td>
<td>Slightly weathered, vesicular, medium dark gray (N5), aphanitic, medium strong to strong, BASALT</td>
</tr>
<tr>
<td>1050</td>
<td>Slightly weathered, vesicular, dusty red (5R8/4), aphanitic, medium strong, BASALT</td>
</tr>
<tr>
<td>1060</td>
<td>Clay interbeded</td>
</tr>
<tr>
<td>1070</td>
<td>Fresh, vesicular, dark gray (N3), aphanitic, medium strong, BASALT</td>
</tr>
<tr>
<td>1100</td>
<td>Slightly weathered, vesicular dark gray (N3), aphanitic, medium strong, BASALT</td>
</tr>
</tbody>
</table>

**DISCONTINUITY DATA**

<table>
<thead>
<tr>
<th>ELEV</th>
<th>RQD</th>
<th>N</th>
<th>FAD</th>
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<tbody>
<tr>
<td>1042</td>
<td>100</td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td>1052</td>
<td>100</td>
<td>51</td>
<td>51</td>
</tr>
<tr>
<td>1062</td>
<td>100</td>
<td>52</td>
<td>52</td>
</tr>
<tr>
<td>1078</td>
<td>100</td>
<td>53</td>
<td>53</td>
</tr>
<tr>
<td>1066</td>
<td>100</td>
<td>54</td>
<td>54</td>
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<tr>
<td>1086</td>
<td>100</td>
<td>55</td>
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</tr>
</tbody>
</table>

**NOTES**

- RQD through point load index not applicable for soils at 1044 and 1059.5

---

**Golder Associates**

LOGGED: Compiled By Bailey
CHECKED: W G
DATE: 1/20/92
## Record of Drillhole WO-2

**Boring Method:** Triple Tube Coring  
**Drilling Date:** 8/4/91  
**Datum:** MSL  
**Coordinates:** N: 69,355.83, E: 312,180.83  
**Collar Elev:** 4229.27  
**Inclination:** -90°

### Rock Type and Description

<table>
<thead>
<tr>
<th>Depth (FT)</th>
<th>Type of Rock</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1200</td>
<td>Fresh, minutely vesicular, dark gray (N3), aphanitic, medium strong, BASALT</td>
<td></td>
</tr>
<tr>
<td>1206.0</td>
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</tr>
<tr>
<td>1210</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1218.0</td>
<td></td>
<td>Slightly weathered, vesicular, dusky red (SR1/4), aphanitic, medium strong, BASALT</td>
</tr>
<tr>
<td>1220</td>
<td></td>
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</tr>
<tr>
<td>1223.0</td>
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<tr>
<td>1230</td>
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<td></td>
</tr>
<tr>
<td>1236.0</td>
<td></td>
<td>Slightly weathered, vesicular, densely packed, dark gray (N3), aphanitic, medium strong to strong, BASALT</td>
</tr>
<tr>
<td>1240</td>
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<tr>
<td>1243.0</td>
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</tr>
<tr>
<td>1250</td>
<td></td>
<td>Hard, moderate, reddish brown (10R4/8), massive, fine SAND AND SILT, some small (1-2 inches) cobbles</td>
</tr>
<tr>
<td>1252.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1260</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1262.0</td>
<td></td>
<td>Slightly weathered to fresh, slightly vesicular, dark gray (N3), aphanitic, medium strong to strong, BASALT</td>
</tr>
<tr>
<td>1270</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1272.0</td>
<td></td>
<td>Slightly weathered, vesicular, grayish red (SR4/2), aphanitic, medium strong, BASALT</td>
</tr>
<tr>
<td>1280</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Drillhole Log Continued on Next Page

---

**Golder Associates**

LOGGED: Compiled By Bailey  
CHECKED: W G  
DATE: 1/20/92
### Record of Drillhole Wo-2

**Project:** EG & ANPR Dr/WD  
**Project No.:** 913-1021.303  
**Location:** NER - INEL

**Boring Method:** Triple Tube Coring  
**Drilling Date:** 8/4/91  
**Datum:** MSL  
**Coordinates:** N: 698355.83, E: 312180.83  
**Azimuth:** NA  
**Collar Elev:** 4929.27  
**Inclination:** -90°

<table>
<thead>
<tr>
<th>Depth (FT)</th>
<th>rocks</th>
<th>description</th>
<th>J-Joint</th>
<th>F-Foliation</th>
<th>St-Stepped</th>
<th>Sm-Smooth</th>
<th>CA-Cable Infill</th>
<th>VR-Veined</th>
<th>VR/V-Buried</th>
<th>WA-Water In</th>
<th>SU-Silt Infill</th>
<th>SF-Soap Filler</th>
<th>SP-Sub Planar</th>
<th>M-Matrix</th>
<th>CH-Channel</th>
<th>SI-Sublayer</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1290</td>
<td></td>
<td>Fresh, slightly vesicular, dark gray (N3), aphanitic, medium strong to strong, BASALT</td>
<td>75 99</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>1291.0</td>
<td></td>
<td>1291.0: Grades to slightly to minutely vesicular</td>
<td>76 99</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>1291.3</td>
<td></td>
<td>1291.3: Returns to vesicular</td>
<td>77 100</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>1292.0</td>
<td></td>
<td>1292.0: Grades to slightly vesicular</td>
<td>78 100</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>1300</td>
<td></td>
<td>Fresh, vesicular, dark gray (N3), aphanitic, medium strong, BASALT</td>
<td>79 100</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
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<td></td>
</tr>
<tr>
<td>1310</td>
<td></td>
<td>Very stiff, light brown (5YR5/6), bedded clayey SILT with little fine pebble sized subangular basalt clasts</td>
<td>80 98</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>1320</td>
<td></td>
<td>Fresh, vesicular, dark gray (N3), aphanitic, strong, BASALT</td>
<td>81 97</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>1330</td>
<td></td>
<td>Very soft, pale yellowish orange (10YR6/6), CLAY with some silt (ECOLAN DEPOSIT)</td>
<td>82 100</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1340</td>
<td></td>
<td>Slightly weathered, vesicular, blackish red (5PR2), aphanitic, medium strong, BASALT</td>
<td>83 100</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1350</td>
<td></td>
<td>Soft, pale yellowish orange (10YR6/6), CLAY with some silt (ECOLAN DEPOSIT)</td>
<td>84 100</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1360</td>
<td></td>
<td>Slightly weathered, vesicular, blackish red (5PR2), aphanitic, medium strong to strong, BASALT</td>
<td>85 100</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>

**Depth Scale:** 1 in. = 10 ft.

**Drillhole Log Continued on Next Page**

---

**Golder Associates**

**Logged:** Compiled by Bailey  
**Checked:** W G  
**Date:** 1/20/92
RECORD OF DRILLHOLE WO-2

BORING METHOD: Triple Tube Coring
DRILLING DATE: 8/4/91
COORDINATES N: 698355.83
E: 312180.83
AZIMUTH: NA
INCLINATION: 40°

PROJECT: EGG/GNP Drift/WR
LOCATION: NPR - INEL

ROCK TYPE

DESCRIPTION

GRAPHIC LOG

ELEV DEPTH

RECOVERY
FRAC.

FRACTURES/FT

DISCONTINUITY DATA

SHEAR INDEX

STRENGTH INDEX

NOTES

WATER LEVELS

INSTRUMENTATION

DEPTHS (FT)

1360

Fresh, slightly vesicular, dark gray (N3), aphanitic, strong, BASALT

1362.0

1370

Slightly weathered, vesicular, dusty red (SR4), aphanitic, medium strong, BASALT

1365.0: Grades to fresh

1367.0: Grades to dark gray (N3)

1369.0: Grades to minutely vesicular

1372.0

1380

Slightly weathered, vesicular, very dusky red (SR4), aphanitic, medium strong, BASALT

1386.0: Grades to fresh, medium dark gray (N4)

1389.0: Grades to slightly vesicular

1392.0

1400

Slightly weathered, vesicular, dusty red (SR4), aphanitic, medium strong, BASALT

1402.0: Grades to dark gray (N3), fresh

1405.0: Grades to slightly vesicular

1407.0

1410

1413.0: Grades to minutely vesicular

1415.0-1417.0: Slightly vesicular horizon

1419.0

1420

1422.0: Grades to strong

1429.0

1430

1434.8-1434.8: Basal cooling; vesicularity increases to slightly vesicular

1432.0

1440

Slightly weathered, vesicular, grayish red (SR4/2), aphanitic, medium strong, BASALT

1443.0

Drill hole log continued on next page

DEP. SCALE: 1 in. = 10 ft.
DRILLING CONTRACTOR: Tonto
DRILLER: Gillespie/Riley/Antonelli

LOGGED: Compiled By Bailey
CHECKED: W G
DATE: 1/20/92

Golder Associates
### ROCK TYPE

#### DESCRIPTION

<table>
<thead>
<tr>
<th>Depth (ft)</th>
<th>ROCK TYPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1442.0</td>
<td>Slightly weathered, slightly vesicular, grayish red (5R4/2), aphanitic, medium strong, BASALT</td>
</tr>
<tr>
<td>1452.0</td>
<td>Slightly weathered, vesicular, grayish red (5R4/2), aphanitic, medium strong, BASALT</td>
</tr>
<tr>
<td>1462.0</td>
<td>Slightly weathered, vesicular, dark yellowish brown (10YR4/2), aphanitic, medium strong, BASALT</td>
</tr>
<tr>
<td>1472.0</td>
<td>Very stiff, moderate reddish brown (10NR4/B), clayey Silt trace fine sand</td>
</tr>
<tr>
<td>1502.0</td>
<td>Slightly weathered, vesicular, dark gray (5N3/1), strong</td>
</tr>
<tr>
<td>1512.0</td>
<td>Dense, moderate reddish brown (10R4/B), fine sand, some silt (EOLIAN DEPOSIT)</td>
</tr>
</tbody>
</table>

#### DISCONTINUITY DATA

<table>
<thead>
<tr>
<th>Depth (ft)</th>
<th>WLF INDEX</th>
</tr>
</thead>
<tbody>
<tr>
<td>1442.0</td>
<td>N/A</td>
</tr>
<tr>
<td>1452.0</td>
<td>N/A</td>
</tr>
<tr>
<td>1462.0</td>
<td>N/A</td>
</tr>
<tr>
<td>1472.0</td>
<td>N/A</td>
</tr>
<tr>
<td>1502.0</td>
<td>N/A</td>
</tr>
<tr>
<td>1512.0</td>
<td>N/A</td>
</tr>
</tbody>
</table>

**Note**: RQD through point load index not applicable for soil at 1512.0 to 1513.0

---

**Golder Associates**

LOGGED: Compiled By Bailey
CHECKED: W G
DATE: 1/20/92

---

**PROJECT**: EGGNPR D/B/D
**PROJECT NO.**: 913-1091.303
**LOCATION**: NPR - INEL

**BORING METHOD**: Triple Tube Coring
**DRILLING DATE**: 8/9/91
**COORDINATES**: N 698355.83, E 312180.83
**AZIMUTH**: NA

**DRILL RIG**: Universal 1500
**COLLAR ELEV**: 4922.27
**INCLINATION**: -90°
## RECORD OF DRILLHOLE WO-2

**BORING METHOD:** Triple Tube Coring  
**DATE:** 8/6/91  
**LOCATION:** NFR - NEL  
**DRILLING DATE:** Universal 1500  
**COORDINATES:** N988555.83  
**INCLINATION:** -90°  
**COLLAR ELEV.:** 4029.27  
**E: 312180.83**  
**AZIMUTH:** NA

<table>
<thead>
<tr>
<th>DEPTH (FT)</th>
<th>DESCRIPTION</th>
<th>ELEV.</th>
<th>DEPTH</th>
<th>FRACTURE</th>
<th>PREFERENCE</th>
<th>TYPE AND SURFACE DESCRIPTION</th>
<th>DISCONTINUITY DATA</th>
</tr>
</thead>
<tbody>
<tr>
<td>1520.2</td>
<td>Fresh, minutely vesicular, dark gray (NG), aphanitic, strong, BASALT.</td>
<td>99</td>
<td>105</td>
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<tr>
<td>1532.0</td>
<td>1523.8-1523.9: Vesicular horizon</td>
<td>100</td>
<td>100</td>
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<tr>
<td>1535.8-1535.8: Vesicular horizon</td>
<td>Hard, moderate reddish brown (10R4/8), laminated CLAY, little silt, moderately indurated (LAGUSTRINE DEPOSIT)</td>
<td>101</td>
<td>100</td>
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<tr>
<td>1542.0</td>
<td>Fresh, vesicular, medium dark gray (N4), aphanitic, medium strong, BASALT.</td>
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<tr>
<td>1557.0</td>
<td>1564.0: Grades to slightly vesicular</td>
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<td></td>
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<tr>
<td>1557.7</td>
<td>1566.0: Grades to slightly vesicular</td>
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<tr>
<td>1571.0</td>
<td>1568.0: Grades to slightly vesicular</td>
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<tr>
<td>1573.0</td>
<td>1569.0: Grades to slightly vesicular</td>
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<tr>
<td>1576.0</td>
<td>1562.0: Grades to medium strong</td>
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<tr>
<td>1581.0</td>
<td>1561.0: Grades to medium strong</td>
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<td></td>
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<tr>
<td>1587.0</td>
<td>Moderately weathered, massive, weak to medium strong, CLAYSTONE.</td>
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<tr>
<td>1596.0</td>
<td>Slightly weathered, vesicular, moderate reddish brown (10R4/8), medium strong, BASALT.</td>
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</tr>
<tr>
<td>1597.0</td>
<td>Slightly weathered, vesicular, very dusty red (10R2/2), aphanitic, medium strong, BASALT.</td>
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</tr>
</tbody>
</table>

**GOLDER ASSOCIATES**

**LOGGED:** Compiled By Bailey  
**CHECKED:** WG  
**DATE:** 1/20/92
### RECORD OF DRILLHOLE WO-2

**BOREHOLE INFORMATION**
- **PROJECT:** EGGANPR D/91D
- **PROJECT NO.:** 913-1091.303
- **LOCATION:** NPR - INEL
- **BORING METHOD:** Triple Tube Coring
- **DRILLING DATE:** 8/23/91
- **DRILL RIG:** Universal 1500
- **DATUM:** MSL
- **COORDINATES:** N: 698355.83, E: 312180.83
- **AZIMUTH:** NA
- **COLLAR ELEV.:** 4929.27
- **INCLINATION:** -90°

### ROCK TYPE

<table>
<thead>
<tr>
<th>DEPTH (FT)</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1680</td>
<td>Hard, brownish gray (5YR4/1), massive, poorly to moderately indurated, CLAY, trace fine sand (LACUSTRINE DEPOSIT)</td>
</tr>
<tr>
<td>1688.8</td>
<td>Slightly weathered, vesicular, medium dark gray (4A), spherulitic, medium strong, BASALT</td>
</tr>
<tr>
<td>1702.5</td>
<td>Grades to slightly vesicular</td>
</tr>
<tr>
<td>1713.0</td>
<td>Very dense, dark reddish brown (10YR5/4) to pale yellowish brown (10YR6/2), laminated fine to medium SAND with 6-inch basalt cobbles (FLUVIAL DEPOSIT)</td>
</tr>
<tr>
<td>1733.0</td>
<td>Very dense (cemented), dark yellowish orange (10YR6/6), thinly laminated (1/4 inch), medium to coarse SAND (FLUVIAL DEPOSIT)</td>
</tr>
<tr>
<td>1743.0</td>
<td>Fresh, yellowish gray (7Y7/2), thinly laminated (1/16 to 1/4 inch), weak to very weak, CLAY with trace of possible charcoal/organic particles (LACUSTRINE DEPOSIT)</td>
</tr>
</tbody>
</table>

### LOGICAL GEOPHYSICAL DATA

- **ELEV.**
- **DEPT.**
- **RQD**
- **SHEAR**
- **DISCONTINUITY DIRECTION**

### Golder Associates

- **LOGGED:** Compiled By Bailey
- **CHECKED:** W G
- **DATE:** 1/20/92

---

**Drill hole log continued on next page**
<table>
<thead>
<tr>
<th>DEPTH (FT)</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1760</td>
<td>Fresh, greenish black (SGY21), moderately indurated, weak to very weak, CLAY, trace pyrite (LACUSTRINE DEPOSIT)</td>
</tr>
<tr>
<td>1770</td>
<td>1771.4: Color grades to olive gray (SGY41)</td>
</tr>
<tr>
<td>1780</td>
<td>1777.0: Color grades to greenish black (SGY21)</td>
</tr>
<tr>
<td>1790</td>
<td>1784.5: Color grades to light brownish gray (SYR61)</td>
</tr>
<tr>
<td>1800</td>
<td>1800.0: Color changes to greenish black (SGY21)</td>
</tr>
<tr>
<td>1810</td>
<td>Slightly weathered, vesicular, medium dark gray (N4), aphanitic, medium strong, BASALT</td>
</tr>
<tr>
<td>1814.0</td>
<td>1814.0: Grades to slightly vesicular</td>
</tr>
<tr>
<td>1817.0</td>
<td>1817.0: Grades to minutely vesicular</td>
</tr>
<tr>
<td>1820</td>
<td>1825.0: Changes to vesicular, aphanitic, medium strong</td>
</tr>
<tr>
<td>1825.5</td>
<td>1825.5: Grades to slightly vesicular</td>
</tr>
<tr>
<td>1829.5</td>
<td>1829.5: Grades to vesicular over 0.2</td>
</tr>
<tr>
<td>1830.5</td>
<td>1830.5: Sharp contact to fresh, slightly vesicular, brownish gray (SYR61/1), aphanitic, strong, BASALT</td>
</tr>
<tr>
<td>1840</td>
<td>Hard, olive gray (SYR22) to grayish brown (SYR52), silty CLAY with up to 6 inch basalt cobbles, interbedded with clayey silt</td>
</tr>
</tbody>
</table>

Drillhole log continued on next page
Fresh, vesicular, dark gray (N3), aphanitic, medium strong, BASALT
1840.0-1845.0: vesicles are infilled with light green (5G7/4) to grayish green (10G4/2) CLAY
1845.7: Grades to slightly vesicular and strong

1853.5: Grades to vesicular, vesicles are infilled with light green (5G7/4),
grayish green (10G4/2), and grayish red (10R4/2), clay and CaCO3
1856.5-1857.7: Contains several discontinuous, irregular CaCO3 veins

1860.0: Grades to slightly vesicular

1865.0: Grades to minutely vesicular, medium strong to strong

1870.0-1872.5: Basalt is brecciated and coated with dark yellowish green (10G3/4a) clay

1880.0: Hard, dark yellowish green (10GY4/4), structural lenses of CLAY and angular to subangular basalt clasts up to 2 inches in diameter (COLLUVIUM?)
Above 1879.2 material is clast supported, below is matrix supported

Fresh, slightly vesicular, medium dark gray (N4), aphanitic, medium strong to strong, BASALT

1896.0: Grades to minutely vesicular
## Record of Drillhole WO-2

**Location:** NPR - INL  
**Project:** EG4GNPR  
**Project No.:** 913-1091.103  
**Drilling Date:** 9/25/91  
**Drill Rig:** Universal 1500  
**Datum:** MSL  
**Coordinates:** N=698355.83  
**E=312180.83**  
**Azimuth:** NA  
**Collar Elevation:** 4929.27  
**Inclination:** -90°  

### Rock Type

| Depth (ft) | Description | Fault | Shear | Mechanical Strength | Index | Index | Index | Index | Index | Index | Index | Index | Index | Index | Index | Index | Index | Index | Index | Index | Index |
|-----------|-------------|-------|-------|---------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 148.00    | Fresh, minutely vesicular, medium dark gray (N4), aphanitic, medium strong to strong, BASALT | 148.00 | 100 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 1927.5    | Fresh, vesicular, very dusty red (10R2/2), aphanitic, medium strong, BASALT. 50% vesicles filled with 
         CaCO3. | 1927.5 | 100 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 1937.5    | Fresh, slightly vesicular, very dusty red (10R2/2), aphanitic, medium strong, BASALT | 1937.5 | 100 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 1947.5    | 1947.5 | 100 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 1957.5    | 1957.5 | 100 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 1967.5    | 1967.5 | 100 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 1978.0    | 1978.0 | 100 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 1988.0    | 1988.0 | 100 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 1999.0    | 1999.0 | 100 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 2000.0    | 2000.0 | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |

### Notes

- Water Levels
- Instrumentation

---

**Logged:** Compiled By Bailey  
**Checked:** W G  
**Date:** 1/20/92  

**Drilling Contractor:** Tonto  
**Driller:** Gillespie/Riley
RECORD OF DRILLHOLE WO-2

PROJECT: EGAG/NPR DR/WD
PROJECT NO: 913-1091.303
LOCATION: NPR - INEL

BORING METHOD: Triple Tube Coring
DRILLING DATE: 8/25/91
DRILL RIG: Universal 1500

DATUM: MSL
COORDINATES N: 698355.83
E: 312180.83
AZIMUTH: NA

COLLAR ELEV: 4929.27
INCLINATION: -90°

ROCK TYPE

DESCRIPTION

DEEPNESS (FT)

ELEV

PRACTICES

PER FOOT

DISCONTINUITY DATA

GRAPHIC LOG

LOGGED:
Compiled By Bailey
CHECKED: W G
DATE: 1/20/92
## RECORD OF DRILLHOLE WO-2

**PROJECT:** EGAGINPR Drilihnl  
**PROJECT NO.:** 913-1091.303  
**LOCATION:** NPR - INEL  
**BORING METHOD:** Triple Tube Coring  
**DRILLING DATE:** 8/26/91  
**DRILLING SST:** Universal 1500  
**COORDINATES N:** 698355.83  
**COORDINATES E:** 312180.83  
**AZIMUTH:** NA  
**COLLAR ELEV.:** 4929.27  
**INCLINATION:** -90°  

### ROCK TYPE DESCRIPTION

<table>
<thead>
<tr>
<th>Depth (ft)</th>
<th>Description</th>
<th>J-Joint</th>
<th>F-Fracture</th>
<th>H-Heater</th>
<th>S-Surface</th>
<th>N-Noted</th>
<th>ROD</th>
<th>Fractures/Fracture Type</th>
<th>Surface Description</th>
<th>Type</th>
<th>Sub Type</th>
<th>Core</th>
<th>Core Recovery</th>
<th>Water Levels</th>
<th>Insturments</th>
</tr>
</thead>
<tbody>
<tr>
<td>2080.2</td>
<td>Slightly weathered, vesicular, dark gray (N9), medium strong, BASALT</td>
<td>2085.5</td>
<td>166 100</td>
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<td>N/A</td>
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<tr>
<td>2093.0</td>
<td>Grades to slightly vesicular</td>
<td>2095.5</td>
<td>167 99</td>
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<td>N/A</td>
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<tr>
<td>2096.5</td>
<td>Grades to vesicular, vesicles infilled with dark gray (N9) and grayish green (10G3/4), CLAY and CaCO3</td>
<td>2105.5</td>
<td>169 100</td>
<td></td>
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<tr>
<td>2100.0-2101.8</td>
<td>Slightly vesicular zone</td>
<td>2105.5</td>
<td>169 100</td>
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<tr>
<td>2104.0</td>
<td>Grades to slightly weathered, dusky yellowish brown (10YR2/2)</td>
<td>2105.5</td>
<td>169 100</td>
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<tr>
<td>2110.0</td>
<td>Soft, light brown (5YR6/4), dusky brown (6YR2/2), and grayish olive green (5Y5/2), mottled, unstratified, CLAY</td>
<td>2108.5</td>
<td>170 95</td>
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<tr>
<td>2112.0</td>
<td>Grades to slightly vesicular, medium dark gray (N4)</td>
<td>2118.5</td>
<td>171 100</td>
<td>INF</td>
<td></td>
<td></td>
<td></td>
<td>Abundant drill induced fractures - many show spin faces</td>
<td></td>
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</tr>
<tr>
<td>2118.5</td>
<td>Grades to minutely vesicular</td>
<td>2128.0</td>
<td>172 100</td>
<td>INF</td>
<td></td>
<td></td>
<td></td>
<td>Abundant drill induced fractures - many exhibit spin faces</td>
<td></td>
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</tr>
<tr>
<td>2120.0</td>
<td>Grades to minutely vesicular</td>
<td>2138.0</td>
<td>173 77</td>
<td>INF</td>
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<tr>
<td>2144.5</td>
<td>Soft, moderate reddish orange (10R6/2), unstratified, CLAY (unknown origin)</td>
<td>2150.5</td>
<td>174 66</td>
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<tr>
<td>2150.5</td>
<td>Slightly weathered, vesicular, dark reddish brown (10R3/4), saphantic, medium strong, BASALT</td>
<td>2152.1</td>
<td>175 105</td>
<td></td>
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<td>Grades to fresh, dark gray (N3) and strong vesicles filled with CaCO3 and pale green (10G6/2) clay</td>
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<tr>
<td>2155.5</td>
<td>Drillhole log continued on next page</td>
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</tbody>
</table>

**NOTES:**  
- WATER LEVELS  
- INSTRUMENTATION

**DEPT SCALE:** 1 in. = 10 ft.  
**DRILLING CONTRACTOR:** Tonio  
**DRILLER:** Gillespie/Riley  
**LOGGED:** Compiled By Bailey  
**CHECKED:** WG  
**DATE:** 1/20/92
**RECORD OF DRILLHOLE WO-2**

**BORING METHOD:** Triple Tube Coring  
**DATE:** 8/25/91  
**DRILL RIG:** Universal 1500

<table>
<thead>
<tr>
<th>DEPTH (FT)</th>
<th>DESCRIPTION</th>
<th>J-Joint</th>
<th>F-Fault</th>
<th>Fractured</th>
<th>ROD</th>
<th>Fracture Surface</th>
<th>Type and Surface Description</th>
<th>Bassalt Inclined</th>
<th>CA-Bassalt Inclined</th>
<th>CR-Crystal</th>
<th>MU-Mud</th>
<th>SI-Silt</th>
<th>MI-Microgites</th>
<th>BI-Bedding</th>
</tr>
</thead>
<tbody>
<tr>
<td>2160.0</td>
<td>Fresh, slightly vesicular, medium dark gray (N4), ephahitic, strong, BASALT 10-20% vesicles are filled with CaCO3</td>
<td></td>
<td></td>
<td></td>
<td>176</td>
<td>88</td>
<td>Many drill induced fractures - ROD difficult to measure</td>
<td></td>
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<tr>
<td>2169.0</td>
<td>Becomes medium strong to strong Vesicles are mostly (90%) filled with CaCO3</td>
<td></td>
<td></td>
<td></td>
<td>177</td>
<td>90</td>
<td>From 2172.5 to 2173.5 there are 19 separate drill breaks - some with spin faces</td>
<td></td>
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<tr>
<td>2179.0</td>
<td>Grades to weak to medium strong</td>
<td></td>
<td></td>
<td></td>
<td>178</td>
<td>100</td>
<td>Majority of fractures likely drill induced - makes it difficult to measure ROD</td>
<td></td>
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<tr>
<td>2188.0</td>
<td>Grades to minutely vesicular</td>
<td></td>
<td></td>
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<td>179</td>
<td>100</td>
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<tr>
<td>2190.0</td>
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<td>2195.5</td>
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<td>181</td>
<td>100</td>
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<tr>
<td>2201.0</td>
<td>Becomes slightly vesicular, medium strong</td>
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<td></td>
<td></td>
<td>182</td>
<td>100</td>
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<tr>
<td>2205.5</td>
<td>Dense, moderately brown (5YR3/4), unstratified, hydrothermally altered, CLAY</td>
<td></td>
<td></td>
<td></td>
<td>183</td>
<td>100</td>
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<tr>
<td>2215.8</td>
<td>From 2224.0 to 2226.0 core is traversed by 1/2 inch thick &quot;bands&quot; of greenish black (5G2/1) indurated material 30-40% by volume</td>
<td></td>
<td></td>
<td></td>
<td>184</td>
<td>100</td>
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</tr>
<tr>
<td>2226.0</td>
<td>Becomes fresh, medium strong</td>
<td></td>
<td></td>
<td></td>
<td>185</td>
<td>100</td>
<td></td>
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</tr>
<tr>
<td>2231.0</td>
<td>Vesicle and fracture infilling of pale green (10G6/2) and light brown (5YR5/6), clay</td>
<td></td>
<td></td>
<td></td>
<td>186</td>
<td>100</td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

**NOTES:**  
- Now drilling N20 to allow use of splits  
- Fractures in this zone may be predominantly drill induced.

**DEPTH SCALE:** 1 in. = 10 ft.  
**DRILLING CONTRACTOR:** Tonto  
**DRILLER:** Gillespie  

**LOGGED:** Compiled By Bailey  
**CHECKED:** WG  
**DATE:** 1/21/92
## Record of Drillhole WO-2

**Boring Method:** Triple Tube Coring  
**Drilling Date:** 8/29/91  
**Drill Rig:** Universal 1500  
**Datum:** MSL  
**Coordinates N:** 698355.83  
**Azimuth:** NA  
**Inclination:** -90°  
**Collar Elev:** 4925.27  
**E:** 312180.83  
**Notes:** Water Levels Instrumentation

<table>
<thead>
<tr>
<th>Depth (ft)</th>
<th>Description</th>
<th>Graphic Log</th>
<th>Fractures/Fracture Type</th>
<th>Surface Description</th>
<th>Type and Surface Description</th>
<th>Notes</th>
</tr>
</thead>
</table>
| 2241.0     | Fresh, slightly vesicular, medium dark gray (N4), aphanitic, medium strong, BASALT  
2241.0: Grades to fresh, medium strong  
2244.0: Color grades to grayish black (N2) and vesicle infilling decreases  
2251.0-2252.5: ~30% vesicles filled with CaCO3  
2259.0-2260.0: Two 1x2 and 1x3 inch vesicles with euhedral CaCO3 crystals  
2262.5-2263.6: ~10% of vesicles as large as 15 mm filled with euhedral CaCO3 crystals  
2265.1-2265.7: Vesicular horizon, vesicles as large as 15 mm filled with euhedral CaCO3 crystals  
2270.0     | Stiff, light olive grey (5YR 4/1), unstratified, CLAY and pebble sized basalts clasts  
2273.0-2276.0: Family laminated  
2278.0-1: 4 diameter basin clast  
2279.2: Graded to soft and firm, dark yellow (5YD 2/2), to pale yellowish brown (10YR 6/8), laminated clay (lacustrine deposit)  
2285.0-2286.0: Becomes small pebble sized angular basalts clasts in clay matrix  
2290.0     | Fresh, crystalline, dark gray (N3), aphanitic, strong, BASALT  
Possible VOID: very easy drilling however is more likely to be a poorly consolidated clay zone as we did recover 0.5 soft, pale yellowish brown (10YR 6/8) CLAY which may have mostly washed away in this zone  
2299.0     | Stiff, pale yellowish brown (10YR 6/8), thinly 1/8 inch laminated CLAY (lacustrine deposit)  
2299.5-1:18 inch lamination of dark gray black (N2) fine sand and silt with discolored organic odor  
2313.0     | Fresh, slightly vesicular, medium dark gray, aphanitic, strong, BASALT  
2313.0: Grades to minutely vesicular  
2313.0-2314.5: Grades to fresh, medium strong  
2314.5-2315.0: Color grades to grayish black (N2) and vesicle infilling decreases  
2315.0     | Drill hole log continued on next page |

**Depths Scale:** 1 in. = 10 ft.

**Drilling Contractor:** Tonlo
**Driller:** Gillespie/Riley

**Logged:** Compiled by Bailey  
**Checked:** WG  
**Date:** 1/22/92

---

**NOTES:**

- Fractures in this interval may be drill induced.
- Fractured clays in this interval may be drill induced.
- All fractures 2242.0 to 2250.0 are 90.0 - many have spin faces.
- 20-40% exhibit spin faces.
- This basin is likely a large clast in interbedded sand as it is difficult to see a 2.4 flow being crystalline. There is a shear with vertical rakes below this zone. Could also be faulted into position.
**RECORD OF DRILLHOLE WO-2**

**PROJECT**: EGAC/NPR Drill

**PROJECT NO.**: 913-1091.303

**LOCATION**: NPI - NEL

**BORING METHOD**: Triple Tube Coring

**DRILLING DATE**: 8/29/91

**DATUM**: MSL

**COORDINATES**: N:698355,83

**AZIMUTH**: NA

**COLLAR ELEV**: 4929.27

**E**: 312180.83

**INCLINATION**: -90°

**DEPTH**: 1 in. = 10 ft.

**DRILLING CONTRACTOR**: Tonto

**DRILLER**: Gillespie/Riley

**LOGGED**: Compiled By Bailey

**CHECKED**: WG

**DATE**: 1/22/92

**DESCRIPTION**

- Fresh, minutely vesicular, medium dark gray (N4), aphanitic, strong, BASALT

- 2321.0: Grades to slightly vesicular, medium strong to strong

- All vesicles are filled with either calcite or pale green (10G6/2) clay

- 2341.0: Becomes moderately weathered, medium strong

- 2351.0: Becomes moderately weathered, weak

- 2361.0: Becomes fresh, medium strong to strong

- 2365.0: Becomes fresh, vesicles filled with pale green (10G6/2) indurated clay and calcite

- 2371.0: Massive indurated clay (LACUSTRINE DEPOSIT)

- Slightly to moderately weathered, slightly vesicular, medium dark gray (N4), aphanitic, weak to moderately strong, BASALT

- From 2372.1-2384.5 much of core is composed of well indurated pale green (10G6/2) clay – possibly original fracture filling that has later become indurated

- 2377.0: Becomes slightly weathered, medium strong

- 2379.0: Becomes fresh, minutely vesicular

- Dense, dark yellowish brown (10YR4/2), massive indurated clayey Silt and 1/4 inch angular basalt clasts (COLIAN DEPOSIT)

- Fresh, minutely vesicular to crystalline, dark gray (N5), aphanitic, strong, BASALT

- 2397.0: Grades to crystalline, very strong

**NOTES**

- No Core

**INSTRUMENTATION**
RECORD OF DRILLHOLE WO-2

PROJECT: EG&G NPR Dr/3D
PROJECT NO: 913-1091.303
LOCATION: NPR - INEL

BORING METHOD: Triple Tube Coring
DRILLING DATE: 8/29/91
DRILL RIG: Universal 1500
COORDINATES N: 698355.63
E: 312190.63
AZIMUTH: NA

DATUM: MSL
COLLAR ELEV: 4929.27
INCLINATION: -90°

DESCRIPTION

2400
Fresh, crystalline, dark gray (N3), aphanitic, very strong, BASALT
Hard, grayish olive green (5GY3/2), finely laminated, silty CLAY, trace fine sand

2405.0
2409.3: Becomes interbedded with firm to stiff, grayish olive green (5GY3/2) clay. Clay laminations are ~ 15 mm in thickness. Unit is composed of approximately 30% clay laminations and 70% silty clay.

2415.5

2420
Fresh, crystalline, dark gray (N3), aphanitic, strong, BASALT
2421.0
2421.9-2423.8: Vesicular horizon, vesicles infilled with light greenish gray (5G6/1) clay and CaCO3

2430
Stiff, medium dark gray (N4), unstratified, CLAY (LACUSTRIENE DEPOSIT)

2431.0
Fresh, crystalline, medium dark gray (N4) to dark gray (N3), aphanitic, strong, BASALT

2460
Hard, dark gray (N3), thinly laminated, (18-14 inch) well indurated CLAY (LACUSTRIENE DEPOSITS)

LOGGED: Compiled By Bailey
CHECKED: WG
DATE: 1/22/92

DEPTH SCALE: 1 in. = 10 ft.
DRILLING CONTRACTOR: Tonto
DRILLER: Gillespie/Riley
RECORD OF DRILLHOLE WO-2

BOREING METHOD: Triple Tube Coring
DATE: 9/1/91

LOCATION: NPR - INEL

PROJECT NO: 913-1091.303
DRILLING DATE: 9/1/91
DATUM: MSL
COORDINATES: N: 698355.89
E: 512180.83
AZIMUTH: NA
INCLINATION: -90°

COLLAR ELEV: 4929.27

1 in. = 10 ft.
LOGGED: Compiled By Bailey
CHECKED: WG
DATE: 1/23/92

Golder Associates

Fresh, minutely to slightly vesicular, medium dark gray (N4), porphyritic, strong, BASALT

2569.0: Becomes minutely vesicular
2569.0-2571.0 and 2577.0-2579.0: Core contains clay inclusions in basalt, dusty yellow green (5GY5/2) to moderate yellowish green (10GY6/4)

2579.5: Becomes moderately weathered, slightly vesicular, weak to medium strong
2580.7-2581.2 and 2581.5-2581.8: Basalt has underlying clay incorporated into flow

Stiff to very stiff, olive gray (5Y3/2), massive, CLAY, some silt (LACUSTRINE DEPOSIT)

2590.0

Fresh, minutely vesicular, medium dark gray (N4), aphanitic, strong, BASALT

2600.0: Grades to crystalline

Very stiff, grayish olive (10Y4/2) and olive gray (5Y3/2) interbedded, massive CLAY and finely laminated clay (LACUSTRINE DEPOSIT)

Drill hole log continued on next page
RECORD OF DRILLHOLE WO-2

PROJECT: EG&G/NPR/OrVid
PROJECT NO: 913-1091.303
LOCATION: NPR - INEL

BORING METHOD: Triple Tube Coring
DRILLING DATE: 9/1/91
DRILL RIG: Universal 1500

DATE: MSL
COORDINATES N: 692855.83
E: 312180.83
AZIMUTH: NA

COLLAR ELEV: 4929.27
INCLINATION: -90°

NOTES
WATER LEVELS
INSTRUMENTATION

ROCK TYPE
DESCRIPTION

Very stiff, grayish olive (10Y4/2) and olive gray (5Y3/2) interbedded, massive CLAY and finely laminated clay
2643.7: Abrupt coarsening to clayey silt, little fine sand

Highly weathered, vesicular, dark gray (NG), aphanitic, medium strong, BASALT
2645.5: Becomes slightly weathered
2647.0: Becomes fresh, strong
2650.5: Grades to slightly vesicular

Slightly weathered, vesicular to vesicular, dark reddish brown (10R5/4), aphanitic, medium strong, BASALT, vesicles are filled with dark reddish brown (10R5/4) clayey silt
2670.0: Color grades to grayish red (5R4/2)

2682.5: Grades to fresh, slightly to minutely vesicular, medium dark gray (N4), aphanitic, medium strong to strong, basalt

2690.0: Grades to minutely vesicular, strong

2710: Fresh, slightly vesicular, greenish black (5G2/1), poorly pumphy, medium strong to strong, BASALT

2717.5: Grades to minutely vesicular, strong

Drillhole log continued on next page

DEPTHS SCALE: 1 in. = 10 ft.
DRILLING CONTRACTOR: Tonto
DRILLER: Gillespie/Riley/Antonelli

Golder Associates
LOGGED: Compiled by Bailey
CHECKED: WG
DATE: 1/23/92
**RECORD OF DRILLHOLE WO-2**

**PROJECT:** EQG/NPR Drill/ID  
**PROJECT NO.:** 913-1091.303  
**LOCATION:** NPR - INEL

**BORING METHOD:** Triple Tube Coring  
**DRILLING DATE:** 9/1/91  
**DRILL RIG:** Universal 1500

**DATUM:** MSL  
**COORDINATES N:** 988355.83  
**COORDINATES E:** 312180.83  
**AZIMUTH:** NA  
**INCLINATION:** -90°

**COLLAR ELEV:** 4929.27

---

**DEPTH (FT):**

<table>
<thead>
<tr>
<th>DESCRIPTION</th>
<th>ELEV</th>
<th>DEPTH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fresh, minutely vesicular, greenish black (5G3/2), porphyritic, strong, BASALT</td>
<td>2272.7</td>
<td>2272.7</td>
</tr>
<tr>
<td>2723.7: Grades to slightly vesicular – all vesicles are infilled with pale green (10G5/2) indurated clay</td>
<td>2729.0</td>
<td>2727.5</td>
</tr>
<tr>
<td>2730.0: Becomes aphanitic</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2736.0: Grades to crystalline</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2736.7: Grades to slightly vesicular</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2743.2: Grades to minutely vesicular</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2749.1: Grades to crystalline</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Moderately weathered, vesicular, dark reddish brown (10R3/4), aphanitic, medium strong, BASALT</td>
<td>2760.0</td>
<td>2756.0</td>
</tr>
<tr>
<td>2761.0: Grades to slightly weathered</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2770.7: Grades to slightly vesicular</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2772.0: Grades to minutely vesicular</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2778.0: Grades to crystalline</td>
<td></td>
<td></td>
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<tr>
<td>2793.0: Becomes very strong</td>
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</tr>
</tbody>
</table>

**RECORD OF DRILLHOLE WO-2**

**DEPTH SCALE:** 1 in. = 10 ft.

**LOGGED:** Compiled By Bailey  
**CHECKED:** WG  
**DATE:** 1/23/92

**Golder Associates**

**DRILLING CONTRACTOR:** Tonto  
**DRILLER:** Gillespie/Riley/Antonelli
# RECORD OF DRILLHOLE WO-2

**BOREHOLE DESCRIPTION**

**ROCK TYPE**

<table>
<thead>
<tr>
<th>DESCRIPTION</th>
<th>ELEV (FT)</th>
<th>DEPTH (FT)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fresh, crystalline, dark gray (N3), aphanitic, very strong, BASALT</td>
<td>2800</td>
<td>246 100</td>
</tr>
<tr>
<td>Slightly weathered, slightly vesicular, grayish brown (SYR3/2), aphanitic, medium strong, BASALT</td>
<td>2810</td>
<td>248 100</td>
</tr>
<tr>
<td>Grades to vesicular</td>
<td>2813</td>
<td>2811 100</td>
</tr>
<tr>
<td>Grades to fresh, minutely vesicular, strong</td>
<td>2817</td>
<td>248 100</td>
</tr>
<tr>
<td>Becomes medium dark gray (N4)</td>
<td>2825</td>
<td>250 100</td>
</tr>
<tr>
<td>Becomes porphyritic, phenocrysts are 2-3 mm lath shaped crystals of plagioclase</td>
<td>2833</td>
<td>251 100</td>
</tr>
<tr>
<td>Becomes aphanitic - all vesicles are infilled with grayish green (1003/2) clay and CaCO3</td>
<td>2841</td>
<td>252 100</td>
</tr>
<tr>
<td>Fresh, unstratified, brownish gray (SY4/1), composed of fine to medium sand grains, medium strong, SANDSTONE</td>
<td>2870</td>
<td>254 100</td>
</tr>
<tr>
<td>Fresh, slightly vesicular, medium dark gray (N4), aphanitic, strong, BASALT</td>
<td>2880</td>
<td>255 100</td>
</tr>
</tbody>
</table>

Fractures in the interval may be predominantly drill induced.
# RECORD OF DRILLHOLE WO-2

**PROJECT:** EG&G NPR Drilling
**PROJECT NO.:** 913-1091.303
**LOCATION:** NPR - INEL

**BORING METHOD:** Triple Tube Coring
**DRILLING DATE:** 9/3/91
**DATUM:** MSL
**COORDINATES N:** 696355.83
**COORDINATES E:** 312180.83
**AZIMUTH:** N
**INCLINATION:** -90°

**COLLAR ELEV.:** 4929.27

**DRILL RIG:** Universal 1500

---

**ROCK TYPE**

<table>
<thead>
<tr>
<th>DEPT (FT)</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>2890.0</td>
<td>Fresh, slightly vesicular, medium dark gray (N4), aphanitic, strong, BASALT</td>
</tr>
<tr>
<td></td>
<td>2891.0: Grades to minutely vesicular to crystalline, porphyritic. Phenocrysts are 2-3 mm lath shaped crystals of plagioclase.</td>
</tr>
<tr>
<td>2899.0</td>
<td>Moderately weathered, slightly vesicular to vesicular, medium dark gray (N4), porphyritic, weak to medium strong, BASALT. Vesicles infilled with pale green (10G6/2) chloritic (?) clay</td>
</tr>
<tr>
<td>2900.0</td>
<td>2916.0: Becomes fresh, crystalline, strong</td>
</tr>
<tr>
<td>2904.0</td>
<td>Grades to fresh, slightly to minutely vesicular, medium strong to strong</td>
</tr>
<tr>
<td></td>
<td>Slightly weathered, slightly vesicular to vesicular, medium dark gray (N4), porphyritic, medium strong, BASALT</td>
</tr>
<tr>
<td>2910.0</td>
<td>2931.0: Moderately weathered, slightly vesicular to vesicular, grayish red (5R4/2), porphyritic, weak to medium strong, BASALT</td>
</tr>
<tr>
<td></td>
<td>Grades to slightly weathered, slightly vesicular, medium dark gray (N4), medium strong</td>
</tr>
<tr>
<td>2941.0</td>
<td>Grades to moderately weathered, vesicular, weak to medium strong</td>
</tr>
<tr>
<td>2946.0</td>
<td>Grades to slightly weathered, slightly vesicular, medium strong</td>
</tr>
<tr>
<td>2949.5</td>
<td>Grades to fresh, minutely vesicular to crystalline, strong</td>
</tr>
<tr>
<td>2950.0</td>
<td>Slightly to moderately weathered, slightly vesicular, medium dark gray (N4), porphyritic, medium strong, BASALT</td>
</tr>
</tbody>
</table>

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**DEPTH SCALE:** 1 in. = 10 ft.
**DRILLING CONTRACTOR:** Tonto
**DRILLER:** Gillespie/Riley/Antonelli

---

**Golder Associates**

**LOGGED:** Compiled By Bailey
**CHECKED:** WG
**DATE:** 1/23/92
RECORD OF DRILLHOLE WO-2

ROCK TYPE

DESCRIPTION

2960.0
Fresh, slightly vesicular, medium dark gray (N4) to dark gray (N3), poikilitic, strong, BASALT. Vesicles have greyish green (5G5/2) partial fillings of clay and CaCO3.  
2965.0: Grades to minutely vesicular, phenocrysts are small (3 mm lath shaped plagioclase crystals

2970.0
From 2973.0 to 2976.0 vesicles are filled with pale green (5G6/2) clay and CaCO3.

2980.0
Shilf, dark reddish brown (10R3/4), unstratified, silty CLAY (UNKNOWN ORIGIN)

2985.0
Slightly weathered, slightly vesicular, brownish gray (5YR4/1), poikilitic (3 mm lath plagioclase), medium strong to strong, BASALT

2990.0
2991.0: Grades to minutely vesicular, medium dark gray (N4), strong, fresh

2991.0
2992.0: Grades to fresh, strong

3000.0
Slightly weathered, slightly vesicular, brownish gray (5YR4/1), aphanitic, strong, BASALT

3005.0
3010.0: Grades to fresh, crystalline, dusky yellowish brown (10YR2/2)

3020.0
Slightly weathered, vesicular, dark reddish brown (10R3/4), aphanitic, strong, BASALT. Vesicles filled with dusky yellowish green (10GY3/2) chloritic clay material.

3025.0
3026.0: Grades to slightly vesicular

3030.0
3031.0: Grades to fresh, crystalline, dark gray (N3)

3040.0
3041.0: Grades to vesicular

Drillhole log continued on next page
RECORD OF DRILLHOLE WO-2

PROJECT: EGA/GNPR Driv/WD
PROJECT NO: 913-1091.303
LOCATION: NPR - NEL

BORING METHOD: PL-Motorized
DRILLING DATE: 9/7/91
DRILL RD: Universal 1500

DATUM: MSL
COORDINATES N: 698355.83
E: 312180.83
AZMUTH: NA

COLLAR ELEV: 4929.27
INCLINATION: -90°

NOTE: WATER LEVELS

INSTRUMENTATION

DEPTH SCALES: 1 in. = 10 ft.

DRILLING CONTRACTOR: Tonto
DRILLER: Gillespie/Riley/Antonelli

Golder Associates

LOGGED: Bailey
CHECKED: WG
DATE: 1/23/92

DESIGNATION

ROCK TYPE

DESCRIPTION

GRAPHIC LOG

ELEV

DEPTH (FT)

2200
Fresh, vesicular, amygdaloidal, medium dark gray (N4) to grayish black (N8), porphyritic, strong, BASALT. Amygdules are grayish green (5G5/2) chloritoid clays. Phenocrysts are 2-3 mm lath plagioclase.

3200:0. Becomes slightly weathered, olive-black (5Y7/2), weak

Basaltic hornblende material from lower interbed into basalt. 10 ft of lower core is composed of up to 40% clay in brecciated basalt.

3210

3220
Fresh, massive, pale brown (5YR5/2), composed of silt, some medium sand, weak to medium strong, SILTSTONE

3223:3: Grades to medium gray (N5)
3224:2-3225:4: Becomes poorly indurated, medium to coarse sand
3227:0: Grades to light gray (N7) and medium strong
3228:5: Sand component grades to very coarse

3233:2: 4-inch basalt cobble
3236:2: Coarsens downward to matrix supported pebbly sandstone

3240
Slightly weathered, vesicular, olive black (5Y7/2), porphyritic, medium strong, BASALT. Vesicles are infilled with CaCO3. Phenocrysts are 1-2 mm lath shaped plagioclase crystals.

3241:5

3250
Fresh, cross-bedded, grayish olive green (5Y5/2), composed of fine grained sand, very weak, SANDSTONE

3251:0

3255:0: Grades to slightly vesicular. Vesicles filled (10G6/2) pale green clay.

3260
Dense to very dense, moderate brown to light brownish gray (2.5Y3/4 to 5YR6/1) coarsely laminated (1-2 ft) SILT to clast supported small gravel (FLUVIAL DEPOSITS)

3261:0

3270
Fresh, vesicular, amygdaloidal, grayish black (N8), porphyritic, strong, BASALT. Vesicles are infilled with zeolites and/or grayish olive green (5G5/2) clay. Phenocrysts are 1-3 mm lath shaped crystals of plagioclase.

3273:0: Grades to minutely vesicular
3275:0: Grades to vesicular

3280
Drillhole log continued on next page
**RECORD OF DRILLHOLE WO-2**

**PROJECT:** EG&G NPR Div/Ind  
**PROJECT NO.:** 913-1091-J03  
**LOCATION:** NFR - INEL

**BORING METHOD:** Triple Tube Coring  
**DRILLING DATE:** 9/9/91  
**DATUM:** MSL  
**COORDINATES:** N: 698355.83, W: 132180.83

**DRILL Rig:** Universal 1500  
**AZIMUTH:** NA  
**COLLAR ELEV:** 4929.27  
**INCLINATION:** -30°

---

<table>
<thead>
<tr>
<th>ROCK TYPE</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Fresh, slightly vesicular to minutely vesicular, amygdaloidal, medium dark</td>
</tr>
<tr>
<td></td>
<td>gray (N4), aphanitic, strong, BASALT. Anhydrites are 63% CaCO₃ and 40% light</td>
</tr>
<tr>
<td></td>
<td>greenish gray (5Y7/1) sandy gray clay</td>
</tr>
<tr>
<td>ELEV/DEPTH (FT)</td>
<td>3361.0</td>
</tr>
<tr>
<td></td>
<td>3361.0</td>
</tr>
<tr>
<td></td>
<td>3370.0</td>
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<tr>
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<td>3391.0</td>
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<tr>
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<td>3400.0</td>
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<tr>
<td></td>
<td>3409.0</td>
</tr>
<tr>
<td></td>
<td>3410.0</td>
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<tr>
<td></td>
<td>3420.0</td>
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<tr>
<td></td>
<td>3430.0</td>
</tr>
<tr>
<td></td>
<td>3440.0</td>
</tr>
</tbody>
</table>

Drillhole log continued on next page.

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**Golder Associates**

DEPHT SCALE: 1 in. = 10 ft.  
**DRILLING CONTRACTOR:** Tonto  
**DRILLER:** Gillespie/Riley/Antonelli

LOGGED: Compiled By Bailey  
CHECKED: WJ  
DATE: 1/23/92
RECORD OF DRILLHOLE WO-2

DEPTH (FT) 3440 3450 3460 3470 3480 3490 3500 3510 3520
ELEV. 3449.0 3459.0 3467.0 3475.0 3480.0 3490.0 3491.0 3498.0 3504.0

ROCK TYPE

DESCRIPTION

Fresh, minutely vesicular, dark gray (N3), aphanitic, strong to very strong, BASALT

Slightly weathered, slightly vesicular, dark gray (N3), aphanitic, medium strong to strong, BASALT

Moderately weathered, slightly vesicular, grayish red (5R4/2), porphyrhic, weak to medium strong, BASALT. Vesicles infilled with dusty green (9G3/2) material.

Slightly weathered, vesicular, dark gray (N3), aphanitic, medium strong, BASALT

Drillhole log continued on next page
RECORD OF DRILLHOLE WO-2

PROJECT: E&G/NPR Drill/W
PROJECT NO: 913-1091.303
LOCATION: NPR - NPL

BORING METHOD: Triple Tube Coring
DRILLING DATE: 9/10/91
COORDINATES N: 698355.83

DRILL RIG: Universal 1500
COORDINATES E: 312180.83

DATUM: MSL
AZIMUTH: NA

COLLAR ELEV: 4929.27
INCLINATION: -90°

GRAPHIC LOG

DESCRIPTION

ELEV
DEPTH
(FT)
3530.0
3550.0
3570.0
3590.0
Fresh to slightly weathered, vesicular, grayish black (N2), aphanitic, medium strong, BASALT
3524.0
3525.4: Grades to very dusky red (10R2/2)
3525.0-3526.0: Minutely vesicular horizon then returns to vesicular, vesicles filled with CaCO3 or clay
3529.0: Becomes grayish black (N2)
3530.0: Grades to fresh, minutely vesicular, greenish black (9R3/1), strong
3534.0
3537.0: Becomes dark gray (N3), poikilitic, Phenocrysts are 2 mm lath shaped crystals of plagioclase.
3540.0
3545.0: Becomes slightly vesicular
3544.0
3548.0: 50% of vesicles began to be filled with grayish green (10G4/2) chlorite clay
3550.0
3555.0: Grades to slightly to minutely vesicular
3551.0
3560.0
3561.0: Grades to crystalline, dark gray (N3). Core color appears "mottled" or "salt and pepper," overall color is (N3).
3570.0
3571.0
3574.0: Grades to strong/very strong
3575.0: Quartz crystals in fractures
3580.0
3581.0
3585.0: Grades to very strong
3582.0
3590.0
3592.0-3596.2: Abundant lioesgang staining, Fe oxide
3591.0
3593.0

Depth Log continued on next page

DEPHT SCALE: 1 inch = 10 ft.
DRILLING CONTRACTOR: Tonto
DRILLER: Gillespie/Riley/Antonoff

LOGGED: Compiled By Bailey
CHECKED: WG
DATE: 1/25/92

Golder Associates
RECORD OF DRILLHOLE WO-2

PROJECT: EG4G/FR Drilling
PROJECT NO: 913-1091.303
LOCATION: NTR - BEL

BORING METHOD: Triple Tube Coring
DRILLING DATE: 9/10/91
COORDINATES N: 698355.83
E: 312180.83

DATUM: MSL
AZIMUTH: NA
COLLAR ELEV: 4920.27
INCLINATION: 90°

DRILL RIG: Universal 1500

NOTES
WATER LEVELS
INSTRUMENTATION

ROCK TYPE
DESCRIPTION
DEPTH SCALE
(FT)
ELEV
DEPT
F-Fiss.
F-Fault
G-Glacial
L-Limestone
S-Sand
S-Silt
T-Tuff
U-Uhvanite
Z-Zeolite

3600
Fresh, crystalline, dark gray (N3), aphanitic, very strong, BASALT
3601.0

3610
3611.0-3617.3: Few irregular discontinuous CaCO3 veins
3614.0-3618.5: Abundant tesselgag staining, Fe-calcite
3611.0
3612.0

3620
3620.3-3620.7: Vesicular horizon, all vesicles are filled with light greenish clay (5G8/1) chloritic clay
3621.0

3630
Hard, greenish gray (5G8/1), unaltered CLAY
Fresh, slightly vesicular, medium dark gray (N4), porphyritic, strong, BASALT. Phenocrysts are 1-3 mm plagioclase laths. Vesicles are filled with zeolite and grayish green (5G5/2) clay.
3630.0
3631.0

3640
3638.4: Grades to minutely vesicular
3640.5: Grades to crystalline, dark gray (N3) and very strong
3641.0
3642.0

3650
Slightly weathered, vesicular, blackish red (5R2/3), porphyritic, strong, BASALT. Phenocrysts are 1-3 mm plagioclase laths.
3652.2-3653.0: Abundant CaCO3 infilling of vesicles.
3658.5: Grades to fresh, crystalline, brownish black (5YR2/1), very strong, BASALT
3655.0
3656.0

3660
3665.0: Grades to slightly weathered, moderate reddish brown (10R4/6)
3661.0
3662.0

3670
Fresh, slightly vesicular to vesicular, grayish blackish red (5R2/2), porphyritic, medium strong, BASALT. 50% of vesicles filled
3673.0: Grades to slightly vesicular
3672.0

3680
Drillhole log continued on next page
3675.0

DEPT SCALE: 1 in = 10 ft.

LOGGED: Compiled by Bailey
CHECKED: WG
DATE: 1/25/92

Golder Associates

DRILLING CONTRACTOR: Tonto
DRILLER: Gillespie/Riley/Antonelli
**RECORD OF DRILLHOLE WO-2**

**PROJECT:** EG/GP/NR D/H/W  
**PROJECT NO:** 913-1091.303  
**LOCATION:** NPI - INEL  

**BORING METHOD:** Triple Tube Coring  
**DRILLING DATE:** 9/11/91  
**COORDINATES:** N: 698355.83  
**AZIMUTH:** NA  
**ELEV:** 4929.27  
**D: 312180.83  
**INCLINATION:** -90°  

**DRILL RIG:** Universal 1500  
**DATUM:** MSL  

**DEPTH (FT):** 3680  

<table>
<thead>
<tr>
<th>ELEV</th>
<th>DESCRIPTION</th>
<th>GEOLOGY</th>
<th>CORE</th>
<th>ROD</th>
</tr>
</thead>
<tbody>
<tr>
<td>3691.0</td>
<td>Fresh, vesicular, grayish red (5R4/2), porphyritic, medium strong, BASALT. Phenocrysts are 2-3 mm long lath shaped crystals of plagioclase, 25% of vesicles are infilled with moderate brown (5YR3/4) clay, 25% with calcite.</td>
<td></td>
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<tr>
<td>3691.0</td>
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<tr>
<td>3697.0</td>
<td>Grades to slightly vesicular, dark gray (5N3), strong</td>
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<tr>
<td>3700</td>
<td>3701.3-3702.2: Core becomes moderate dusky red (5R4/4) and then returns to dark gray (5N3)</td>
<td></td>
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<tr>
<td>3704.0</td>
<td>Grades to pale grayish red (5G5/2)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3710</td>
<td>Slightly weathered, pyroclastic bomba and angular breccia, moderate red (5R4/4) to dusky yellow (5Y6/4) to dusky red (5R3/4) to grayish red (5R4/2), mostly porphyritic, weak, tephroclastically deposited, BASALT BRECCIA</td>
<td></td>
<td></td>
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<tr>
<td>3713.0</td>
<td>Grades to fresh crystalline, strong</td>
<td></td>
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<tr>
<td>3720</td>
<td>Fresh to slightly weathered, slightly vesicular to minutely vesicular, medium dark gray (5N4), porphyritic, medium strong, BASALT</td>
<td></td>
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<td></td>
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<tr>
<td>3729.5</td>
<td></td>
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<tr>
<td>3730</td>
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<td>3740</td>
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<tr>
<td>3739.0</td>
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<tr>
<td>3745.0</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>3750</td>
<td>Slightly weathered, vesicular, brownish black (5Y2R/1), porphyritic, medium strong, BASALT</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>3751.0</td>
<td>Becomes slightly weathered, vesicles are infilled with CaCO₃, zeolite, and grayish green (5G5/2) clay</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3755.0</td>
<td>Moderately weathered to fresh, finely laminated to unstratified, moderate yellowish brown (10YR5/4) to grayish olive (10Y4/2) composed of tuffaceous fine to coarse sand, some silt, weak, TUFFACEOUS SANDSTONE</td>
<td></td>
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</tbody>
</table>

Drillhole log continued on next page

**Golder Associates**

LOGGED: Compiled By Bailey  
CHECKED: WG  
DATE: 1/25/92
RECORD OF DRILLHOLE WO-2

BORE FEATURES:

PROJECT: EQ&GNPR DAVID
PROJECT NO.: 913-1091-303
LOCATION: NPR - INEL

DRILLING DATE: 9/22/91
DRILL RIG: Universal 1500

BORING METHOD: Triple Tube Coring

COORDINATES: N: 496355.83
E: 312180.83
AZMUTH: NA

COLLAR ELEV: 4929.27
INCLINATION: -90°

REMARKS:

DEPTH SCALE: 1 ft = 10 ft

DEEPER SCALES: 1 in. = 10 ft

DRILLING CONTRACTOR: Tonto
DRILLER: Gillespie/Riley/Antonelli

Golder Associates

LOGGED: Compilled By Bailey
CHECKED: WG
DATE: 1/25/92

DISCONTINUITY DATA:

NOTES
WATER LEVELS
INSTRUMENTATION

ROCK TYPE

DESCRIPTION

- Moderately weathered to fresh, finely laminated to unstratified, moderate yellowish brown (10YR5/4) to grayish olive (10Y4/2), composed of tuffaceous fine to coarse sand, some silt, weak, TUFFACEOUS SANDSTONE

- Very stiff, moderate reddish orange (10R5/6), unstratified, CLAY (WATERLAIN ASH)

- With a separate horizon from 3773.3 to 3777.0 of fresh, stratified, grayish olive (10Y4/2), fine to coarse sand, some silt, weak, tuffaceous sandstone

- At 3777.0 sandstone becomes interbedded with above clay in 1-4 ft beds

- Fresh, unstratified, grayish green (10GY5/2), composed of clayey silt, with little fine, black, glassy, angular, sand, weak to very weak, SLTSTONE

- Color grades to light olive gray (5Y6/1)

- Fresh, unstratified, light olive gray (5Y6/1), composed of fine tuffaceous sand, grading downward to medium to coarse tuffaceous sand, weak to very weak, TUFFACEOUS SANDSTONE

- Moderately weathered, unstratified, dark gray (N3), weak to very weak, VITROPHYRE

- From 3830.2 to 3831.0 is a horizon of fresh, unstratified, light olive gray (5Y6/1), medium sand, weak to very weak, sandstone

Drillhole log continued on next page
RECORD OF DRILLHOLE WO-2

PROJECT NO: 913-1091.130
LOCATION: NPR - INEL

BORING METHOD: Triple Tube Coring
DRILLING DATE: 9/12/91
DRILL RIG: Universal 1500

DATUM: MSL
COORDINATES N: 698355.83
AZIMUTH: NA
COLLAR ELEV: 4923.27
E: 312180.83
INCLINATION: 90°

MODERATELY WEATHERED, UNSTRATIFIED, DARK GRAY (N3), WEAK TO VERY WEAK. VITROPHYRE

OBSIDIAN FRAGMENTS ARE 2-4 MM IN DIAMETER AND ANGULAR OCCASIONAL DAVITIZED 1/2 INCH TO 1 INCH ZONES

GRADES TO FRESH, BLACK (N1), WEAK

HIGHLY WEATHERED, UNSTRATIFIED, ASSORTED COLORS, BRIGHT ORANGE (NO CODE), GRAYISH PURPLE (SP4/2), MOLAR ELLIPSOIDS (SP4/2), MODERATE RED (SP4/2), VARYING WEAK TO WEAK. DAVITIZED, WELDED, LITHIC, TUFF

Drillhole log continued on next page
RECORD OF DRILLHOLE WO-2

BORING METHOD: Triple Tube Coring
DRILLING DATE: 9/13/91
COORDINATES N: 698355.83
AZIMUTH: NA

DATUM: MSL
COORDINATES E: 312180.83
INCINNATION: -90°

PROJECT NO: 913-1091-303
LOCATION: NPR - INEL

PROJECT: EG&G NPR D-311/D

DEPTH SCALE: 1 in. = 10 ft.
DRILLING CONTRACTOR: Tonto
DRILLER: Gillespie/Riley/Antonelli

Golder Associates

LOGGED: Compiled By Bailey
CHECKED: WG
DATE: 1/25/92

RECORD OF DRILLHOLE WO-2

DESCRIPTION
Highly weathered, unstratified, assorted colors, bright orange (no code), grayish purple (SP42), moderate red (SP44/8), very weak, devitrified, welded tuff to crystal, TUFF

GRADES AND SURFACE DESCRIPTION
3928.0: Grades to slightly weathered, weak to medium strong

3948.0: Grades to highly weathered, very weak

3958.0: Grades to fresh, flow banded, weak

3961.0: No visible lithics
3962.0: Color grades to grayish red purple (SP46/2), contains ~10% subhedral to euhedral quartz and feldspar crystals.

3979.0: Becomes lithophysal. Now: fresh, flow banded grayish red purple (SP46/2) with moderate brown (4YR3/4) flow bands, weak devitrified, lithic, crystal, welded, lithophysal, TUFF

Drillhole log continued on next page
RECORD OF DRILLHOLE WO-2

PROJECT: EG&G/INEL Drilling
PROJECT NO: 913-1031.303
LOCATION: NPL - INEL

BORING METHOD: Triple Tube Coring
DRILLING DATE: 9/14/91
DRILL RIG: Universal 1500

DATUM: MSL
COORDINATES: N:683355.83 E:312180.83
AZIMUTH: NA

COLLAR ELEV: 4929.27
UTURE LEVELS
INSTRUMENTATION

Depth Scale: 1 in. = 10 ft.
DRILLING CONTRACTOR: Tonto
DRILLER: Gillespie/Riley/Antonelli

LOGGED: Compiled By Bailey
CHECKED: WG
DATE: 1/25/92

Golder Associates
Fresh, flow banded, grayish red purple (5R4/2) with 20% grayish pink (5R6/2). Strong, lithophysal, devitrified, moderately welded, lithic, crystal, TUFF.

Fresh, massive, grayish black (N2), weak, Vitrophyre.

Fresh, flow banded (bending runs 24° in relation to core axis), grayish red purple (5R4/2), medium strong, densely welded, crystal, TUFF.

Fresh, massive, dark gray (N3), strong, Vitrophyre. Obsidian crystals are very angular 3-4 mm.

Obsidian crystals size decrease to 1-2 mm.

Slightly weathered, laminated, pale reddish brown (10R5/4) to pale brown (5YR5/2), weak to medium strong, unwelded, crystal, lithic, AIRFALL ASH.

Drill hole log continued on next page.
RECORD OF DRILLHOLE WO-2

PROJECT: EG&G/NPR David
PROJECT NO: 913-1091.303
LOCATION: NPR - INEL

BORING METHOD: Triple Tube Coring
DRILLING DATE: 9/15/91
DRILL RIG: Universal 1900
COORDINATES N: 898355.83
E: 312180.83
AZIMUTH: 0°

DATUM: MSL
COLLAR ELEV: 4929.27
INCLINATION: 0°

Notes:

1. Rock Type:
   - Moderately slightly weathered, massive, moderate reddish brown, weak to medium strong, slightly weathered, devitrified, lithophysal, crystal, TUFF. Unit contains up to 1 inch spherical crystals of sanidine.
   - 4160.0: Becomes medium strong to strong
   - 4197.0: Lithophysae become less abundant
   - 4202.0: Becomes fresh to slightly weathered
   - 4226.0: Becomes strong

2. Discontinuity Data:
   - Type and Surface Description
   - Fractures Per Foot
   - St-Depped
   - Pl-Planar
   - I- Irregular
   - R- Rough
   - C- Curved
   - P- Polished
   - Vs- Very Rough
   - A- Angular
   - M- Medium
   - S- Smooth
   - U- Unbroken
   - K- Crossbedded
   - Fe-FeCo Infill
   - Sa- Sand Infill
   - B- Bed Planer

3. Other Details:
   - Fresh, thinly laminated (1/4-1 inch), moderate reddish brown (10R4/8), medium strong, fine AIRFALLASH
   - Drillhole log continued on next page

Golder Associates

LOGGED: Compiled By Bailey
CHECKED: WG
DATE: 1/25/92
<table>
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<th>DESCRIPTION</th>
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</thead>
<tbody>
<tr>
<td>4240</td>
<td>Fresh, thinly laminated (1/4-1 inch), moderate reddish brown (10R8/8), medium strong, fine AIRFALL ASH</td>
</tr>
<tr>
<td>4240</td>
<td>Fresh, massive, dark gray (N3), medium strong, VITROPHYRE</td>
</tr>
<tr>
<td>4254.0</td>
<td>Grades to strong</td>
</tr>
<tr>
<td>4255.0</td>
<td>Fresh, massive, dark gray (N3), strong, ash flow, crystal, TUFF</td>
</tr>
<tr>
<td>4260</td>
<td>Fresh, laminated, moderate orange pink (10R7/4), light olive (10Y5/4) and grayish olive (10Y4/2), strong, AIRFALL ASH</td>
</tr>
<tr>
<td>4265.5</td>
<td>Fresh, massive, moderate reddish brown (10R4/6) to grayish brown (10YR3/2), medium strong, unwelded, devitrified, lithic, TUFF</td>
</tr>
<tr>
<td>4269.0</td>
<td>Grades to welded, auto-brecciated, hydrothermally altered</td>
</tr>
<tr>
<td>4274.0</td>
<td>Becomes light olive (10Y5/4) to dusky red (10R3/4)</td>
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<tr>
<td>4300</td>
<td>Core remains fresh, massive, light olive (10Y5/4) to dusky red (10R3/4), medium strong, welded, auto-brecciated, devitrified, lithic, TUFF (HYDROTHERMALLY ALTERED)</td>
</tr>
<tr>
<td>4305.0</td>
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<tr>
<td>4315.0</td>
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Drillhole log continued on next page
RECORD OF DRILLHOLE WO-2

PROJECT: EGGNPR Drll/ID
PROJECT NO: 913-1091.303
LOCATION: NPR - INEL

BORING METHOD: Triple Tube Coring
DRILLING DATE: 9/17/91
DRILL RIG: Universal 1500

DATUM: MSL
COORDINATES N: 698355.83
E: 312180.83
AZIMUTH: NA
INCLINATION: -90°

COLLAR ELEV: 4929.27

NOTES
WATER LEVELS
INSTRUMENTATION

ROCK TYPE
DESCRIPTION

DEPT (FT)

ELEV
MTR
ROD
RECORD

3400
Fresh, massive, pale yellowish brown (10YR6/2) to yellowish gray (5Y7/2), medium strong, welded, autobrecciated, devitrified, lithic, TUFF
(HYDROTHERMALLY ALTERED)
4330.0: Becomes weak

3428.0

3429.0

3430.0

3431.0

3432.0

3434.0

3435.0

3436.0

3437.0

3438.0

3439.0

3440.0

Hydrothermally altered (SW), massive, dark gray (N3), medium strong, lithic, VITrophyre

Hydrothermally altered, massive, grayish red (10R4/2), medium strong, welded, devitrified, TUFF

3435.0

3436.0

Hydrothermally altered, massive, dark gray (N3), medium strong, VITPHYRE

Hydrothermally altered, massive, grayish red (10R4/2), medium strong, welded, devitrified, lithic, TUFF

Hydrothermally altered, massive, dark gray (N3), medium strong, VITPHYRE

3437.0

3438.0

Frescor, massive, moderate orange pink (10R7/4) to moderate reddish brown (10R4/6), medium strong, devitrified, welded, crystal, TUFF

4388.0: Grades to pale olive (10Y/G6) to dusty yellow (5Y/G4), devitrified, lithic, crystal, tuff

Drillhole log continued on next page

DEPTH SCALE: 1 in. = 10 ft.
DRILLING CONTRACTOR: Tonto
DRILLER: Gillespie/Riley/Antonelli

LOGGED: Compiled By Bailey
CHECKED: WG
DATE: 1/25/92

Golder Associates
RECORD OF DRILLHOLE WO-2

PROJECT: EG/GNPR D/WD
PROJECT NO: 913-1091.303
LOCATION: NFR - INEL

BORING METHOD: Triple Tube Coring
DRILLING DATE: 9/17/91
DRILL RIG: Universal 1500

COORDINATES N: 698355.83
E: 312180.83
AZIMUTH: NA

COLLAR ELEV: 4929.27
INCLINATION: -90°

DESCRIPTION

- Fresh, massive, pale olive (10YR/2) to dusky yellow (YR 5/4), medium strong, poorly welded, hydrothermally altered, devitrified, lithic, crystal, TUFF (4400.0)
- Sharp color change to moderate orange pink (10R/2R) and moderate reddish orange (10R/3/8) (4407.6)
- Lithic fragments decrease in frequency - grades to weak (4425.5)
- Becomes medium strong (4426.0)
- Becomes lithophysal (4431.5)
- Color becomes medium dark gray (N4) and dark reddish brown (10R3/4) (4434.0)
- Now slightly weathered, pale grayish red (5R5/2), weak, devitrified, lithophysal, welded, crystal, TUFF (4442.0)
- Becomes weak to medium strong (4458.0)
- Becomes fresh to slightly weathered (4466.0)
- Becomes lithic, crystal, TUFF (4470.0)
- Grades back to crystal, tuff (4480.0)

DEEPSCALE: 1 in. = 10 ft.
LOGGED: Compiled By Bailey
CHECKED: WG
DATE: 1/25/92

Golder Associates
RECORD OF DRILLHOLE WO-2

BENDING METHOD: Triple Tube Coring
DRILLING DATE: 9/18/91
DATE: MSL
COORDINATES N: 696355.83
E: 312180.83
AZIMUTH: NA

NOTES: WATER LEVELS INSTRUMENTATION

DEPTH SCALE: 1 in. = 10 ft.
DRILLING CONTRACTOR: Tonto
DRILLER: Gillespie/Riley/Antonoff

4430 Fresh to slightly weathered, massive pale to grayish red (SR4/2 to SR16/2), medium strong, devitrified, welded, crystal, TUFF

4440

4450 4490.0 Becomes flow banded and fresh

4500

4510 4520.0 No apparent flow banding - becomes massive

4530

4540

4550

4560 Drilled log continued on next page

LOGGED: Compiled By Bailey
CHECKED: WG
DATE: 1/25/92

Golder Associates
### RECORD OF DRILLHOLE WO-2

**DATE OF SUBMISSION:** 1/25/92

**LOCATION:** NPR - INEL

<table>
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<tr>
<th>BORING METHOD</th>
<th>Triple Tube Coring</th>
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<tr>
<td>DRILLING DATE</td>
<td>9/19/91</td>
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**Rocks:**

- **455' - 460'**
  - Fresh, massive, paks to grayish red (SR42 to SR62), medium strong to strong, devitrified, moderately welded to densely welded, lithic, crystal, TUFF

**Additional Notes:**

- Drillhole log continued on next page

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**Golder Associates**

LOGGED: Compiled By Bailey
CHECKED: WG
DATE: 1/25/92
Fresh, massive, pale to grayish red (SR4/2) to SR6/2), medium strong to strong, dehydrated, densely welded, crystal, TUFF. Banding is oriented 40° w/c core axis.

Fresh, flow banded, pale red (SR6/2) to grayish red (SR4/2), medium strong, dehydrated, densely welded, crystal, TUFF. Banding is oriented 40° w/c core axis.

Fresh, pale red (SR6/2) to grayish red (SR4/2), medium strong to strong, dehydrated, densely welded, crystal, TUFF.

Fresh, massive, pale red (SR6/2) to grayish red (SR4/2), medium strong to strong, dehydrated, densely welded, crystal, TUFF.

Fresh, faintly flow banded, pale red (SR6/2) to grayish red (SR4/2), medium strong to strong, dehydrated, densely welded, crystal, TUFF.

Drill hole log continued on next page.
## RECORD OF DRILLHOLE WO-2

### ROCK TYPE

- **DESCRIPTION:** Fresh, fairly flow banded, pale red (SR6/2) to grayish red (SR4/2), medium strong to strong, devitrified, densely welded, crystal, TUFF
- **ELEV. DEPTH:** 4721.0
- **CORE:** 474
- **ROD:** 100
- **SD:** 476
- **BD:** 88
- **NOTES:** Flow banding is oriented 55° wrt core axis

- **DESCRIPTION:** Fresh, flow banded, minutely vesicular, pale red (SR6/2) to grayish red (SR4/2), medium strong to strong, devitrified, densely welded, crystal, TUFF
- **ELEV. DEPTH:** 4731.0
- **CORE:** 476
- **ROD:** 88
- **SD:** 476
- **BD:** 88
- **NOTES:** Flow banding is oriented 80° wrt core axis

- **DESCRIPTION:** Slightly weathered, minutely vesicular to slightly vesicular, pale red (SR6/2) to grayish red (SR4/2), medium strong, devitrified, densely welded, crystal, TUFF
- **ELEV. DEPTH:** 4740.0
- **CORE:** 477
- **ROD:** 80
- **SD:** 478
- **BD:** 80
- **NOTES:** Flow banding is oriented 75° wrt core axis

- **DESCRIPTION:** Fresh to slightly weathered, flow banded, minutely vesicular, pale red (SR6/2) to grayish red (SR4/2), medium strong, devitrified, densely welded, crystal, TUFF
- **ELEV. DEPTH:** 4750.0
- **CORE:** 480
- **ROD:** 100
- **SD:** 481
- **BD:** 100
- **NOTES:** Flow banding is oriented 70° wrt core axis

- **DESCRIPTION:** Vesicles become absent
- **ELEV. DEPTH:** 4760.0
- **CORE:** 483
- **ROD:** 93
- **SD:** 483
- **BD:** 93
- **NOTES:** Core loss was not shown for run 483

- **DESCRIPTION:** Becomes fresh
- **ELEV. DEPTH:** 4770.0
- **CORE:** 484
- **ROD:** 100
- **SD:** 485
- **BD:** 98
- **NOTES:** Core loss was not shown for run 485

- **DESCRIPTION:** Fresh, massive to fairly flow banded, pale red (SR6/2) to grayish red (SR4/2), medium strong, devitrified, densely welded, crystal, TUFF
- **ELEV. DEPTH:** 4790.0
- **CORE:** 486
- **ROD:** 100
- **SD:** 487
- **BD:** 91
- **NOTES:** Core recovery was 100 and ROD was 98 for run 474

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**Drillhole log continued on next page**

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**LOGGED:** Compiled By F. Mooker
**CHECKED:** WG
**DATE:** 2/992
Fresh, massive, to lainly flow banded, pale red (SR4/2) to grayish red (SR4/2), medium strong, devitrified, densely welded, crystal, TUFF

Fresh, massive, minutely vesicular, pale red (SR4/2) to grayish red (SR4/2), medium strong to strong, devitrified, densely welded, crystal, TUFF

Drillhole log continued on next page
RECORD OF DRILLHOLE WO-2

BOARING METHOD: Triple Tube Coring
DRILLING DATE: 9/22/91-9/23/91
DRILL RIG: Universal 1500

DEPTH (FT) | ROCK TYPE | DESCRIPTION
--- | --- | ---
4982.0 | Fresh, flow banded, pale red (5N6/2) to grayish red (5N4/2), strong, devitrified, densely welded, crystal, TUFF
4989.0 | Fresh, flow banded, pale red (5N6/2) to grayish red (5N4/2), medium strong to strong, devitrified, densely welded, crystal, TUFF. Slightly hydrothermally altered from 4882.0 to 4890.0, becomes medium strong at 4890.0
4990.0 | Fresh, flow banded, pale red (5N6/2) to grayish red (5N4/2), medium strong to strong, devitrified, densely welded, crystal, TUFF
4990.0 | 4991.0-4992.0: Convolute flow banding
4995.0 | 4991.5-4995.3: Weak hydrothermally altered horizon
4995.0 | Gradational change in the interval 4972.5 to 4978.8 to fresh, massive, medium dark gray (N4), medium strong, moderately welded, Vitrophyre
4997.0 | Fresh, hydrothermally altered, moderate reddish brown (10R4/6) to grayish red (10R4/2), very weak to weak, fine AIRFALL ASH, trace lithic fragments
4997.0 | Fresh, massive, medium gray (N5), grayish red purple (5NP4/2) and moderate reddish brown (10R4/6), medium strong, densely welded, devitrified, lithic, crystal, TUFF
4997.0 | 4944.3-4944.8: Hydrothermally altered
4997.0 | 4945.5-4949.0: Abundant lithophysae
4997.0 | Fresh, light gray (N7) and moderate reddish brown (10R4/6), medium strong, devitrified, densely welded, crystal, TUFF

Drillhole log continued on next page

NOTE: Core recovery was 100 and ROD was 50 for run 502

Golder Associates

LOGGED: Compiled By F. Mockler
CHECKED: WG
DATE: 2/9/92
RECORD OF DRILLHOLE WO-2

PROJECT: EG&G/INEL D-955
PROJECT NO: 913-1001.303
LOCATION: NPR - INEL

BORING METHOD: Triple Tube Coring
DRILLING DATE: 9/23/91
DRILL RIG: Universal 1500

DATUM: MSL
COORDINATES: N 698335.83
AZIMUTH: NA
INCLINATION: -90°

COLLAR ELEV: 4929.27
E: 312180.83

NOTES
WATER LEVELS
INSTRUMENTATION

ROCK TYPE

DESCRIPTION

Fresh, light gray (N7) and moderate redish brown (10R4/8), medium strong, devitrified, densely welded, crystal, TUFF

4966.0
505 100

4976.0
506 100

4985.0
507 100

4995.0
508 100

Total Depth: 5000.0 ft
BGS achieved 0900
23 Sept. 1991

Golder Associates
LOGGED: Compiled By F. Mooker
CHECKED: WG
DATE: 2/9/92