## PBO Borehole SEED Codes and Conventions

**Table 1: PBO SEED Site Codes**

| Site Code | 16-Character Station Name | City | State | Country |
|---|---|---|---|---|
| | | *Borehole Strainmeter Stations* | | |
| B001 | golbeck01bwa2005 | Sequim | Washington | USA |
| B003 | floequarybwa2005 | Floe Quarry | Washington | USA |
| B004 | hokofallsbwa2005 | Sekiu | Washington | USA |
| B005 | shoresnw1bwa2005 | Port Angeles | Washington | USA |
| B006 | shoresne2bwa2005 | Port Angeles | Washington | USA |
| B007 | shoresso3bwa2005 | Shores | Washington | USA |
| B009 | pacgeosi1bbc2005 | Sidney | British Columbia | CA |
| B010 | pacgeosi2bbc2005 | Sidney | British Columbia | CA |
| B011 | pacgeosi3bbc2005 | Sidney | British Columbia | CA |
| B012 | ucluelet1bbc2005 | Ucluelet | British Columbia | CA |
| B013 | pnycrk013bwa2007 | Quilcene | Washington | USA |
| B014 | quinlt014bwa2008 | Olympic NP | Washington | USA |
| B017 | flinkm017bwa2007 | Montesano | Washington | USA |
| B018 | delphi018bor2006 | Delphi | Oregon | USA |
| B019 | waldrf019bwa2008 | Raymond | Washington | USA |
| B020 | wirkla020bwa2008 | Naselle | Washington | USA |
| B022 | seaside22bor2006 | Seaside | Oregon | USA |
| B023 | cataln023bor2008 | Claskanie | Oregon | USA |
| B024 | kuntza024bor2006 | Portland | Oregon | USA |
| B026 | roosbc026bor2007 | Portland | Oregon | USA |
| B027 | lester027bor2007 | Albany | Oregon | USA |
| B028 | lester028bor2007 | Albany | Oregon | USA |
| B030 | pattrs030bor2007 | Springfield | Oregon | USA |
| B031 | hergrt031bor2007 | Hergert | Oregon | USA |
| B032 | hergrt032bor2007 | Hergert | Oregon | USA |
| B033 | vanvlk033bor2007 | Glide | Oregon | USA |
| B035 | grants035bor2006 | Grant's Pass | Oregon | USA |
| B036 | grants036bor2007 | Grant's Pass | Oregon | USA |
| B039 | cofflt039bcn2007 | Weed | California | USA |
| B040 | yorkmn040bcn2007 | Montague | California | USA |
| B045 | rdcrst045bcn2008 | Pepperwood | California | USA |
| B046 | mattol046scn2008 | Petrolia | California | USA |
| B047 | chapmn047scn2008 | Mendocino | California | USA |
| B049 | mirand049scn2008 | Mendocino | California | USA |
| B054 | sibley054bcn2008 | Orinda | California | USA |
| B057 | lucasv057bcn2008 | Lucas Valley | California | USA |
| B058 | sjgrad058bcn2007 | San Juan Bautista | California | USA |

| Site Code | 16-Character Station Name | City | State | Country |
|---|---|---|---|---|
| B065 | gabiln065bcn2007 | San Juan Bautista | California | USA |
| B066 | rockrd066bcn2007 | San Juan Bautista | California | USA |
| B067 | stoney067bcn2007 | San Juan Bautista | California | USA |
| B072 | goldhl072bcn2007 | Parkfield | California | USA |
| B073 | varian073bcs2006 | Parkfield | California | USA |
| B075 | flengt075bcs2006 | Parkfield | California | USA |
| B076 | donnal076bcs2006 | Parkfield | California | USA |
| B078 | goldhl078bcs2006 | Parkfield | California | USA |
| B079 | jackcn079bcs2006 | Parkfield | California | USA |
| B081 | keenwi081bcs2006 | Anza | California | USA |
| B082 | pathfi082bcs2006 | Anza | California | USA |
| B084 | pinyon084bcs2006 | Anza | California | USA |
| B086 | santar086bcs2006 | Anza | California | USA |
| B087 | fordra087bcs2006 | Anza | California | USA |
| B088 | skyoks088bcs2007 | Anza | California | USA |
| B089 | pathfi089bcs2006 | Anza | California | USA |
| B093 | trippf093bcs2007 | Anza | California | USA |
| B201 | coldwt201bwa2007 | Mt St Helens | Washington | USA |
| B202 | windyr202bwa2007 | Mt St Helens | Washington | USA |
| B203 | quarry203bwa2007 | Mt St Helens | Washington | USA |
| B204 | marble204bwa2007 | Mt St Helens | Washington | USA |
| B205 | norris205bwy2008 | Yellowstone | Wyoming | USA |
| B206 | canyon206bwy2008 | Yellowstone | Wyoming | USA |
| B207 | madisn207bwy2007 | Yellowstone | Wyoming | USA |
| B208 | lakejn208bwy2007 | Yellowstone | Wyoming | USA |
| B900 | blacka900bcn2007 | Parkfield | California | USA |
| B901 | indspr901bcn2007 | Parkfield | California | USA |
| B916 | marips916bcs2008 | China Lake | California | USA |
| B917 | tonyso917bcs2008 | China Lake | California | USA |
| B918 | mtsprn918bcs2008 | China Lake | California | USA |
| B921 | randsb921bcs2008 | China Lake | California | USA |
| B926 | cowich926bbc2007 | Port  Renfrew | British Columbia | Canada |
| B927 | albern927bbc2007 | Port Alberni | British Columbia | Canada |
| B928 | bamfld928bbc2007 | Bamfield | British Columbia | Canada |
| B933 | mckeem933bcn2008 | Thorn Junction | California | USA |
| B934 | legget934bcn2008 | Leggett | California | USA |
| B935 | dinsmr935bcn2008 | Dinsmore | California | USA |
| B941 | kapows941bwa2008 | Kapowsin | Washington | USA |
| B943 | pnycrk943bwa2008 | Seattle | Washington | USA |
| B944 | grantt944bwy2008 | Yellowstone | Wyoming | USA |
| B946 | sagebf946bcs2010 | Anza | California | USA |

| Site Code | 16-Character Station Name | City | State | Country |
|---|---|---|---|---|
| | | *Seismometer Sites* | | |
| B082A | pathfi082bcs2006 | Anza | California | USA |
| B086A | santar086bcs2006 | Anza | California | USA |
| B088A | skyoks088bcs2007 | Anza | California | USA |
| B932 | burogh932scn2008 | Petrolia | California | USA |
| B945 | panthr945swy2008 | Yellowstone | Wyoming | USA |
| B046 | mattol046scn2008 | Petrolia | California | USA |
| B047 | chapmn047scn2008 | Mendocino | California | USA |
| B049 | mirand049scn2008 | Mendocino | California | USA |
| | | *Laser Strainmeter Stations* | | |
| CHL1 | cholamehl1cn2008 | Cholame | California | USA |
| CHL2 | cholamehl2cn2008 | Cholame | California | USA |
| DHL2 | durmidhillcs2005 | Durmid Hill | California | USA |
| GVS1 | glendallsmcs2005 | Glendale | California | USA |
| SCS1 | saltncity1cs2006 | Salton Sea | California | USA |
| SCS2 | saltncity2cs2006 | Salton Sea | California | USA |

**Table 2: PBO Borehole Strainmeter SEED Channel and Location Codes**

| SEED Codes | | Sample Rate | Description |
|---|---|---|---|
| Channel | Location | (samples/sec) | |
| BS1 | T0 | 20 | GTSM Strain Channel 1, sampled at 20 samples/sec |
| LS1 | T0 | 1 | GTSM Strain Channel 1, sampled at 1 samples/sec |
| RS1 | T0 | 0.001667 | GTSM Strain Channel 1, sampled once every 600 sec |
| BS2 | T0 | 20 | GTSM Strain Channel 2, sampled at 20 samples/sec |
| LS2 | T0 | 1 | GTSM Strain Channel 2, sampled at 1 samples/sec |
| RS2 | T0 | 0.001667 | GTSM Strain Channel 2, sampled once every 600 sec |
| BS3 | T0 | 20 | GTSM Strain Channel 3, sampled at 20 samples/sec |
| LS3 | T0 | 1 | GTSM Strain Channel 3, sampled at 1 samples/sec |
| RS3 | T0 | 0.001667 | GTSM Strain Channel 3, sampled once every 600 sec |
| BS4 | T0 | 20 | GTSM Strain Channel 4, sampled at 20 samples/sec |
| LS4 | T0 | 1 | GTSM Strain Channel 4, sampled at 1 samples/sec |
| RS4 | T0 | 0.001667 | GTSM Strain Channel 4, sampled once every 600 sec |
| VDD | TP | 0.1 | Downhole pore pressure |
| VKD | TP | 0.1 | Downhole temperature recorded at the pore pressure sensor, approximately 100 meters deep in the borehole |
| LDO | TS | 1 | Atmospheric pressure |
| RDO | TS | 0.0005556 | Atmospheric pressure |
| RRO | TS | 0.0005556 | Rainfall |
| RK1 | T0 | 0.0005556 | Logger temperature |
| RKD | T0 | 0.0005556 | Downhole temperature, measured by a thermistor inside the GTSM sonde |

| | | | |
|---|---|---|---|
| REO | T0 | 0.0005556 | Solar amps |
| RE1 | T0 | 0.0005556 | Battery voltage |
| RK2 | T0 | 0.0005556 | Power box temp |
| RE2 | T0 | 0.0005556 | System amps |

Note: There are also 32 calibration channels available under channel codes RCA, RCB, RCC, and RCD with location codes T1 through T8.

**Table 3. PBO Laser Strainmeter SEED Channel and Location Codes**

| SEED Codes | | Sample Rate | Description |
|---|---|---|---|
| Channel | Location | (samples/sec) | |
| LDV | LI | 1 | Vacuum Pressure |
| RDV | LI | 0.00333 | Vacuum Pressure |
| LS1 | LM | 1 | Laser strain |
| RS1 | LI | 0.00333 | Laser strain |
| RS1 | LM | 0.00333 | Laser strain |
| LX1 | LI | 1 | Correction series from optical anchor at interferometer end |
| RX1 | LI | 0.00333 | Correction series from optical anchor at interferometer end |
| LX2 | LR | 1 | Correction series from optical anchor at retroreflector end |
| RX2 | LR | 0.00333 | Correction series from optical anchor at retroreflector end |
| LE1 | LI | 1 | Voltage reference channel 1 |
| RE1 | LI | 0.00333 | Voltage reference channel 1 |
| LKI | LI | 1 | Room temperature at interferometer end |
| RKI | LI | 0.00333 | Room temperature at interferometer end |
| LK2 | LI | 1 | Box temperature at interferometer end |
| RK2 | LI | 0.00333 | Box temperature at interferometer end |
| LKI | LR | 1 | Room temperature at retroreflector end |
| RKI | LR | 0.00333 | Room temperature at retroreflector end |
| LK3 | LR | 1 | Box temperature at retroreflector end |
| RK3 | LR | 0.00333 | Box temperature at retroreflector end |
| LKO | LV | 1 | Air temperature |
| RKO | LV | 0.00333 | Air temperature |
| LKD | LV | 1 | Ground temperature |
| RKD | LV | 0.00333 | Ground temperature |
| LDO | LV | 1 | Barometric pressure |
| RDO | LV | 0.00333 | Barometric pressure |
| LUO | LV | 1 | Light intensity |
| RUO | LV | 0.00333 | Light intensity |
| LRO | LI | 1 | Rainfall |
| RRO | LI | 0.00333 | Rainfall |
| LE2 | LI | 1 | Voltage reference channel 2 |

| SEED Codes | | Sample Rate | Description |
|---|---|---|---|
| RE2 | LI | 0.00333 | Voltage reference channel 2 |
| LX3 | LI | 1 | Correction series from backup optical anchor at interferometer end |
| RX3 | LI | 0.00333 | Correction series from backup optical anchor at interferometer end |
| LX4 | LR | 1 | Correction series from backup optical anchor at retroreflector end |
| RX4 | LR | 0.00333 | Correction series from backup optical anchor at retroreflector end |

**Table 4 PBO Seismic, Pore Pressure and Meteorological Channel and Location Codes**

| SEED Codes Channel | Sample Rate (samples/sec) | Description |
|---|---|---|
| | *Seismometer and Q330 State of Health Channels* | |
| HH1 | 200 | Horizontal velocity ($ms^{-1}$), orientation unknown |
| HH2 | 200 | Horizontal velocity ($ms^{-1}$) 90° to HH1 |
| HHE | 200 | Horizontal velocity ($ms^{-1}$), orientation known |
| HHN | 200 | Horizontal velocity ($ms^{-1}$) 90° to HHE |
| HHZ | 200 | Vertical velocity ($ms^{-1}$) |
| EH1 | 100 | Horizontal velocity ($ms^{-1}$), orientation unknown |
| EH2 | 100 | Horizontal velocity ($ms^{-1}$) 90° to EH1 |
| EHE | 100 | Horizontal velocity ($ms^{-1}$), orientation known |
| EHN | 100 | Horizontal velocity ($ms^{-1}$) 90° to EHE |
| EHZ | 100 | Vertical velocity ($ms^{-1}$) |
| BH1 | 40 | Horizontal velocity ($ms^{-1}$), orientation unknown |
| BH2 | 40 | Horizontal velocity ($ms^{-1}$) 90° to BH1 |
| BHE | 40 | Horizontal velocity ($ms^{-1}$), orientation known |
| BHN | 40 | Horizontal velocity ($ms^{-1}$) 90° to BHE |
| BHZ | 40 | Vertical velocity ($ms^{-1}$) |
| LH1 | 1 | Horizontal velocity ($ms^{-1}$), orientation unknown |
| LH2 | 1 | Horizontal velocity ($ms^{-1}$), 90° to EH1 |
| LHE | 1 | Horizontal velocity ($ms^{-1}$), orientation known |
| LHN | 1 | Horizontal velocity ($ms^{-1}$), 90° to EHE |
| LHZ | 1 | Vertical velocity ($ms^{-1}$) |
| LCC | 1 | clock (GPS) quality |
| LCE | 1 | Absolute clock phase error (1 microsecond /count) |
| LCL | 1 | time since GPS lock was lost |
| LCQ | 1 | Clock quality (1 % / count) |
| LPL | 1 | Counts - digital counts |
| QBD | 0.05 | Total number of Q330 reboots in last 24 hours |

| SEED Codes Channel | Sample Rate (samples/sec) | Description |
|---|---|---|
| QBP | 0.05 | Buffer percent full from real-time status |
| QDL | 0.05 | Current data latency (s) |
| QDR | 0.05 | Current data rate (Bits/sec) |
| QG1 | 0.05 | Total number of data gaps in last 1 hour |
| QGD | 0.05 | Total number of data gaps in last 24 hours |
| QLD | 0.05 | Total number of comm link cycles in last 24 hours |
| QRD | 0.05 | Total number of bytes read in last 24 hours |
| QRT | 0.05 | Current run time (s) |
| QWD | 0.05 | Total number of bytes written in last 24 hours |
| VCO | 0.1 | Voltage controlled oscillator value (V) |
| VEA | 0.1 | Antenna current (A) |
| VEC | 0.1 | Main system current (A) |
| VEP | 0.1 | Main system voltage (V) |
| VKI | 0.1 | Q330 system temperature (1 celsius/count) |
| VPB | 0.1 | Q330 buffer usage (0.1 % / count) |
| | | *High Rate Barometer* |
| LDO | 1 | Atmospheric pressure (hecto pascals) |
| | | *Pore Pressure Sensor* |
| LDD | 1 | Pore pressure (hecto pascals) |
| LKD | 1 | Degrees (°C) |