

## **Monitoring Vertical Land Movements at Tide Gauges**

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Global sea level has risen by 10 to 20 cm during the 20th century. Much of the evidence for this rise came from mean sea level (MSL) measurements obtained at tide gauges, which measure MSL with respect to a local tide gauge bench mark (TGBM). However, it is impossible to distinguish between any 'true sea level variations' and any changes in the level of the land at a tide gauge using these measurements alone. Around Britain sea levels have risen by different amounts over the last century, from a 7cm rise at Aberdeen to a 21cm rise at Sheerness. This is because different parts of the British Isles are rising and subsiding at different rates, due mainly to the removal of ice from the land at the end of the last ice age – so called, glacial isostatic adjustment (GIA). Therefore, to measure the climate related component of changes in sea level using a tide gauge, the rate of any vertical land movements at the specific tide gauge must be determined.

In recent years, modern geodetic techniques have developed to the stage where they can be used to measure such vertical land movements, which are typically of the order of 1 to 2 mm/yr for the British Isles. The two most suitable techniques for this purpose are measurements using the Global Positioning System (GPS) and measurements of absolute gravity.

With funding from Defra and the Environment Agency, POL, together with the Institute of Engineering Surveying and Space Geodesy (IESSG) at the University of Nottingham, have been carrying out research on these geodetic techniques since 1990. This has resulted in the establishment of a network of continuous GPS (CGPS) stations at, or close to, the tide gauges of Aberdeen, Liverpool, Lowestoft, Newlyn, North Shields, Portsmouth and Sheerness, and a network of absolute gravity stations close to the tide gauges of Aberdeen, Lerwick and Newlyn, some of which have been operational since 1996.

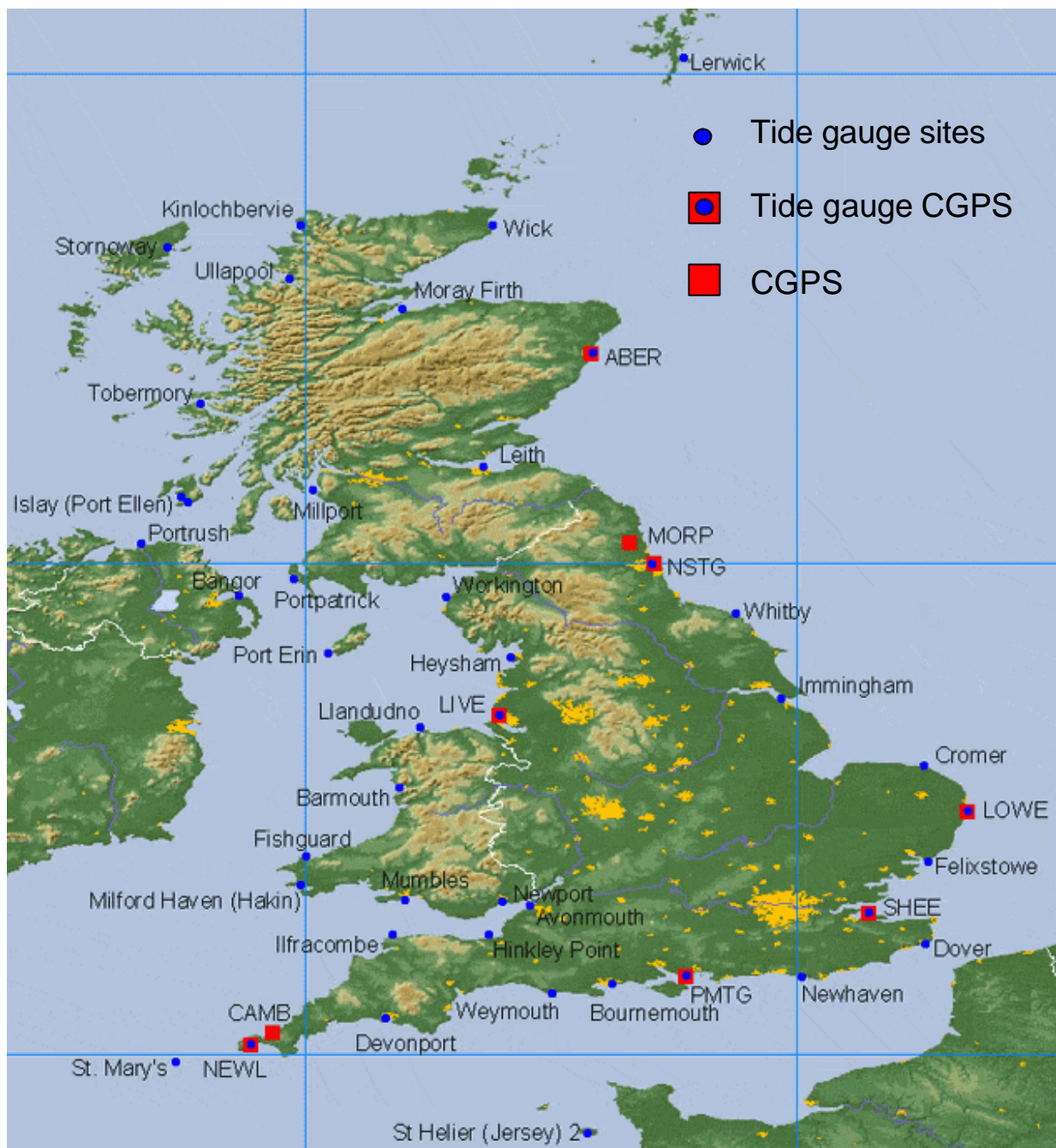
The data from the seven CGPS stations at, or close to, tide gauges are archived as part of the British Isles GPS archive Facility (BIGF), which is also operated by the IESSG at the University of Nottingham. By the end of 2004, BIGF contained data for a total of 90 CGPS stations (a significant increase on the 55 CGPS stations reported last year), some of which are also used to help to understand vertical land movements at non-coastal locations in the British Isles.

The data from all of the CGPS stations at, or close to, tide gauges are also contributed to European initiatives, notably the European Sea Level Service (ESEAS), and data from four of the CGPS stations at, or close to, tide gauges (namely Newlyn, Sheerness, North Shields and Aberdeen) are contributed to international initiatives, notably the International GPS Service (IGS) Tide Gauge Pilot Project (TIGA).

This report includes copies of the log files for the seven CGPS stations at, or close to, tide gauges along with a summary of their daily data availability and quality, based on the TEQC program available through the IGS. The plots show the time window length (taken as the period between the first and last epoch of data recorded on a single day), the number of observations (along with the maximum number of satellites available for a particular day), the multipath characteristics for the dual-frequency pseudo-range observables (given as MP1 and MP2 values), and the number of cycle slips on the carrier phase observables (given as slips per thousand observations).

The data from the absolute gravity stations are processed and analysed by POL. The data from the CGPS stations are combined with data from other CGPS stations in Europe that form part of the IGS global network and processed by the IESSG using both in-house and third party scientific GPS software. The resultant time series are then analysed by POL and IESSG using in-house software.

The trends in the CGPS and absolute gravity time series so far appear to support the idea that GIA is the main contribution to current vertical land movements in the British Isles, with stations in Scotland rising with respect to stations in Southern England. The results are still preliminary; more reliable estimates of vertical land movements will be obtained after an extended monitoring period. However, it is clear that such estimates of vertical land movements should enable ‘true sea level variations’ around the British Isles to be measured to allow comparisons with predictions and observations of global sea levels and to enable a better understanding of the space- and time- variations.



## Aberdeen

ABER Site Information Form (site log)  
 International GPS Service  
 See Instructions at:  
[ftp://igsceb.jpl.nasa.gov/pub/station/general/sitelog\\_instr.txt](ftp://igsceb.jpl.nasa.gov/pub/station/general/sitelog_instr.txt)

### 0. Form

Prepared by (full name) : Richard Bingley  
 Date Prepared : 2001-12-12  
 Report Type : NEW  
 If Update:  
 Previous Site Log :  
 Modified/Added Sections :

### 1. Site Identification of the GNSS Monument

Site Name : Aberdeen Tide Gauge  
 Four Character ID : ABER  
 Monument Inscription :  
 IERS DOMES Number : 13231M001  
 CDP Number : (A4)  
 Monument Description : STEEL PLATE AND CARBON FIBRE PIPE  
 Height of the Monument : 4.0m  
 Monument Foundation : QUAY  
 Foundation Depth : (m)  
 Marker Description : TOP OF 40mm DIA THREAD ON STEEL PLATE  
 Date Installed : 1998-09-17T12:00Z  
 Geologic Characteristic : GLACIAL SAND AND GRAVEL  
 Bedrock Type : METAMORPHIC (QUARTZ-MICA-SCHIST)  
 Bedrock Condition : (FRESH/JOINTED/WEATHERED)  
 Fracture Spacing : (1-10 cm/11-50 cm/51-200 cm/over 200 cm)  
 Fault zones nearby : (YES/NO/Name of the zone)  
 Distance/activity : (multiple lines)  
 Additional Information : The monument is mounted adjacent to the  
 : tide gauge building, which is located on a  
 : concrete quay, with piled foundations.  
 : The GPS antenna is located on the monument  
 : which consists of a 4m carbon fibre pipe mounted  
 : on a steel plate, which is fixed to the concrete  
 : quay.  
 : The GPS antenna is attached to the carbon fibre  
 : pipe using a 5/8" thread.  
 : The carbon fibre pipe is attached to the steel  
 : plate using a 40 mm diameter thread.  
 : The male part of the 40mm diameter thread is on  
 : the steel plate and has a domed head, which  
 : serves as the survey marker.

### 2. Site Location Information

City or Town : Aberdeen  
 State or Province :  
 Country : Scotland  
 Tectonic Plate : EURASIAN  
 Approximate Position  
 X coordinate (m) : 3466272.4  
 Y coordinate (m) : -125904.3  
 Z coordinate (m) : 5334662.3  
 Latitude (N is +) : +570838.42  
 Longitude (E is +) : -0020448.80  
 Elevation (m,ellips.) : 53.4  
 Additional Information : (multiple lines)

### 3. GNSS Receiver Information

3.1 Receiver Type : ASHTECH Z-XII3  
 Satellite System : GPS  
 Serial Number : 03140  
 Firmware Version : 1F50  
 Elevation Cutoff Setting : 5  
 Date Installed : 1998-09-18T00:00Z  
 Date Removed : 1999-08-15T23:59Z  
 Temperature Stabiliz. : NONE

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Additional Information      : Full receiver serial number is LP 03140.
                          : Operation using a direct modem connection.
                          : Download using CGREMOTE v5.4.00 CGRS1F50 and
                          : CGHOSE v5.4.00 CGRS1F50.
                          : Conversion to RINEX using ASRINEXO v2.9.7
                          : (with PR SMOOTH FLAG 0).

3.2 Receiver Type         : ASHTECH Z-XII3
Satellite System          : GPS
Serial Number              : 03140
Firmware Version          : CD00
Elevation Cutoff Setting  : 5
Date Installed             : 1999-08-17T00:00Z
Date Removed              : CCYY-MM-DDThh:mmZ
Temperature Stabiliz.     : NONE
Additional Information      : Full receiver serial number is LP 03140.
                          : Operation using a direct modem connection.
                          : Download using CGREMOTE v5.4.00 CGRSCD00 and
                          : CGHOSE v6.0.00 CGRSCD00.
                          : Conversion to RINEX using ASRINEXO v2.9.7
                          : (with PR SMOOTH FLAG 0).

3.x Receiver Type         : (A20, from rcvr_ant.tab; see instructions)
Satellite System          : (GPS/GLONASS/GPS+GLONASS)
Serial Number              : (A5)
Firmware Version          : (A11)
Elevation Cutoff Setting  : (deg)
Date Installed             : (CCYY-MM-DDThh:mmZ)
Date Removed              : (CCYY-MM-DDThh:mmZ)
Temperature Stabiliz.     : (none or tolerance in degrees C)
Additional Information      : (multiple lines)

4. GNSS Antenna Information

4.1 Antenna Type          : ASH700936F_C    SNOW
Serial Number              : 14767
Antenna Reference Point   : BPA
Marker->ARP Up Ecc. (m)   : 3.9650
Marker->ARP North Ecc(m)  : 0.0000
Marker->ARP East Ecc(m)   : 0.0000
Alignment from True N     : 0
Antenna Radome Type       : SNOW
Radome Serial Number      :
Antenna Cable Type        : ASHTECH 100914 REVA
Antenna Cable Length      : 30m
Date Installed             : 1998-09-17T00:00Z
Date Removed              : CCYY-MM-DDThh:mmZ
Additional Information      : Full antenna serial number is CR 14767.

4.x Antenna Type          : (A20 from rcvr_ant.tab; see instructions)
Serial Number              : (A*, but note the first A5 is used in SINEX)
Antenna Reference Point   : (BPA/BCR/XXX from "antenna.gra"; see instr.)
Marker->ARP Up Ecc. (m)   : (F8.4)
Marker->ARP North Ecc(m)  : (F8.4)
Marker->ARP East Ecc(m)   : (F8.4)
Alignment from True N     : (deg; + is clockwise/east)
Antenna Radome Type       : (A4 from rcvr_ant.tab; see instructions)
Radome Serial Number      :
Antenna Cable Type        : (vendor & type number)
Antenna Cable Length      : (m)
Date Installed             : (CCYY-MM-DDThh:mmZ)
Date Removed              : (CCYY-MM-DDThh:mmZ)
Additional Information      : (multiple lines)

5. Surveyed Local Ties

5.x Tied Marker Name      :
Tied Marker Usage         : (SLR/VLBI/LOCAL CONTROL/FOOTPRINT/etc)
Tied Marker CDP Number    : (A4)
Tied Marker DOMES Number  : (A9)
Differential Components from GNSS Marker to the tied monument (ITRS)
  dx (m)                  : (m)
  dy (m)                  : (m)
  dz (m)                  : (m)
Accuracy (mm)             : (mm)
Survey method             : (GPS CAMPAIGN/TRILATERATION/TRIANGULATION/etc)
Date Measured            : (CCYY-MM-DDThh:mmZ)
Additional Information      : (multiple lines)

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## 6. Frequency Standard

- 6.1 Standard Type : INTERNAL  
 Input Frequency : (if external)  
 Effective Dates : 1998-09-17/CCYY-MM-DD  
 Notes : (multiple lines)
- 6.x Standard Type : (INTERNAL or EXTERNAL H-MASER/CESIUM/etc)  
 Input Frequency : (if external)  
 Effective Dates : (CCYY-MM-DD/CCYY-MM-DD)  
 Notes : (multiple lines)

## 7. Collocation Information

- 7.x Instrumentation Type : (GPS/GLONASS/DORIS/PRARE/SLR/VLBI/TIME/etc)  
 Status : (PERMANENT/MOBILE)  
 Effective Dates : (CCYY-MM-DD/CCYY-MM-DD)  
 Notes : (multiple lines)

## 8. Meteorological Instrumentation

- 8.1.1 Humidity Sensor Model : NONE  
 Manufacturer :  
 Serial Number :  
 Data Sampling Interval : (sec)  
 Accuracy (% rel h) : (% rel h)  
 Aspiration : (UNASPIRATED/NATURAL/FAN/etc)  
 Height Diff to Ant : (m)  
 Calibration date : (CCYY-MM-DD)  
 Effective Dates : (CCYY-MM-DD/CCYY-MM-DD)  
 Notes : (multiple lines)

- 8.1.x Humidity Sensor Model :  
 Manufacturer :  
 Serial Number :  
 Data Sampling Interval : (sec)  
 Accuracy (% rel h) : (% rel h)  
 Aspiration : (UNASPIRATED/NATURAL/FAN/etc)  
 Height Diff to Ant : (m)  
 Calibration date : (CCYY-MM-DD)  
 Effective Dates : (CCYY-MM-DD/CCYY-MM-DD)  
 Notes : (multiple lines)

- 8.2.1 Pressure Sensor Model : NONE  
 Manufacturer :  
 Serial Number :  
 Data Sampling Interval : (sec)  
 Accuracy : (hPa)  
 Height Diff to Ant : (m)  
 Calibration date : (CCYY-MM-DD)  
 Effective Dates : (CCYY-MM-DD/CCYY-MM-DD)  
 Notes : (multiple lines)

- 8.2.x Pressure Sensor Model :  
 Manufacturer :  
 Serial Number :  
 Data Sampling Interval : (sec)  
 Accuracy : (hPa)  
 Height Diff to Ant : (m)  
 Calibration date : (CCYY-MM-DD)  
 Effective Dates : (CCYY-MM-DD/CCYY-MM-DD)  
 Notes : (multiple lines)

- 8.3.1 Temp. Sensor Model : NONE  
 Manufacturer :  
 Serial Number :  
 Data Sampling Interval : (sec)  
 Accuracy : (deg C)  
 Aspiration : (UNASPIRATED/NATURAL/FAN/etc)  
 Height Diff to Ant : (m)  
 Calibration date : (CCYY-MM-DD)  
 Effective Dates : (CCYY-MM-DD/CCYY-MM-DD)  
 Notes : (multiple lines)

- 8.3.x Temp. Sensor Model :  
 Manufacturer :

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Serial Number      :
Data Sampling Interval : (sec)
Accuracy          : (deg C)
Aspiration        : (UNASPIRATED/NATURAL/FAN/etc)
Height Diff to Ant : (m)
Calibration date  : (CCYY-MM-DD)
Effective Dates   : (CCYY-MM-DD/CCYY-MM-DD)
Notes            : (multiple lines)

8.4.1 Water Vapor Radiometer : NONE
Manufacturer       :
Serial Number      :
Distance to Antenna : (m)
Height Diff to Ant : (m)
Calibration date  : (CCYY-MM-DD)
Effective Dates   : (CCYY-MM-DD/CCYY-MM-DD)
Notes            : (multiple lines)

8.4.x Water Vapor Radiometer :
Manufacturer       :
Serial Number      :
Distance to Antenna : (m)
Height Diff to Ant : (m)
Calibration date  : (CCYY-MM-DD)
Effective Dates   : (CCYY-MM-DD/CCYY-MM-DD)
Notes            : (multiple lines)

8.5.x Other Instrumentation : (multiple lines)

9. Local Ongoing Conditions Possibly Affecting Computed Position

9.1.1 Radio Interferences : ANTENNA
Observed Degradations : SN RATIO/DATA GAPS
Effective Dates       : 1998-09-17/2001-05-01
Additional Information : Harbour antenna transmitting DGPS corrections.
                       : Fault on antenna repaired on 2001-05-01.

9.1.x Radio Interferences : (TV/CELL PHONE ANTENNA/RADAR/etc)
Observed Degradations : (SN RATIO/DATA GAPS/etc)
Effective Dates       : (CCYY-MM-DD/CCYY-MM-DD)
Additional Information : (multiple lines)

9.2.x Multipath Sources : (METAL ROOF/DOME/VLBI ANTENNA/etc)
Effective Dates       : (CCYY-MM-DD/CCYY-MM-DD)
Additional Information : (multiple lines)

9.3.x Signal Obstructions : (TREES/BUILDINGS/etc)
Effective Dates       : (CCYY-MM-DD/CCYY-MM-DD)
Additional Information : (multiple lines)

10. Local Episodic Effects Possibly Affecting Data Quality

10.1 Date : (CCYY-MM-DDTh:mmZ)
Event    : (TREE CLEARING/CONSTRUCTION/etc)

10.x Date : (CCYY-MM-DDTh:mmZ)
Event    : (TREE CLEARING/CONSTRUCTION/etc)

11. On-Site, Point of Contact Agency Information

Agency : Aberdeen Harbour Board
Preferred Abbreviation : (A10)
Mailing Address : 16 Regents Quay
               : Aberdeen AB511SS
               : UK

Primary Contact
Contact Name : Port Surveyor
Telephone (primary) :
Telephone (secondary) :
Fax :
E-mail :

Secondary Contact
Contact Name :
Telephone (primary) :
Telephone (secondary) :
Fax :
E-mail :

```

Additional Information : (multiple lines)

12. Responsible Agency (if different from 11.)

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Agency                : IESSG
Preferred Abbreviation : IESSG
Mailing Address        : University of Nottingham
                      : University Park
                      : Nottingham NG72RD
                      : UK

Primary Contact
Contact Name           : Richard Bingley
Telephone (primary)    : +44 (0)115 9513932
Telephone (secondary) : +44 (0)115 9513880
Fax                    : +44 (0)115 9513881
E-mail                 : richard.bingley@nottingham.ac.uk

Secondary Contact
Contact Name           : IESSG Experimental Officers
Telephone (primary)    : +44 (0)115 9513921
Telephone (secondary) : +44 (0)115 9513880
Fax                    : +44 (0)115 9513881
E-mail                 : iessg@nottingham.ac.uk

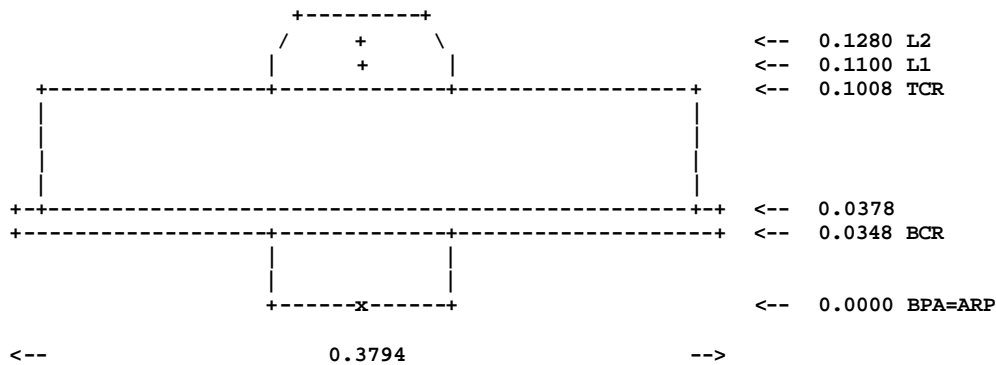
Additional Information  : ABER is operated by the IESSG for the
                      : Proudman Oceanographic Laboratory and
                      : the UK Department of Environment, Flooding
                      : and Rural Affairs (DEFRA)
    
```

13. More Information

```

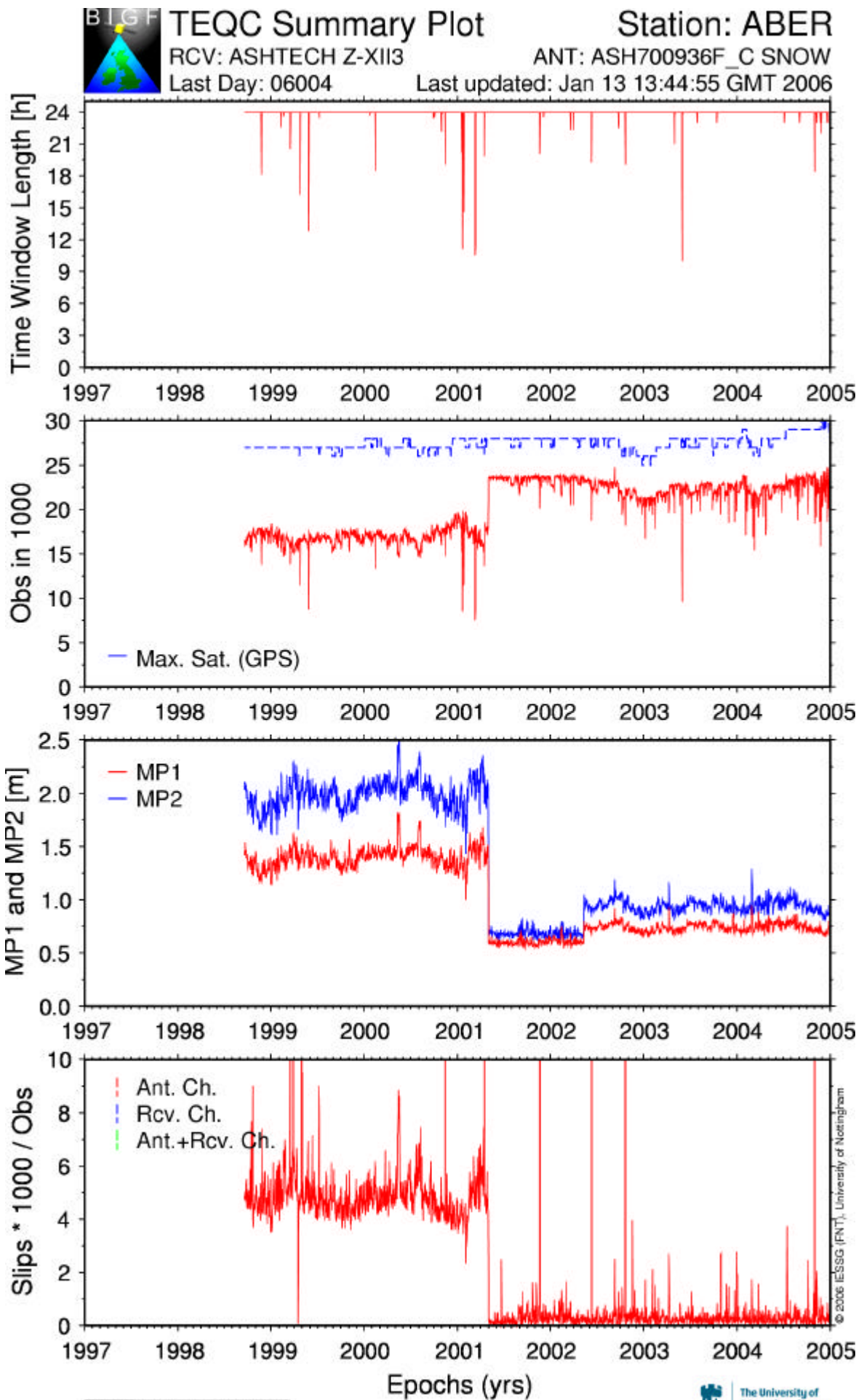
Primary Data Center    :
Secondary Data Center  :
URL for More Information : http://www.bigf.ac.uk
Hardcopy on File
Site Map               : Y
Site Diagram           : Y
Horizon Mask           : Y
Monument Description   : Y
Site Pictures          : Y
Additional Information  : (multiple lines)
Antenna Graphics with Dimensions
    
```

ASH700936F\_C



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ARP: Antenna Reference Point
L1 : L1 Phase Center          L2 : L2 Phase Center
TCR: Top of Chokering        BCR: Bottom of Chokering
    
```



GM 2006 Jan 13 13:44:56



## Liverpool

LIVE Site Information Form (site log)  
 International GPS Service  
 See Instructions at:  
[ftp://igsceb.jpl.nasa.gov/pub/station/general/sitelog\\_instr.txt](ftp://igsceb.jpl.nasa.gov/pub/station/general/sitelog_instr.txt)

### 0. Form

Prepared by (full name) : Richard Bingley  
 Date Prepared : 2005-03-15  
 Report Type : UPDATE  
 If Update:  
 Previous Site Log : live\_20011212.log  
 Modified/Added Sections : 4.2

### 1. Site Identification of the GNSS Monument

Site Name : Liverpool Tide Gauge  
 Four Character ID : LIVE  
 Monument Inscription :  
 IERS DOMES Number : 13233M001  
 CDP Number : (A4)  
 Monument Description : STEEL PLATE AND STEEL PIPE  
 Height of the Monument : 0.07m  
 Monument Foundation : CONCRETE PILLAR  
 Foundation Depth : (m)  
 Marker Description : TOP OF 40mm DIA THREAD ON STEEL PLATE  
 Date Installed : 1999-02-03T12:00Z  
 Geologic Characteristic : ALLUVIUM  
 Bedrock Type : SEDIMENTARY (SANDSTONE)  
 Bedrock Condition : (FRESH/JOINTED/WEATHERED)  
 Fracture Spacing : (1-10 cm/11-50 cm/51-200 cm/over 200 cm)  
 Fault zones nearby : (YES/NO/Name of the zone)  
 Distance/activity : (multiple lines)  
 Additional Information : The monument is mounted on a 5m high  
 : concrete pillar which forms part of a  
 : wind-break and is about 5m from the  
 : tide gauge building, which is located  
 : on a stone pier, with piled foundations.  
 : The GPS antenna is located on the monument  
 : which consists of a 0.07m steel pipe mounted on  
 : a steel plate.  
 : The GPS antenna is attached to the steel pipe  
 : using a 5/8" thread.  
 : The steel pipe is attached to the steel plate  
 : using a 40 mm diameter thread.  
 : The male part of the 40mm diameter thread is on  
 : the steel plate and has a domed head, which  
 : serves as the survey marker.

### 2. Site Location Information

City or Town : Liverpool  
 State or Province : Merseyside  
 Country : England  
 Tectonic Plate : EURASIAN  
 Approximate Position  
 X coordinate (m) : 3801351.8  
 Y coordinate (m) : -200433.1  
 Z coordinate (m) : 5100558.2  
 Latitude (N is +) : +532658.90  
 Longitude (E is +) : -0030105.62  
 Elevation (m,ellips.) : 66.0  
 Additional Information : (multiple lines)

### 3. GNSS Receiver Information

3.1 Receiver Type : ASHTECH Z-XII3  
 Satellite System : GPS  
 Serial Number : 03145  
 Firmware Version : 1F50  
 Elevation Cutoff Setting : 5  
 Date Installed : 1999-02-04T00:00Z  
 Date Removed : 1999-08-15T23:59Z

```

Temperature Stabiliz.      : NONE
Additional Information     : Full receiver serial number is LP 03145.
                          : Operation using a direct modem connection.
                          : Download using CGREMOTE v5.4.00 CGRS1F50 and
                          : CGHOSE v5.4.00 CGRS1F50.
                          : Conversion to RINEX using ASRINEXO v2.9.7
                          : (with PR SMOOTH FLAG 0).

3.2 Receiver Type         : ASHTECH Z-XII3
Satellite System          : GPS
Serial Number             : 03145
Firmware Version          : CD00
Elevation Cutoff Setting : 5
Date Installed            : 1999-08-17T00:00Z
Date Removed              : CCYY-MM-DDThh:mmZ
Temperature Stabiliz.     : NONE
Additional Information     : Full receiver serial number is LP 03145.
                          : Operation using a direct modem connection.
                          : Download using CGREMOTE v5.4.00 CGRSCD00 and
                          : CGHOSE v6.0.00 CGRSCD00
                          : Conversion to RINEX using ASRINEXO v2.9.7
                          : (with PR SMOOTH FLAG 0)

3.x Receiver Type         : (A20, from rcvr_ant.tab; see instructions)
Satellite System          : (GPS/GLONASS/GPS+GLONASS)
Serial Number             : (A5)
Firmware Version          : (A11)
Elevation Cutoff Setting : (deg)
Date Installed            : (CCYY-MM-DDThh:mmZ)
Date Removed              : (CCYY-MM-DDThh:mmZ)
Temperature Stabiliz.     : (none or tolerance in degrees C)
Additional Information     : (multiple lines)

4. GNSS Antenna Information

4.1 Antenna Type          : ASH700936F_C      SNOW
Serial Number             : 14774
Antenna Reference Point  : BPA
Marker->ARP Up Ecc. (m)  : 0.0310
Marker->ARP North Ecc(m) : 0.0000
Marker->ARP East Ecc(m)  : 0.0000
Alignment from True N    : 0
Antenna Radome Type      : SNOW
Radome Serial Number     :
Antenna Cable Type       : ASHTECH 100914 REVA
Antenna Cable Length     : 30m
Date Installed            : 1999-02-04T00:00Z
Date Removed              : 2005-02-22T12:00Z
Additional Information     : Full antenna serial number is CR 14774.

4.2 Antenna Type          : ASH700936D_M      SNOW
Serial Number             : 13141
Antenna Reference Point  : BPA
Marker->ARP Up Ecc. (m)  : 0.0310
Marker->ARP North Ecc(m) : 0.0000
Marker->ARP East Ecc(m)  : 0.0000
Alignment from True N    : 0
Antenna Radome Type      : SNOW
Radome Serial Number     :
Antenna Cable Type       : ASHTECH 100914 REVA
Antenna Cable Length     : 30m
Date Installed            : 2005-03-15T09:00Z
Date Removed              : CCYY-MM-DDThh:mmZ
Additional Information     : Full antenna serial number is CR 13141.
                          : The antenna cable was not replaced.

4.x Antenna Type          : (A20 from rcvr_ant.tab; see instructions)
Serial Number             : (A*, but note the first A5 is used in SINEX)
Antenna Reference Point  : (BPA/BCR/XXX from "antenna.gra"; see instr.)
Marker->ARP Up Ecc. (m)  : (F8.4)
Marker->ARP North Ecc(m) : (F8.4)
Marker->ARP East Ecc(m)  : (F8.4)
Alignment from True N    : (deg; + is clockwise/east)
Antenna Radome Type      : (A4 from rcvr_ant.tab; see instructions)
Radome Serial Number     :
Antenna Cable Type       : (vendor & type number)
Antenna Cable Length     : (m)
Date Installed            : (CCYY-MM-DDThh:mmZ)
Date Removed              : (CCYY-MM-DDThh:mmZ)

```

Additional Information : (multiple lines)

## 5. Surveyed Local Ties

5.x Tied Marker Name :  
 Tied Marker Usage : (SLR/VLBI/LOCAL CONTROL/FOOTPRINT/etc)  
 Tied Marker CDP Number : (A4)  
 Tied Marker DOMES Number : (A9)  
 Differential Components from GNSS Marker to the tied monument (ITRS)  
 dx (m) : (m)  
 dy (m) : (m)  
 dz (m) : (m)  
 Accuracy (mm) : (mm)  
 Survey method : (GPS CAMPAIGN/TRILATERATION/TRIANGULATION/etc)  
 Date Measured : (CCYY-MM-DDTh:mmZ)  
 Additional Information : (multiple lines)

## 6. Frequency Standard

6.1 Standard Type : INTERNAL  
 Input Frequency : (if external)  
 Effective Dates : 1999-02-04/CCYY-MM-DD  
 Notes : (multiple lines)

6.x Standard Type : (INTERNAL or EXTERNAL H-MASER/CESIUM/etc)  
 Input Frequency : (if external)  
 Effective Dates : (CCYY-MM-DD/CCYY-MM-DD)  
 Notes : (multiple lines)

## 7. Collocation Information

7.x Instrumentation Type : (GPS/GLONASS/DORIS/PRARE/SLR/VLBI/TIME/etc)  
 Status : (PERMANENT/MOBILE)  
 Effective Dates : (CCYY-MM-DD/CCYY-MM-DD)  
 Notes : (multiple lines)

## 8. Meteorological Instrumentation

8.1.1 Humidity Sensor Model : NONE  
 Manufacturer :  
 Serial Number :  
 Data Sampling Interval : (sec)  
 Accuracy (% rel h) : (% rel h)  
 Aspiration : (UNASPIRATED/NATURAL/FAN/etc)  
 Height Diff to Ant : (m)  
 Calibration date : (CCYY-MM-DD)  
 Effective Dates : (CCYY-MM-DD/CCYY-MM-DD)  
 Notes : (multiple lines)

8.1.x Humidity Sensor Model :  
 Manufacturer :  
 Serial Number :  
 Data Sampling Interval : (sec)  
 Accuracy (% rel h) : (% rel h)  
 Aspiration : (UNASPIRATED/NATURAL/FAN/etc)  
 Height Diff to Ant : (m)  
 Calibration date : (CCYY-MM-DD)  
 Effective Dates : (CCYY-MM-DD/CCYY-MM-DD)  
 Notes : (multiple lines)

8.2.1 Pressure Sensor Model : NONE  
 Manufacturer :  
 Serial Number :  
 Data Sampling Interval : (sec)  
 Accuracy : (hPa)  
 Height Diff to Ant : (m)  
 Calibration date : (CCYY-MM-DD)  
 Effective Dates : (CCYY-MM-DD/CCYY-MM-DD)  
 Notes : (multiple lines)

8.2.x Pressure Sensor Model :  
 Manufacturer :  
 Serial Number :  
 Data Sampling Interval : (sec)  
 Accuracy : (hPa)  
 Height Diff to Ant : (m)

---

```

Calibration date      : (CCYY-MM-DD)
Effective Dates      : (CCYY-MM-DD/CCYY-MM-DD)
Notes                 : (multiple lines)

8.3.1 Temp. Sensor Model : NONE
Manufacturer         :
Serial Number        :
Data Sampling Interval : (sec)
Accuracy             : (deg C)
Aspiration           : (UNASPIRATED/NATURAL/FAN/etc)
Height Diff to Ant   : (m)
Calibration date     : (CCYY-MM-DD)
Effective Dates      : (CCYY-MM-DD/CCYY-MM-DD)
Notes                 : (multiple lines)

8.3.x Temp. Sensor Model :
Manufacturer         :
Serial Number        :
Data Sampling Interval : (sec)
Accuracy             : (deg C)
Aspiration           : (UNASPIRATED/NATURAL/FAN/etc)
Height Diff to Ant   : (m)
Calibration date     : (CCYY-MM-DD)
Effective Dates      : (CCYY-MM-DD/CCYY-MM-DD)
Notes                 : (multiple lines)

8.4.1 Water Vapor Radiometer : NONE
Manufacturer         :
Serial Number        :
Distance to Antenna  : (m)
Height Diff to Ant   : (m)
Calibration date     : (CCYY-MM-DD)
Effective Dates      : (CCYY-MM-DD/CCYY-MM-DD)
Notes                 : (multiple lines)

8.4.x Water Vapor Radiometer :
Manufacturer         :
Serial Number        :
Distance to Antenna  : (m)
Height Diff to Ant   : (m)
Calibration date     : (CCYY-MM-DD)
Effective Dates      : (CCYY-MM-DD/CCYY-MM-DD)
Notes                 : (multiple lines)

8.5.x Other Instrumentation : (multiple lines)

9. Local Ongoing Conditions Possibly Affecting Computed Position

9.1.x Radio Interferences : (TV/CELL PHONE ANTENNA/RADAR/etc)
Observed Degradations   : (SN RATIO/DATA GAPS/etc)
Effective Dates          : (CCYY-MM-DD/CCYY-MM-DD)
Additional Information    : (multiple lines)

9.2.x Multipath Sources : (METAL ROOF/DOME/VLBI ANTENNA/etc)
Effective Dates          : (CCYY-MM-DD/CCYY-MM-DD)
Additional Information    : (multiple lines)

9.3.x Signal Obstructions : (TREES/BUILDINGS/etc)
Effective Dates          : (CCYY-MM-DD/CCYY-MM-DD)
Additional Information    : (multiple lines)

10. Local Episodic Effects Possibly Affecting Data Quality

10.1 Date : (CCYY-MM-DDTh:mmZ)
Event     : (TREE CLEARING/CONSTRUCTION/etc)

10.x Date : (CCYY-MM-DDTh:mmZ)
Event     : (TREE CLEARING/CONSTRUCTION/etc)

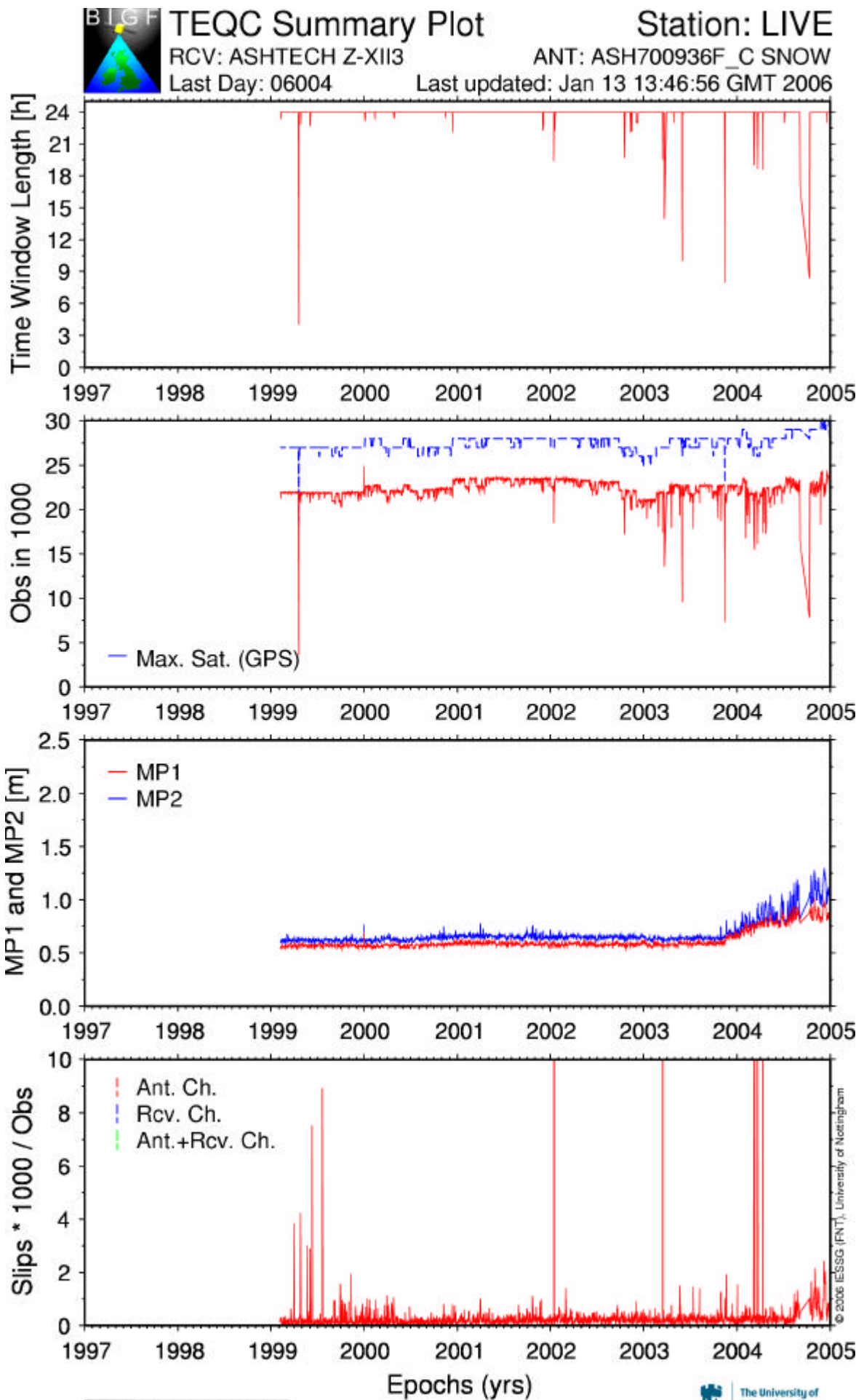
11. On-Site, Point of Contact Agency Information

Agency : Mersey Docks and Harbour Company
Preferred Abbreviation : (A10)
Mailing Address : Maritime Centre
                : Port of Liverpool
                : Merseyside L21 1LA
                : UK

```

---





## Lowestoft

LOWE Site Information Form (site log)  
 International GPS Service  
 See Instructions at:  
[ftp://igsceb.jpl.nasa.gov/pub/station/general/sitelog\\_instr.txt](ftp://igsceb.jpl.nasa.gov/pub/station/general/sitelog_instr.txt)

### 0. Form

Prepared by (full name) : Richard Bingley  
 Date Prepared : 2001-12-12  
 Report Type : NEW  
 If Update:  
 Previous Site Log :  
 Modified/Added Sections :

### 1. Site Identification of the GNSS Monument

Site Name : Lowestoft Tide Gauge  
 Four Character ID : LOWE  
 Monument Inscription :  
 IERS DOMES Number : 13232M001  
 CDP Number : (A4)  
 Monument Description : STEEL BRACKET AND CARBON FIBRE PIPE  
 Height of the Monument : 0.80m  
 Monument Foundation : BUILDING  
 Foundation Depth : (m)  
 Marker Description : TOP OF 40mm DIA THREAD ON STEEL BRACKET  
 Date Installed : 1999-02-12T12:00Z  
 Geologic Characteristic : ALLUVIUM  
 Bedrock Type : SEDIMENTARY (CRAG)  
 Bedrock Condition : (FRESH/JOINTED/WEATHERED)  
 Fracture Spacing : (1-10 cm/11-50 cm/51-200 cm/over 200 cm)  
 Fault zones nearby : (YES/NO/Name of the zone)  
 Distance/activity : (multiple lines)  
 Additional Information : The monument is mounted on the side  
 : wall of a two storey brick office  
 : building, adjacent to the tide gauge  
 : building, so that the antenna is raised  
 : above the roof  
 : The GPS antenna is located on the monument  
 : which consists of a 0.8m carbon fibre pipe  
 : mounted on a steel bracket.  
 : The GPS antenna is attached to the carbon fibre  
 : pipe using a 5/8" thread.  
 : The carbon fibre pipe is attached to the steel  
 : bracket using a 40 mm diameter thread.  
 : The male part of the 40mm diameter thread is on  
 : the steel bracket and has a domed head, which  
 : serves as the survey marker.

### 2. Site Location Information

City or Town : Lowestoft  
 State or Province : Suffolk  
 Country : England  
 Tectonic Plate : EURASIAN  
 Approximate Position  
 X coordinate (m) : 3891549.7  
 Y coordinate (m) : 118910.8  
 Z coordinate (m) : 5035092.8  
 Latitude (N is +) : +522823.60  
 Longitude (E is +) : +0014500.70  
 Elevation (m,ellips.) : 53.8  
 Additional Information : (multiple lines)

### 3. GNSS Receiver Information

3.1 Receiver Type : ASHTECH Z-XII3  
 Satellite System : GPS  
 Serial Number : 03141  
 Firmware Version : 1F50  
 Elevation Cutoff Setting : 5  
 Date Installed : 1999-02-13T00:00Z  
 Date Removed : 1999-08-15T23:59Z

```

Temperature Stabiliz.      : NONE
Additional Information     : Full receiver serial number is LP 03141.
                          : Operation using a direct modem connection.
                          : Download using CGREMOTE v5.4.00 CGRS1F50 and
                          : CGHOSE v5.4.00 CGRS1F50.
                          : Conversion to RINEX using ASRINEXO v2.9.7
                          : (with PR SMOOTH FLAG 0).

3.2 Receiver Type         : ASHTECH Z-XII3
Satellite System          : GPS
Serial Number             : 03141
Firmware Version          : CD00
Elevation Cutoff Setting : 5
Date Installed            : 1999-08-17T00:00Z
Date Removed              : CCYY-MM-DDThh:mmZ
Temperature Stabiliz.     : NONE
Additional Information     : The full receiver serial number is LP 03141.
                          : Operation using a direct modem connection.
                          : Download using CGREMOTE v5.4.00 CGRSCD00 and
                          : CGHOSE v6.0.00 CGRSCD00.
                          : Conversion to RINEX using ASRINEXO v2.9.7
                          : (with PR SMOOTH FLAG 0).

3.x Receiver Type         : (A20, from rcvr_ant.tab; see instructions)
Satellite System          : (GPS/GLONASS/GPS+GLONASS)
Serial Number             : (A5)
Firmware Version          : (All)
Elevation Cutoff Setting : (deg)
Date Installed            : (CCYY-MM-DDThh:mmZ)
Date Removed              : (CCYY-MM-DDThh:mmZ)
Temperature Stabiliz.     : (none or tolerance in degrees C)
Additional Information     : (multiple lines)

4. GNSS Antenna Information

4.1 Antenna Type          : ASH700936F_C      SNOW
Serial Number             : 14769
Antenna Reference Point  : BPA
Marker->ARP Up Ecc. (m)  : 0.7620
Marker->ARP North Ecc(m) : 0.0000
Marker->ARP East Ecc(m)  : 0.0000
Alignment from True N    : 0
Antenna Radome Type      : SNOW
Radome Serial Number     :
Antenna Cable Type       : ASHTECH 100914 REVA
Antenna Cable Length     : 30m
Date Installed            : 1999-02-13T00:00Z
Date Removed              : CCYY-MM-DDThh:mmZ
Additional Information     : Full antenna serial number is CR 14769.

4.x Antenna Type         : (A20 from rcvr_ant.tab; see instructions)
Serial Number             : (A*, but note the first A5 is used in SINEX)
Antenna Reference Point  : (BPA/BCR/XXX from "antenna.gra"; see instr.)
Marker->ARP Up Ecc. (m)  : (F8.4)
Marker->ARP North Ecc(m) : (F8.4)
Marker->ARP East Ecc(m)  : (F8.4)
Alignment from True N    : (deg; + is clockwise/east)
Antenna Radome Type      : (A4 from rcvr_ant.tab; see instructions)
Radome Serial Number     :
Antenna Cable Type       : (vendor & type number)
Antenna Cable Length     : (m)
Date Installed            : (CCYY-MM-DDThh:mmZ)
Date Removed              : (CCYY-MM-DDThh:mmZ)
Additional Information     : (multiple lines)

5. Surveyed Local Ties

5.x Tied Marker Name      :
Tied Marker Usage        : (SLR/VLBI/LOCAL CONTROL/FOOTPRINT/etc)
Tied Marker CDP Number   : (A4)
Tied Marker DOMES Number : (A9)
Differential Components from GNSS Marker to the tied monument (ITRS)
  dx (m)                  : (m)
  dy (m)                  : (m)
  dz (m)                  : (m)
Accuracy (mm)            : (mm)
Survey method             : (GPS CAMPAIGN/TRILATERATION/TRIANGULATION/etc)
Date Measured            : (CCYY-MM-DDThh:mmZ)

```

Additional Information : (multiple lines)

6. Frequency Standard

6.1 Standard Type : INTERNAL  
Input Frequency : (if external)  
Effective Dates : 1999-02-13/CCYY-MM-DD  
Notes : (multiple lines)

6.x Standard Type : (INTERNAL or EXTERNAL H-MASER/CESIUM/etc)  
Input Frequency : (if external)  
Effective Dates : (CCYY-MM-DD/CCYY-MM-DD)  
Notes : (multiple lines)

7. Collocation Information

7.x Instrumentation Type : (GPS/GLONASS/DORIS/PRARE/SLR/VLBI/TIME/etc)  
Status : (PERMANENT/MOBILE)  
Effective Dates : (CCYY-MM-DD/CCYY-MM-DD)  
Notes : (multiple lines)

8. Meteorological Instrumentation

8.1.1 Humidity Sensor Model : NONE  
Manufacturer :  
Serial Number :  
Data Sampling Interval : (sec)  
Accuracy (% rel h) : (% rel h)  
Aspiration : (UNASPIRATED/NATURAL/FAN/etc)  
Height Diff to Ant : (m)  
Calibration date : (CCYY-MM-DD)  
Effective Dates : (CCYY-MM-DD/CCYY-MM-DD)  
Notes : (multiple lines)

8.1.x Humidity Sensor Model :  
Manufacturer :  
Serial Number :  
Data Sampling Interval : (sec)  
Accuracy (% rel h) : (% rel h)  
Aspiration : (UNASPIRATED/NATURAL/FAN/etc)  
Height Diff to Ant : (m)  
Calibration date : (CCYY-MM-DD)  
Effective Dates : (CCYY-MM-DD/CCYY-MM-DD)  
Notes : (multiple lines)

8.2.1 Pressure Sensor Model : NONE  
Manufacturer :  
Serial Number :  
Data Sampling Interval : (sec)  
Accuracy : (hPa)  
Height Diff to Ant : (m)  
Calibration date : (CCYY-MM-DD)  
Effective Dates : (CCYY-MM-DD/CCYY-MM-DD)  
Notes : (multiple lines)

8.2.x Pressure Sensor Model :  
Manufacturer :  
Serial Number :  
Data Sampling Interval : (sec)  
Accuracy : (hPa)  
Height Diff to Ant : (m)  
Calibration date : (CCYY-MM-DD)  
Effective Dates : (CCYY-MM-DD/CCYY-MM-DD)  
Notes : (multiple lines)

8.3.1 Temp. Sensor Model : NONE  
Manufacturer :  
Serial Number :  
Data Sampling Interval : (sec)  
Accuracy : (deg C)  
Aspiration : (UNASPIRATED/NATURAL/FAN/etc)  
Height Diff to Ant : (m)  
Calibration date : (CCYY-MM-DD)  
Effective Dates : (CCYY-MM-DD/CCYY-MM-DD)  
Notes : (multiple lines)

8.3.x Temp. Sensor Model :

```

Manufacturer      :
Serial Number     :
Data Sampling Interval : (sec)
Accuracy          : (deg C)
Aspiration        : (UNASPIRATED/NATURAL/FAN/etc)
Height Diff to Ant : (m)
Calibration date  : (CCYY-MM-DD)
Effective Dates   : (CCYY-MM-DD/CCYY-MM-DD)
Notes             : (multiple lines)

8.4.1 Water Vapor Radiometer : NONE
Manufacturer      :
Serial Number     :
Distance to Antenna : (m)
Height Diff to Ant : (m)
Calibration date  : (CCYY-MM-DD)
Effective Dates   : (CCYY-MM-DD/CCYY-MM-DD)
Notes             : (multiple lines)

8.4.x Water Vapor Radiometer :
Manufacturer      :
Serial Number     :
Distance to Antenna : (m)
Height Diff to Ant : (m)
Calibration date  : (CCYY-MM-DD)
Effective Dates   : (CCYY-MM-DD/CCYY-MM-DD)
Notes             : (multiple lines)

8.5.x Other Instrumentation : (multiple lines)

9. Local Ongoing Conditions Possibly Affecting Computed Position

9.1.x Radio Interferences : (TV/CELL PHONE ANTENNA/RADAR/etc)
Observed Degradations : (SN RATIO/DATA GAPS/etc)
Effective Dates : (CCYY-MM-DD/CCYY-MM-DD)
Additional Information : (multiple lines)

9.2.x Multipath Sources : (METAL ROOF/DOME/VLBI ANTENNA/etc)
Effective Dates : (CCYY-MM-DD/CCYY-MM-DD)
Additional Information : (multiple lines)

9.3.x Signal Obstructions : (TREES/BUILDINGS/etc)
Effective Dates : (CCYY-MM-DD/CCYY-MM-DD)
Additional Information : (multiple lines)

10. Local Episodic Effects Possibly Affecting Data Quality

10.1 Date : (CCYY-MM-DDThh:mmZ)
Event : (TREE CLEARING/CONSTRUCTION/etc)

10.x Date : (CCYY-MM-DDThh:mmZ)
Event : (TREE CLEARING/CONSTRUCTION/etc)

11. On-Site, Point of Contact Agency Information

Agency : Associated British Ports
Preferred Abbreviation : (A10)
Mailing Address : Port House
: Lowestoft
: Suffolk NR32 1BG
: UK

Primary Contact
Contact Name : Harbour Master
Telephone (primary) :
Telephone (secondary) :
Fax :
E-mail :

Secondary Contact
Contact Name :
Telephone (primary) :
Telephone (secondary) :
Fax :
E-mail :
Additional Information : (multiple lines)

12. Responsible Agency (if different from 11.)

```

```

Agency : IESSG
Preferred Abbreviation : IESSG
Mailing Address : University of Nottingham
                : University Park
                : Nottingham NG72RD
                : UK

Primary Contact
Contact Name : Richard Bingley
Telephone (primary) : +44 (0)115 9513932
Telephone (secondary) : +44 (0)115 9513880
Fax : +44 (0)115 9513881
E-mail : richard.bingley@nottingham.ac.uk

Secondary Contact
Contact Name : IESSG Experimental Officers
Telephone (primary) : +44 (0)115 9513921
Telephone (secondary) : +44 (0)115 9513880
Fax : +44 (0)115 9513881
E-mail : iessg@nottingham.ac.uk

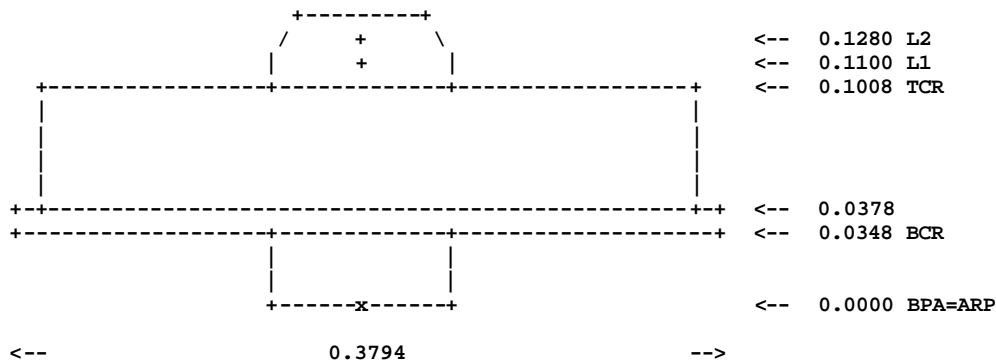
Additional Information : LOWE is operated by the IESSG for the
                       : Proudman Oceanographic Laboratory and
                       : the UK Department of Environment, Flooding
                       : and Rural Affairs (DEFRA)
    
```

13. More Information

```

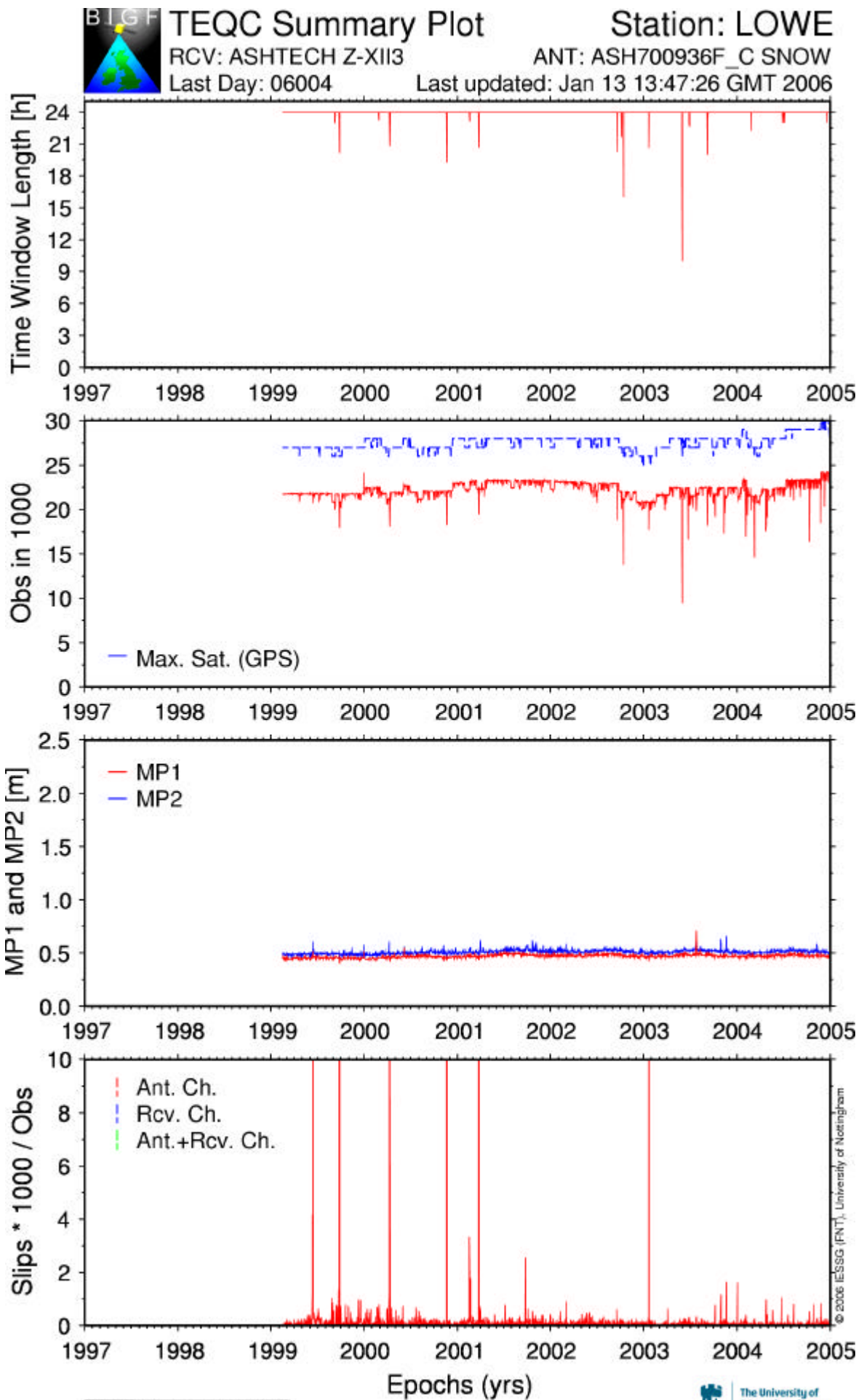
Primary Data Center :
Secondary Data Center :
URL for More Information : http://www.bigf.ac.uk
Hardcopy on File
Site Map : Y
Site Diagram : Y
Horizon Mask : Y
Monument Description : Y
Site Pictures : Y
Additional Information : (multiple lines)
Antenna Graphics with Dimensions
    
```

ASH700936F\_C



```

ARP: Antenna Reference Point
L1 : L1 Phase Center          L2 : L2 Phase Center
TCR: Top of Chokering        BCR: Bottom of Chokering
    
```



## Newlyn

NEWL Site Information Form (site log)  
 International GPS Service  
 See Instructions at:  
[ftp://igs.cb.jpl.nasa.gov/pub/station/general/sitelog\\_instr.txt](ftp://igs.cb.jpl.nasa.gov/pub/station/general/sitelog_instr.txt)

### 0. Form

Prepared by (full name) : Richard Bingley  
 Date Prepared : 2003-12-12  
 Report Type : NEW  
 If Update:  
 Previous Site Log :  
 Modified/Added Sections :

### 1. Site Identification of the GNSS Monument

Site Name : Newlyn Tide Gauge  
 Four Character ID : NEWL  
 Monument Inscription :  
 IERS DOMES Number : 13273M103  
 CDP Number : (A4)  
 Monument Description : STEEL PLATE AND CARBON FIBRE PIPE  
 Height of the Monument : 3.0m  
 Monument Foundation : LIGHTHOUSE  
 Foundation Depth : (m)  
 Marker Description : TOP OF 40mm DIA THREAD ON STEEL PLATE  
 Date Installed : 1998-09-29T12:00Z  
 Geologic Characteristic : BEDROCK  
 Bedrock Type : SEDIMENTARY (SANDSTONE)  
 Bedrock Condition : (FRESH/JOINTED/WEATHERED)  
 Fracture Spacing : (1-10 cm/11-50 cm/51-200 cm/over 200 cm)  
 Fault zones nearby : (YES/NO/Name of the zone)  
 Distance/activity : (multiple lines)  
 Additional Information : The monument is mounted on the  
 : observation platform of a steel  
 : lighthouse adjacent to the tide gauge  
 : building, which is located at the end  
 : of a stone pier, which is founded  
 : on the Sandstone bedrock  
 : The GPS antenna is located on the monument  
 : which consists of a 3m carbon fibre pipe mounted  
 : on a steel plate, which is fixed to the  
 : observation platform.  
 : The GPS antenna is attached to the carbon fibre  
 : pipe using a 5/8" thread.  
 : The carbon fibre pipe is attached to the steel  
 : plate using a 40 mm diameter thread.  
 : The male part of the 40mm diameter thread is on  
 : the steel plate and has a domed head, which  
 : serves as the survey marker.

### 2. Site Location Information

City or Town : Newlyn  
 State or Province : Cornwall  
 Country : England  
 Tectonic Plate : EURASIAN  
 Approximate Position  
 X coordinate (m) : 4079954.1  
 Y coordinate (m) : -395930.4  
 Z coordinate (m) : 4870196.8  
 Latitude (N is +) : +500610.90  
 Longitude (E is +) : -0053234.04  
 Elevation (m,ellips.) : 64.5  
 Additional Information : (multiple lines)

### 3. GNSS Receiver Information

3.1 Receiver Type : ASHTECH Z-XII3  
 Satellite System : GPS  
 Serial Number : 02964  
 Firmware Version : 1F50  
 Elevation Cutoff Setting : 5

```

Date Installed      : 1998-09-30T00:00Z
Date Removed       : 1999-08-15T23:59Z
Temperature Stabiliz. : NONE
Additional Information : Full receiver serial number is LP 02964.
                    : Operation using a direct modem connection.
                    : Download using CGREMOTE v5.4.00 CGRS1F50 and
                    : CGHOSE v5.4.00 CGRS1F50
                    : Conversion to RINEX using ASRINEXO v2.9.7
                    : (with PR SMOOTH FLAG 0)

3.2 Receiver Type      : ASHTECH Z-XII3
Satellite System     : GPS
Serial Number        : 02964
Firmware Version     : CD00
Elevation Cutoff Setting : 5
Date Installed       : 1999-08-17T00:00Z
Date Removed        : CCYY-MM-DDThh:mmZ
Temperature Stabiliz. : NONE
Additional Information : Full receiver serial number is LP 02964.
                    : Operation using a direct modem connection.
                    : Download using CGREMOTE v5.4.00 CGRSCD00 and
                    : CGHOSE v6.0.00 CGRSCD00.
                    : Conversion to RINEX using ASRINEXO v2.9.7
                    : (with PR SMOOTH FLAG 0).

3.x Receiver Type      : (A20, from rcvr_ant.tab; see instructions)
Satellite System     : (GPS/GLONASS/GPS+GLONASS)
Serial Number        : (A5)
Firmware Version     : (A11)
Elevation Cutoff Setting : (deg)
Date Installed       : (CCYY-MM-DDThh:mmZ)
Date Removed        : (CCYY-MM-DDThh:mmZ)
Temperature Stabiliz. : (none or tolerance in degrees C)
Additional Information : (multiple lines)

4. GNSS Antenna Information

4.1 Antenna Type      : ASH700936D_M    SNOW
Serial Number        : 15402
Antenna Reference Point : BPA
Marker->ARP Up Ecc. (m) : 2.9650
Marker->ARP North Ecc(m) : 0.0000
Marker->ARP East Ecc(m) : 0.0000
Alignment from True N : 0
Antenna Radome Type   : SNOW
Radome Serial Number  :
Antenna Cable Type    : ASHTECH 100914 REVA
Antenna Cable Length  : 30m
Date Installed        : 1998-09-30T00:00Z
Date Removed         : 2001-01-17T23:59Z
Additional Information : Full antenna serial number is CR 15042.
                    : Antenna cable damaged in 2001-01

4.2 Antenna Type      : ASH700936D_M    SNOW
Serial Number        : 15402
Antenna Reference Point : BPA
Marker->ARP Up Ecc. (m) : 2.9650
Marker->ARP North Ecc(m) : 0.0000
Marker->ARP East Ecc(m) : 0.0000
Alignment from True N : 0
Antenna Radome Type   : SNOW
Radome Serial Number  :
Antenna Cable Type    : ASHTECH 100914 REVA
Antenna Cable Length  : 30m
Date Installed        : 2001-02-09T00:00Z
Date Removed         : CCYY-MM-DDThh:mmZ
Additional Information : Full antenna serial number is CR 15042.
                    : New antenna cable installed

4.x Antenna Type      : (A20 from rcvr_ant.tab; see instructions)
Serial Number        : (A*, but note the first A5 is used in SINEX)
Antenna Reference Point : (BPA/BCR/XXX from "antenna.gra"; see instr.)
Marker->ARP Up Ecc. (m) : (F8.4)
Marker->ARP North Ecc(m) : (F8.4)
Marker->ARP East Ecc(m) : (F8.4)
Alignment from True N : (deg; + is clockwise/east)
Antenna Radome Type   : (A4 from rcvr_ant.tab; see instructions)
Radome Serial Number  :
Antenna Cable Type    : (vendor & type number)

```

Antenna Cable Length : (m)  
 Date Installed : (CCYY-MM-DDThh:mmZ)  
 Date Removed : (CCYY-MM-DDThh:mmZ)  
 Additional Information : (multiple lines)

#### 5. Surveyed Local Ties

5.x Tied Marker Name :  
 Tied Marker Usage : (SLR/VLBI/LOCAL CONTROL/FOOTPRINT/etc)  
 Tied Marker CDP Number : (A4)  
 Tied Marker DOMES Number : (A9)  
 Differential Components from GNSS Marker to the tied monument (ITRS)  
 dx (m) : (m)  
 dy (m) : (m)  
 dz (m) : (m)  
 Accuracy (mm) : (mm)  
 Survey method : (GPS CAMPAIGN/TRILATERATION/TRIANGULATION/etc)  
 Date Measured : (CCYY-MM-DDThh:mmZ)  
 Additional Information : (multiple lines)

#### 6. Frequency Standard

6.1 Standard Type : INTERNAL  
 Input Frequency : (if external)  
 Effective Dates : 1998-09-30/CCYY-MM-DD  
 Notes : (multiple lines)

6.x Standard Type : (INTERNAL or EXTERNAL H-MASER/CESIUM/etc)  
 Input Frequency : (if external)  
 Effective Dates : (CCYY-MM-DD/CCYY-MM-DD)  
 Notes : (multiple lines)

#### 7. Collocation Information

7.x Instrumentation Type : (GPS/GLONASS/DORIS/PRARE/SLR/VLBI/TIME/etc)  
 Status : (PERMANENT/MOBILE)  
 Effective Dates : (CCYY-MM-DD/CCYY-MM-DD)  
 Notes : (multiple lines)

#### 8. Meteorological Instrumentation

8.1.1 Humidity Sensor Model : NONE  
 Manufacturer :  
 Serial Number :  
 Data Sampling Interval : (sec)  
 Accuracy (% rel h) : (% rel h)  
 Aspiration : (UNASPIRATED/NATURAL/FAN/etc)  
 Height Diff to Ant : (m)  
 Calibration date : (CCYY-MM-DD)  
 Effective Dates : (CCYY-MM-DD/CCYY-MM-DD)  
 Notes : (multiple lines)

8.1.x Humidity Sensor Model :  
 Manufacturer :  
 Serial Number :  
 Data Sampling Interval : (sec)  
 Accuracy (% rel h) : (% rel h)  
 Aspiration : (UNASPIRATED/NATURAL/FAN/etc)  
 Height Diff to Ant : (m)  
 Calibration date : (CCYY-MM-DD)  
 Effective Dates : (CCYY-MM-DD/CCYY-MM-DD)  
 Notes : (multiple lines)

8.2.1 Pressure Sensor Model : NONE  
 Manufacturer :  
 Serial Number :  
 Data Sampling Interval : (sec)  
 Accuracy : (hPa)  
 Height Diff to Ant : (m)  
 Calibration date : (CCYY-MM-DD)  
 Effective Dates : (CCYY-MM-DD/CCYY-MM-DD)  
 Notes : (multiple lines)

8.2.x Pressure Sensor Model :  
 Manufacturer :  
 Serial Number :

```

Data Sampling Interval : (sec)
Accuracy                : (hPa)
Height Diff to Ant     : (m)
Calibration date       : (CCYY-MM-DD)
Effective Dates        : (CCYY-MM-DD/CCYY-MM-DD)
Notes                  : (multiple lines)

8.3.1 Temp. Sensor Model : NONE
Manufacturer            :
Serial Number           :
Data Sampling Interval : (sec)
Accuracy                : (deg C)
Aspiration              : (UNASPIRATED/NATURAL/FAN/etc)
Height Diff to Ant     : (m)
Calibration date       : (CCYY-MM-DD)
Effective Dates        : (CCYY-MM-DD/CCYY-MM-DD)
Notes                  : (multiple lines)

8.3.x Temp. Sensor Model :
Manufacturer            :
Serial Number           :
Data Sampling Interval : (sec)
Accuracy                : (deg C)
Aspiration              : (UNASPIRATED/NATURAL/FAN/etc)
Height Diff to Ant     : (m)
Calibration date       : (CCYY-MM-DD)
Effective Dates        : (CCYY-MM-DD/CCYY-MM-DD)
Notes                  : (multiple lines)

8.4.1 Water Vapor Radiometer : NONE
Manufacturer            :
Serial Number           :
Distance to Antenna    : (m)
Height Diff to Ant     : (m)
Calibration date       : (CCYY-MM-DD)
Effective Dates        : (CCYY-MM-DD/CCYY-MM-DD)
Notes                  : (multiple lines)

8.4.x Water Vapor Radiometer :
Manufacturer            :
Serial Number           :
Distance to Antenna    : (m)
Height Diff to Ant     : (m)
Calibration date       : (CCYY-MM-DD)
Effective Dates        : (CCYY-MM-DD/CCYY-MM-DD)
Notes                  : (multiple lines)

8.5.x Other Instrumentation : (multiple lines)

9. Local Ongoing Conditions Possibly Affecting Computed Position

9.1.x Radio Interferences : (TV/CELL PHONE ANTENNA/RADAR/etc)
Observed Degradations    : (SN RATIO/DATA GAPS/etc)
Effective Dates          : (CCYY-MM-DD/CCYY-MM-DD)
Additional Information    : (multiple lines)

9.2.x Multipath Sources   : (METAL ROOF/DOME/VLBI ANTENNA/etc)
Effective Dates          : (CCYY-MM-DD/CCYY-MM-DD)
Additional Information    : (multiple lines)

9.3.x Signal Obstructions : (TREES/BUILDINGS/etc)
Effective Dates          : (CCYY-MM-DD/CCYY-MM-DD)
Additional Information    : (multiple lines)

10. Local Episodic Effects Possibly Affecting Data Quality

10.1 Date                 : (CCYY-MM-DDThh:mmZ)
Event                    : (TREE CLEARING/CONSTRUCTION/etc)

10.x Date                 : (CCYY-MM-DDThh:mmZ)
Event                    : (TREE CLEARING/CONSTRUCTION/etc)

11. On-Site, Point of Contact Agency Information

Agency                  : Newlyn Pier and Harbour Commissioners
Preferred Abbreviation  : NPHC
Mailing Address         : Newlyn

```

: Penzance  
 : Cornwall  
 : UK

Primary Contact  
 Contact Name : Andrew Munson (Harbour Master)  
 Telephone (primary) :  
 Telephone (secondary) :  
 Fax :  
 E-mail :  
 Secondary Contact  
 Contact Name : Richard Turner (Tide Gauge)  
 Telephone (primary) :  
 Telephone (secondary) :  
 Fax :  
 E-mail :  
 Additional Information : (multiple lines)

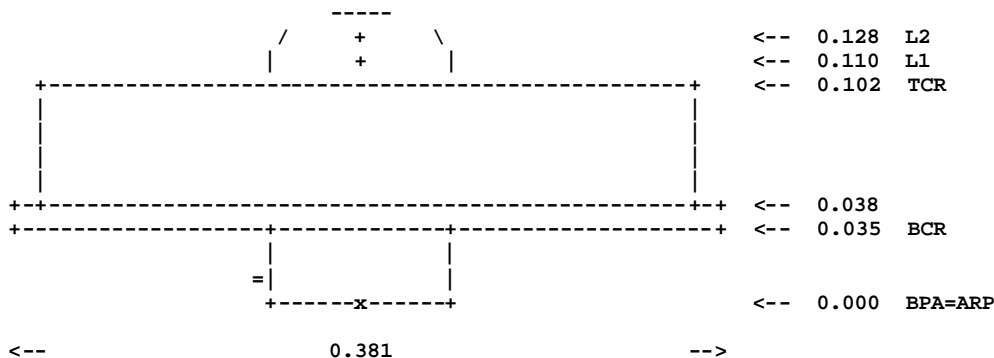
12. Responsible Agency (if different from 11.)

Agency : IESSG  
 Preferred Abbreviation : IESSG  
 Mailing Address : University of Nottingham  
 : University Park  
 : Nottingham NG72RD  
 : UK  
 Primary Contact  
 Contact Name : Richard Bingley  
 Telephone (primary) : +44 (0)115 9513932  
 Telephone (secondary) : +44 (0)115 9513880  
 Fax : +44 (0)115 9513881  
 E-mail : richard.bingley@nottingham.ac.uk  
 Secondary Contact  
 Contact Name : IESSG Experimental Officers  
 Telephone (primary) : +44 (0)115 9513921  
 Telephone (secondary) : +44 (0)115 9513880  
 Fax : +44 (0)115 9513881  
 E-mail : iessg@nottingham.ac.uk  
 Additional Information : NEWL is operated by the IESSG for the  
 : Proudman Oceanographic Laboratory and  
 : the UK Department of Environment, Flooding  
 : and Rural Affairs (DEFRA)

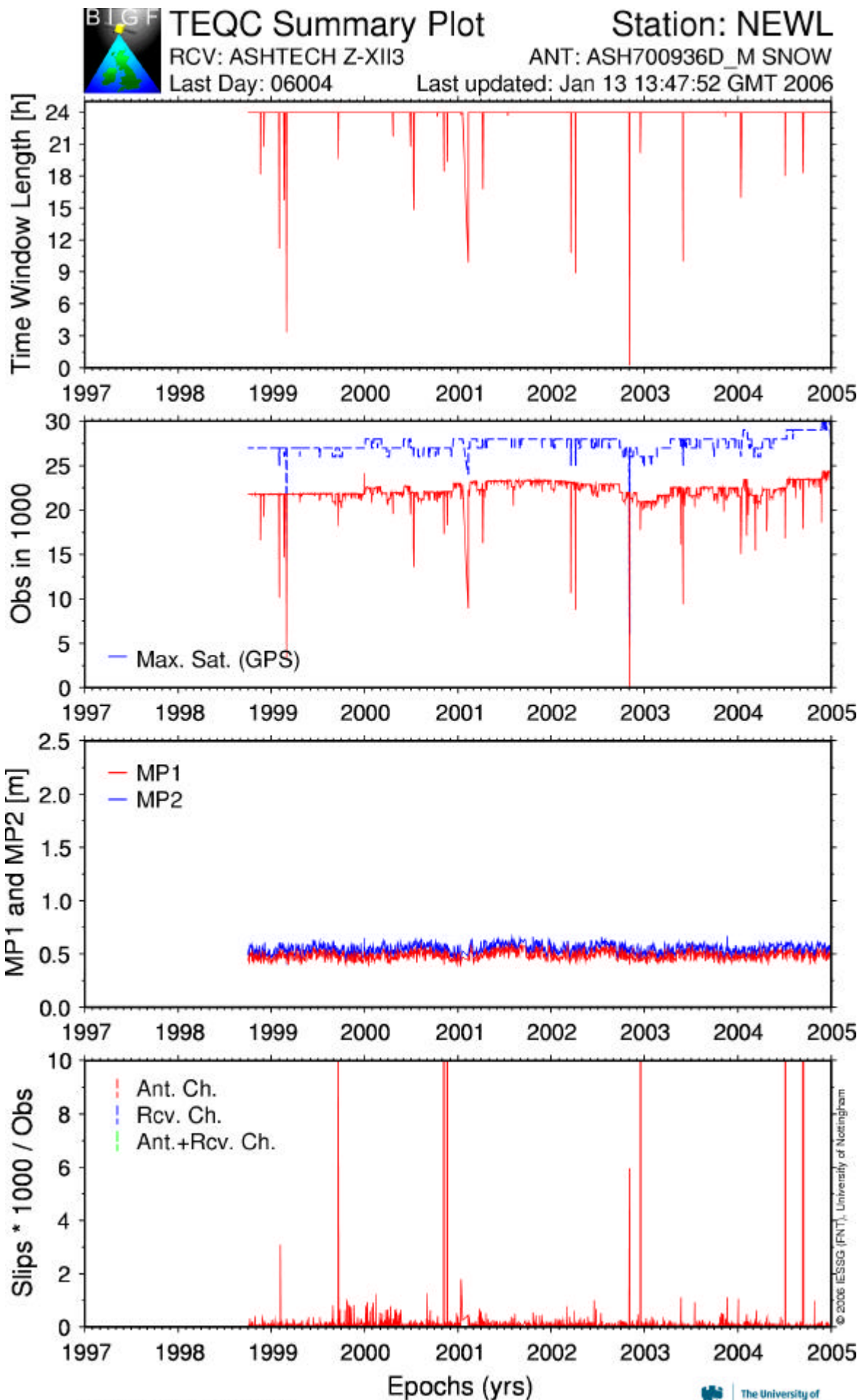
13. More Information

Primary Data Center : BKGE  
 Secondary Data Center :  
 URL for More Information : <http://www.bigf.ac.uk>  
 Hardcopy on File  
 Site Map : Y  
 Site Diagram : Y  
 Horizon Mask : Y  
 Monument Description : Y  
 Site Pictures : Y  
 Additional Information : (multiple lines)  
 Antenna Graphics with Dimensions

ASH700936D\_M



ARP: Antenna Reference Point  
 L1 : L1 Phase Center  
 TCR: Top of Chokering  
 L2 : L2 Phase Center  
 BCR: Bottom of Chokering



## North Shields

NSTG Site Information Form (site log)  
 International GPS Service  
 See Instructions at:  
[ftp://igsceb.jpl.nasa.gov/pub/station/general/sitelog\\_instr.txt](ftp://igsceb.jpl.nasa.gov/pub/station/general/sitelog_instr.txt)

### 0. Form

Prepared by (full name) : Richard Bingley  
 Date Prepared : 2003-11-??  
 Report Type : UPDATE  
 If Update:  
 Previous Site Log : nstg\_20031021.log  
 Modified/Added Sections : 4.10

### 1. Site Identification of the GNSS Monument

Site Name : North Shields Tide Gauge  
 Four Character ID : NSTG  
 Monument Inscription :  
 IERS DOMES Number : 13216M001  
 CDP Number : (A4)  
 Monument Description : ALUMINIUM POLE  
 Height of the Monument : 4.00m  
 Monument Foundation : QUAY  
 Foundation Depth : 2.4m  
 Marker Description : BOTTOM OF 5/8" THREAD ON 4m ALUMINIUM POLE  
 Date Installed : 1998-03-07T12:00Z  
 Geologic Characteristic : BOULDER CLAY  
 Bedrock Type : SEDIMENTARY (WESTPHALIAN)  
 Bedrock Condition : (FRESH/JOINTED/WEATHERED)  
 Fracture Spacing : (1-10 cm/11-50 cm/51-200 cm/over 200 cm)  
 Fault zones nearby : (YES/NO/Name of the zone)  
 Distance/activity : (multiple lines)  
 Additional Information : The monument is mounted in the  
 : tide gauge building, which is located  
 : on a concrete quay, with piled  
 : foundations  
 : The GPS antenna is located on the monument  
 : which consists of a 4m aluminium pole, which is  
 : fixed to the concrete quay, in the tide gauge  
 : building.  
 : The GPS antenna is attached to the aluminium  
 : pole using a 5/8" thread.  
 : The male part of the 5/8" thread is on the  
 : aluminium pole and the bottom of the thread  
 : serves as the survey marker.

### 2. Site Location Information

City or Town : North Shields  
 State or Province : Northumbria  
 Country : England  
 Tectonic Plate : EURASIAN  
 Approximate Position  
 X coordinate (m) : 3664792.2  
 Y coordinate (m) : -92117.3  
 Z coordinate (m) : 5201903.7  
 Latitude (N is +) : +550026.70  
 Longitude (E is +) : -0012623.53  
 Elevation (m,ellips.) : 56.9  
 Additional Information : (multiple lines)

### 3. GNSS Receiver Information

3.1 Receiver Type : ASHTECH Z-XII3  
 Satellite System : GPS  
 Serial Number : ???????  
 Firmware Version : 1I00  
 Elevation Cutoff Setting : 5  
 Date Installed : 1998-03-15T00:00Z  
 Date Removed : 1998-08-23T23:59Z  
 Temperature Stabiliz. : NONE  
 Additional Information : Full receiver serial number not known.

```

: Not continuous operation.
: Download using HOSE?
: Conversion to RINEX using ASHTORIN
: (with codephase smoothing).

3.2 Receiver Type      : ASHTECH Z-XII3
Satellite System      : GPS
Serial Number         : 982
Firmware Version      : 1I00
Elevation Cutoff Setting : 5
Date Installed        : 1999-08-10T00:00Z
Date Removed          : 1999-08-13T23:59Z
Temperature Stabiliz. : NONE
Additional Information : Full receiver serial number not known.
: Not continuous operation.
: Download using HOSE?
: Conversion to RINEX using ASHTORIN
: (with codephase smoothing).

3.3 Receiver Type      : ASHTECH Z-XII3
Satellite System      : GPS
Serial Number         : ??????
Firmware Version      : 1L00
Elevation Cutoff Setting : 5
Date Installed        : 1999-12-03T00:00Z
Date Removed          : 1999-12-09T23:59Z
Temperature Stabiliz. : NONE
Additional Information : Full receiver serial number not known.
: Not continuous operation.
: Download using HOSE?
: Conversion to RINEX using ASHTORIN
: (with codephase smoothing).

3.4 Receiver Type      : ASHTECH Z-XII3
Satellite System      : GPS
Serial Number         : 00111
Firmware Version      : 1L00
Elevation Cutoff Setting : 5
Date Installed        : 2000-02-12T00:00Z
Date Removed          : 2000-10-15T23:59Z
Temperature Stabiliz. : NONE
Additional Information : Full receiver serial number is LP 00111.

3.5 Receiver Type      : ASHTECH Z-XII3
Satellite System      : GPS
Serial Number         : 00111
Firmware Version      : CD00
Elevation Cutoff Setting : 5
Date Installed        : 2001-05-15T00:00Z
Date Removed          : 2002-04-03T23:59Z
Temperature Stabiliz. : NONE
Additional Information : Full receiver serial number is LP 00111.
: Operation using a direct modem connection
: Download using CGREMOTE v5.4.00 CGRSCD00 and
: CGHOSE v6.0.00 CGRSCD00.
: Conversion to RINEX using ASRINEXO v2.9.7
: (with PR SMOOTH FLAG 0).

3.6 Receiver Type      : ASHTECH Z-XII3
Satellite System      : GPS
Serial Number         : 01845
Firmware Version      : CD00
Elevation Cutoff Setting : 5
Date Installed        : 2002-04-05T00:00Z
Date Removed          : 2002-05-16T23:59Z
Temperature Stabiliz. : NONE
Additional Information : Full receiver serial number is LP 01845.
: Operation using a direct modem connection.
: Download using CGREMOTE v5.4.00 CGRSCD00 and
: CGHOSE v6.0.00 CGRSCD00.
: Conversion to RINEX using ASRINEXO v2.9.7
: (with PR SMOOTH FLAG 0).

3.7 Receiver Type      : ASHTECH Z-XII3
Satellite System      : GPS
Serial Number         : 00111
Firmware Version      : CD00
Elevation Cutoff Setting : 5
Date Installed        : 2002-05-18T00:00Z
Date Removed          : CCYY-MM-DDThh:mmZ

```

```

Temperature Stabiliz.      : NONE
Additional Information     : Full receiver serial number is LP 00111.
                          : Operation using a direct modem connection.
                          : Download using CGREMOTE v5.4.00 CGRSCD00 and
                          : CGHOSE v6.0.00 CGRSCD00.
                          : Conversion to RINEX using ASRINEXO v2.9.7
                          : (with PR SMOOTH FLAG 0).

3.x Receiver Type         : (A20, from rcvr_ant.tab; see instructions)
Satellite System          : (GPS/GLONASS/GPS+GLONASS)
Serial Number             : (A5)
Firmware Version          : (A11)
Elevation Cutoff Setting : (deg)
Date Installed            : (CCYY-MM-DDThh:mmZ)
Date Removed              : (CCYY-MM-DDThh:mmZ)
Temperature Stabiliz.     : (none or tolerance in degrees C)
Additional Information     : (multiple lines)

4. GNSS Antenna Information

4.1 Antenna Type          : ASH700936B_M
Serial Number             : ??????
Antenna Reference Point  : BPA
Marker->ARP Up Ecc. (m)  : 0.0000
Marker->ARP North Ecc(m) : 0.0000
Marker->ARP East Ecc(m)  : 0.0000
Alignment from True N    : 0
Antenna Radome Type      : NONE
Radome Serial Number     :
Antenna Cable Type       :
Antenna Cable Length     :
Date Installed            : 1998-03-15T00:00Z
Date Removed              : 1998-08-23T23:59Z
Additional Information     : Full antenna serial number is not known.

4.2 Antenna Type          : ASH700936B_M    SNOW
Serial Number             : 146
Antenna Reference Point  : BPA
Marker->ARP Up Ecc. (m)  : 0.0000
Marker->ARP North Ecc(m) : 0.0000
Marker->ARP East Ecc(m)  : 0.0000
Alignment from True N    : 0
Antenna Radome Type      : SNOW
Radome Serial Number     :
Antenna Cable Type       :
Antenna Cable Length     :
Date Installed            : 1999-08-10T00:00Z
Date Removed              : 1999-08-13T23:59Z
Additional Information     : Full antenna serial number is not known.

4.3 Antenna Type          : ASH700936B_M    SNOW
Serial Number             : ??????
Antenna Reference Point  : BPA
Marker->ARP Up Ecc. (m)  : 0.0000
Marker->ARP North Ecc(m) : 0.0000
Marker->ARP East Ecc(m)  : 0.0000
Alignment from True N    : 0
Antenna Radome Type      : SNOW
Radome Serial Number     :
Antenna Cable Type       :
Antenna Cable Length     :
Date Installed            : 1999-12-03T00:00Z
Date Removed              : 1999-12-09T23:59Z
Additional Information     : Full antenna serial number is not known.

4.4 Antenna Type          : ASH700936B_M    SNOW
Serial Number             : 13570
Antenna Reference Point  : BPA
Marker->ARP Up Ecc. (m)  : 0.0000
Marker->ARP North Ecc(m) : 0.0000
Marker->ARP East Ecc(m)  : 0.0000
Alignment from True N    : 0
Antenna Radome Type      : SNOW
Radome Serial Number     :
Antenna Cable Type       :
Antenna Cable Length     :
Date Installed            : 2000-02-12T00:00Z
Date Removed              : 2000-10-15T23:59Z
Additional Information     : Full antenna serial number is CR 13570.

```

4.5 Antenna Type : ASH700936B\_M SNOW  
 Serial Number : 13570  
 Antenna Reference Point : BPA  
 Marker->ARP Up Ecc. (m) : 0.0000  
 Marker->ARP North Ecc(m) : 0.0000  
 Marker->ARP East Ecc(m) : 0.0000  
 Alignment from True N : 0  
 Antenna Radome Type : SNOW  
 Radome Serial Number :  
 Antenna Cable Type :  
 Antenna Cable Length : 10m  
 Date Installed : 2001-05-15T00:00Z  
 Date Removed : 2001-06-12T12:59Z  
 Additional Information : Full antenna serial number is CR 13570.

4.6 Antenna Type : ASH700936B\_M SNOW  
 Serial Number : 13570  
 Antenna Reference Point : BPA  
 Marker->ARP Up Ecc. (m) : 0.0000  
 Marker->ARP North Ecc(m) : 0.0000  
 Marker->ARP East Ecc(m) : 0.0000  
 Alignment from True N : 0  
 Antenna Radome Type : SNOW  
 Radome Serial Number :  
 Antenna Cable Type :  
 Antenna Cable Length : 30m  
 Date Installed : 2001-06-12T13:00Z  
 Date Removed : 2002-03-11T23:59Z  
 Additional Information : Full antenna serial number is CR 13570.

4.7 Antenna Type : ASH701945C\_M SNOW  
 Serial Number : 10213  
 Antenna Reference Point : BPA  
 Marker->ARP Up Ecc. (m) : 0.0000  
 Marker->ARP North Ecc(m) : 0.0000  
 Marker->ARP East Ecc(m) : 0.0000  
 Alignment from True N : 0  
 Antenna Radome Type : SNOW  
 Radome Serial Number :  
 Antenna Cable Type :  
 Antenna Cable Length : 30m  
 Date Installed : 2002-03-13T00:00Z  
 Date Removed : 2002-04-03T23:59Z  
 Additional Information : Full antenna serial number is CR5 2001 0213.

4.8 Antenna Type : ASH700936B\_M SNOW  
 Serial Number : 13570  
 Antenna Reference Point : BPA  
 Marker->ARP Up Ecc. (m) : 0.0000  
 Marker->ARP North Ecc(m) : 0.0000  
 Marker->ARP East Ecc(m) : 0.0000  
 Alignment from True N : 0  
 Antenna Radome Type : SNOW  
 Radome Serial Number :  
 Antenna Cable Type :  
 Antenna Cable Length : 30m  
 Date Installed : 2002-04-05T00:00Z  
 Date Removed : 2003-10-20T15:59Z  
 Additional Information : Full antenna serial number is CR 13570.

4.9 Antenna Type : ASH700936B\_M SNOW  
 Serial Number : 13570  
 Antenna Reference Point : BPA  
 Marker->ARP Up Ecc. (m) : 0.0000  
 Marker->ARP North Ecc(m) : 0.0000  
 Marker->ARP East Ecc(m) : 0.0000  
 Alignment from True N : 0  
 Antenna Radome Type : SNOW  
 Radome Serial Number :  
 Antenna Cable Type :  
 Antenna Cable Length : 30m  
 Date Installed : 2003-10-20T16:00Z  
 Date Removed : 2003-11-18T10:00Z  
 Additional Information : Full antenna serial number is CR 13570.  
 : Antenna cable replaced.

4.10 Antenna Type : ASH700936B\_M SNOW  
 Serial Number : 13570  
 Antenna Reference Point : BPA

```

Marker->ARP Up Ecc. (m) : 0.0000
Marker->ARP North Ecc(m) : 0.0000
Marker->ARP East Ecc(m) : 0.0000
Alignment from True N : 0
Antenna Radome Type : SNOW
Radome Serial Number :
Antenna Cable Type :
Antenna Cable Length : 30m
Date Installed : 2003-11-18T11:00Z
Date Removed : CCYY-MM-DDThh:mmZ
Additional Information : Full antenna serial number is CR 13570.
                       : Antenna cable replaced.

```

```

4.x Antenna Type : (A20 from rcvr_ant.tab; see instructions)
Serial Number : (A*, but note the first A5 is used in SINEX)
Antenna Reference Point : (BPA/BCR/XXX from "antenna.gra"; see instr.)
Marker->ARP Up Ecc. (m) : (F8.4)
Marker->ARP North Ecc(m) : (F8.4)
Marker->ARP East Ecc(m) : (F8.4)
Alignment from True N : (deg; + is clockwise/east)
Antenna Radome Type : (A4 from rcvr_ant.tab; see instructions)
Radome Serial Number :
Antenna Cable Type : (vendor & type number)
Antenna Cable Length : (m)
Date Installed : (CCYY-MM-DDThh:mmZ)
Date Removed : (CCYY-MM-DDThh:mmZ)
Additional Information : (multiple lines)

```

#### 5. Surveyed Local Ties

```

5.x Tied Marker Name :
Tied Marker Usage : (SLR/VLBI/LOCAL CONTROL/FOOTPRINT/etc)
Tied Marker CDP Number : (A4)
Tied Marker DOMES Number : (A9)
Differential Components from GNSS Marker to the tied monument (ITRS)
  dx (m) : (m)
  dy (m) : (m)
  dz (m) : (m)
Accuracy (mm) : (mm)
Survey method : (GPS CAMPAIGN/TRILATERATION/TRIANGULATION/etc)
Date Measured : (CCYY-MM-DDThh:mmZ)
Additional Information : (multiple lines)

```

#### 6. Frequency Standard

```

6.1 Standard Type : INTERNAL
Input Frequency : (if external)
Effective Dates : 1998-03-22/CCYY-MM-DD
Notes : (multiple lines)

6.x Standard Type : (INTERNAL or EXTERNAL H-MASER/CESIUM/etc)
Input Frequency : (if external)
Effective Dates : (CCYY-MM-DD/CCYY-MM-DD)
Notes : (multiple lines)

```

#### 7. Collocation Information

```

7.x Instrumentation Type : (GPS/GLONASS/DORIS/PRARE/SLR/VLBI/TIME/etc)
Status : (PERMANENT/MOBILE)
Effective Dates : (CCYY-MM-DD/CCYY-MM-DD)
Notes : (multiple lines)

```

#### 8. Meteorological Instrumentation

```

8.1.1 Humidity Sensor Model : NONE
Manufacturer :
Serial Number :
Data Sampling Interval : (sec)
Accuracy (% rel h) : (% rel h)
Aspiration : (UNASPIRATED/NATURAL/FAN/etc)
Height Diff to Ant : (m)
Calibration date : (CCYY-MM-DD)
Effective Dates : (CCYY-MM-DD/CCYY-MM-DD)
Notes : (multiple lines)

```

```

8.1.x Humidity Sensor Model :

```

```

Manufacturer      :
Serial Number     :
Data Sampling Interval : (sec)
Accuracy (% rel h) : (% rel h)
Aspiration        : (UNASPIRATED/NATURAL/FAN/etc)
Height Diff to Ant : (m)
Calibration date  : (CCYY-MM-DD)
Effective Dates   : (CCYY-MM-DD/CCYY-MM-DD)
Notes             : (multiple lines)

8.2.1 Pressure Sensor Model : NONE
Manufacturer             :
Serial Number           :
Data Sampling Interval  : (sec)
Accuracy                 : (hPa)
Height Diff to Ant     : (m)
Calibration date       : (CCYY-MM-DD)
Effective Dates        : (CCYY-MM-DD/CCYY-MM-DD)
Notes                   : (multiple lines)

8.2.x Pressure Sensor Model :
Manufacturer             :
Serial Number           :
Data Sampling Interval  : (sec)
Accuracy                 : (hPa)
Height Diff to Ant     : (m)
Calibration date       : (CCYY-MM-DD)
Effective Dates        : (CCYY-MM-DD/CCYY-MM-DD)
Notes                   : (multiple lines)

8.3.1 Temp. Sensor Model   : NONE
Manufacturer             :
Serial Number           :
Data Sampling Interval  : (sec)
Accuracy                 : (deg C)
Aspiration              : (UNASPIRATED/NATURAL/FAN/etc)
Height Diff to Ant     : (m)
Calibration date       : (CCYY-MM-DD)
Effective Dates        : (CCYY-MM-DD/CCYY-MM-DD)
Notes                   : (multiple lines)

8.3.x Temp. Sensor Model   :
Manufacturer             :
Serial Number           :
Data Sampling Interval  : (sec)
Accuracy                 : (deg C)
Aspiration              : (UNASPIRATED/NATURAL/FAN/etc)
Height Diff to Ant     : (m)
Calibration date       : (CCYY-MM-DD)
Effective Dates        : (CCYY-MM-DD/CCYY-MM-DD)
Notes                   : (multiple lines)

8.4.1 Water Vapor Radiometer : NONE
Manufacturer             :
Serial Number           :
Distance to Antenna    : (m)
Height Diff to Ant     : (m)
Calibration date       : (CCYY-MM-DD)
Effective Dates        : (CCYY-MM-DD/CCYY-MM-DD)
Notes                   : (multiple lines)

8.4.x Water Vapor Radiometer :
Manufacturer             :
Serial Number           :
Distance to Antenna    : (m)
Height Diff to Ant     : (m)
Calibration date       : (CCYY-MM-DD)
Effective Dates        : (CCYY-MM-DD/CCYY-MM-DD)
Notes                   : (multiple lines)

8.5.x Other Instrumentation : (multiple lines)

9. Local Ongoing Conditions Possibly Affecting Computed Position

9.1.x Radio Interferences : (TV/CELL PHONE ANTENNA/RADAR/etc)
Observed Degradations   : (SN RATIO/DATA GAPS/etc)
Effective Dates         : (CCYY-MM-DD/CCYY-MM-DD)
Additional Information   : (multiple lines)

```

9.2.x Multipath Sources : (METAL ROOF/DOME/VLBI ANTENNA/etc)  
 Effective Dates : (CCYY-MM-DD/CCYY-MM-DD)  
 Additional Information : (multiple lines)

9.3.x Signal Obstructions : (TREES/BUILDINGS/etc)  
 Effective Dates : (CCYY-MM-DD/CCYY-MM-DD)  
 Additional Information : (multiple lines)

10. Local Episodic Effects Possibly Affecting Data Quality

10.1 Date : (CCYY-MM-DDThh:mmZ)  
 Event : (TREE CLEARING/CONSTRUCTION/etc)

10.x Date : (CCYY-MM-DDThh:mmZ)  
 Event : (TREE CLEARING/CONSTRUCTION/etc)

11. On-Site, Point of Contact Agency Information

Agency : Port of Tyne Authority  
 Preferred Abbreviation :  
 Mailing Address : Neville House  
 : Bell Street  
 : North Shields NE30 1LJ  
 : UK

Primary Contact  
 Contact Name : Port Control  
 Telephone (primary) :  
 Telephone (secondary) :  
 Fax :  
 E-mail :

Secondary Contact  
 Contact Name : Martin Robertson  
 Telephone (primary) : +44 (0)191 2227834  
 Telephone (secondary) : +44 (0)191 2226445  
 Fax : +44 (0)191 2228691  
 E-mail : Martin.Robertson@newcastle.ac.uk  
 Additional Information : (multiple lines)

12. Responsible Agency (if different from 11.)

Agency : IESSG  
 Preferred Abbreviation : IESSG  
 Mailing Address : University of Nottingham  
 : University Park  
 : Nottingham NG72RD  
 : UK

Primary Contact  
 Contact Name : Richard Bingley  
 Telephone (primary) : +44 (0)115 9513932  
 Telephone (secondary) : +44 (0)115 9513880  
 Fax : +44 (0)115 9513881  
 E-mail : richard.bingley@nottingham.ac.uk

Secondary Contact  
 Contact Name : IESSG Experimental Officers  
 Telephone (primary) : +44 (0)115 9513921  
 Telephone (secondary) : +44 (0)115 9513880  
 Fax : +44 (0)115 9513881  
 E-mail : iessg@nottingham.ac.uk

Additional Information : NSTG is operated jointly by the  
 : University of Newcastle-upon-Tyne and  
 : the IESSG for the  
 : Proudman Oceanographic Laboratory and  
 : the UK Department of Environment, Flooding  
 : and Rural Affairs (DEFRA)

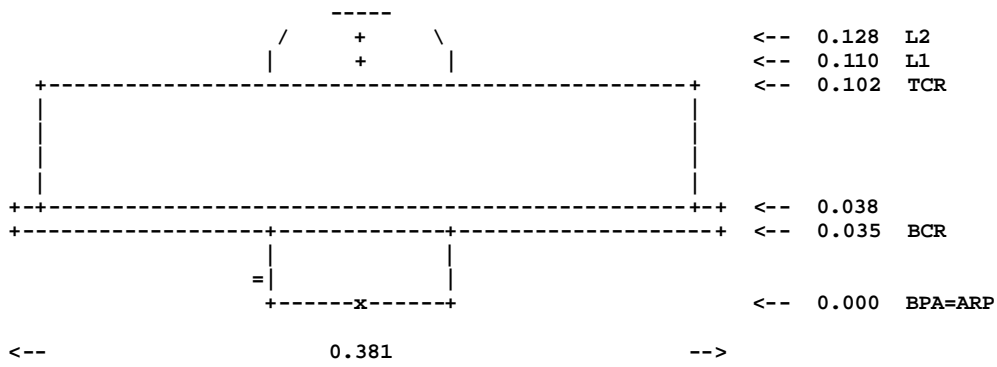
13. More Information

Primary Data Center :  
 Secondary Data Center :  
 URL for More Information : <http://www.bigf.ac.uk>  
 Hardcopy on File

Site Map : Y  
 Site Diagram : Y  
 Horizon Mask : Y  
 Monument Description : Y  
 Site Pictures : Y  
 Additional Information : (multiple lines)

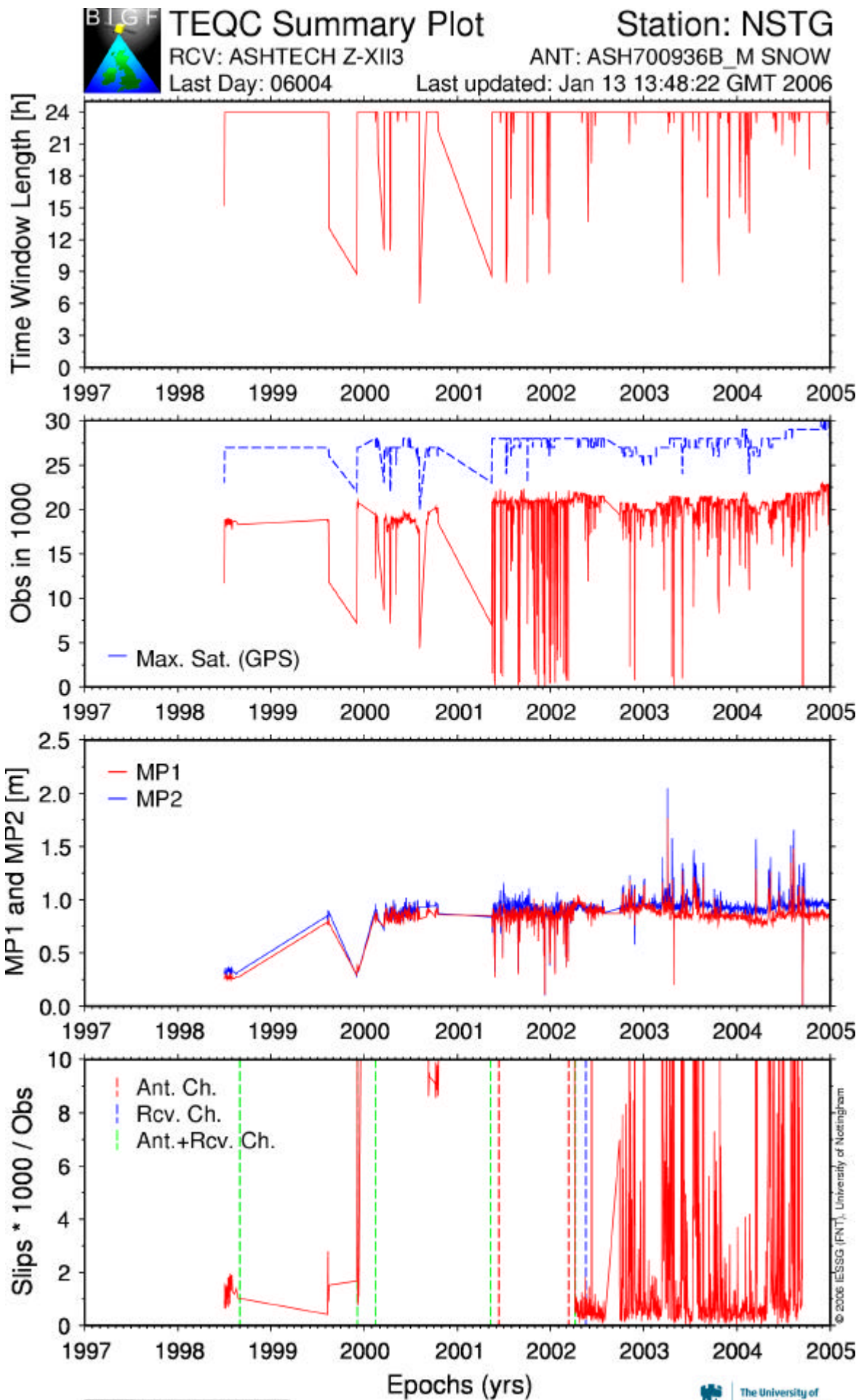
Antenna Graphics with Dimensions

ASH700936B\_M



ARP: Antenna Reference Point  
L1 : L1 Phase Center  
TCR: Top of Choking

L2 : L2 Phase Center  
BCR: Bottom of Choking



GM 2006 Jan 13 13:48:23



## Portsmouth

PMTG Site Information Form (site log)  
 International GPS Service  
 See Instructions at:  
[ftp://igsch.jpl.nasa.gov/pub/station/general/sitelog\\_instr.txt](ftp://igsch.jpl.nasa.gov/pub/station/general/sitelog_instr.txt)

### 0. Form

Prepared by (full name) : Richard Bingley  
 Date Prepared : 2001-09-25  
 Report Type : NEW  
 If Update:  
 Previous Site Log :  
 Modified/Added Sections :

### 1. Site Identification of the GNSS Monument

Site Name : Portsmouth Tide Gauge  
 Four Character ID : PMTG  
 Monument Inscription :  
 IERS DOMES Number : 13289M003  
 CDP Number : (A4)  
 Monument Description : STEEL BRACKET  
 Height of the Monument : 1.5m  
 Monument Foundation : BUILDING  
 Foundation Depth : (m)  
 Marker Description : TOP OF 5/8" THREAD ON 1.5m STEEL POLE/BRACKET  
 Date Installed : 2001-09-25T12:00Z  
 Geologic Characteristic : ALLUVIUM  
 Bedrock Type : SEDIMENTARY (BAGSHOT BEDS)  
 Bedrock Condition : (FRESH/JOINTED/WEATHERED)  
 Fracture Spacing : (1-10 cm/11-50 cm/51-200 cm/over 200 cm)  
 Fault zones nearby : (YES/NO/Name of the zone)  
 Distance/activity : (multiple lines)  
 Additional Information : The monument is mounted on the North end  
 : wall of a single storey brick building,  
 : which houses the tide gauge equipment,  
 : so that the antenna is raised above the  
 : roof apex.  
 : The GPS antenna is located on the monument  
 : which consists of a steel bracket with a 1.5m  
 : pole.  
 : The GPS antenna is attached to the steel pole  
 : using a 5/8" thread.  
 : The antenna height is taken as 0.000m (ie the  
 : survey marker is on the pole and is coincident  
 : with the GPS ARP).

### 2. Site Location Information

City or Town : Portsmouth  
 State or Province : Hampshire  
 Country : England  
 Tectonic Plate : EURASIAN  
 Approximate Position  
 X coordinate (m) : 4038372.3  
 Y coordinate (m) : -78330.6  
 Z coordinate (m) : 4919718.8  
 Latitude (N is +) : +504808.36  
 Longitude (E is +) : -0010640.33  
 Elevation (m,ellips.) : 55.4  
 Additional Information : (multiple lines)

### 3. GNSS Receiver Information

3.1 Receiver Type : ASHTECH UZ-12  
 Satellite System : GPS  
 Serial Number : 10206  
 Firmware Version : CJ00  
 Elevation Cutoff Setting : 5  
 Date Installed : 2001-09-25T00:00Z  
 Date Removed : CCYY-MM-DDThh:mmZ  
 Temperature Stabiliz. : NONE  
 Additional Information : Receiver is an Ashtech Micro-Z.

```

: Full receiver serial number is ZR 2001 0206.
: Operation using a direct modem connection.
: Download using MicroManager Pro v1.1.00 (2001).
: Conversion to RINEX using ASRINEXO v2.9.7
: (with PR SMOOTH FLAG 0).

3.x Receiver Type      : (A20, from rcvr_ant.tab; see instructions)
   Satellite System    : (GPS/GLONASS/GPS+GLONASS)
   Serial Number       : (A5)
   Firmware Version    : (All)
   Elevation Cutoff Setting : (deg)
   Date Installed      : (CCYY-MM-DDThh:mmZ)
   Date Removed        : (CCYY-MM-DDThh:mmZ)
   Temperature Stabiliz. : (none or tolerance in degrees C)
   Additional Information : (multiple lines)

4. GNSS Antenna Information

4.1 Antenna Type      : ASH701945C_M    SNOW
   Serial Number      : 10214
   Antenna Reference Point : BPA
   Marker->ARP Up Ecc. (m) : 0.0000
   Marker->ARP North Ecc(m) : 0.0000
   Marker->ARP East Ecc(m) : 0.0000
   Alignment from True N : 0
   Antenna Radome Type : SNOW
   Radome Serial Number :
   Antenna Cable Type : ASHTECH 100914 REVA
   Antenna Cable Length : 30m
   Date Installed      : 2001-09-25T00:00Z
   Date Removed        : CCYY-MM-DDThh:mmZ
   Additional Information : Full antenna serial number is CR5 2001 0214.
: The antenna radome is painted black.

4.x Antenna Type      : (A20 from rcvr_ant.tab; see instructions)
   Serial Number      : (A*, but note the first A5 is used in SINEX)
   Antenna Reference Point : (BPA/BCR/XXX from "antenna.gra"; see instr.)
   Marker->ARP Up Ecc. (m) : (F8.4)
   Marker->ARP North Ecc(m) : (F8.4)
   Marker->ARP East Ecc(m) : (F8.4)
   Alignment from True N : (deg; + is clockwise/east)
   Antenna Radome Type : (A4 from rcvr_ant.tab; see instructions)
   Radome Serial Number :
   Antenna Cable Type : (vendor & type number)
   Antenna Cable Length : (m)
   Date Installed      : (CCYY-MM-DDThh:mmZ)
   Date Removed        : (CCYY-MM-DDThh:mmZ)
   Additional Information : (multiple lines)

5. Surveyed Local Ties

5.x Tied Marker Name :
   Tied Marker Usage : (SLR/VLBI/LOCAL CONTROL/FOOTPRINT/etc)
   Tied Marker CDP Number : (A4)
   Tied Marker DOMES Number : (A9)
   Differential Components from GNSS Marker to the tied monument (ITRS)
     dx (m) : (m)
     dy (m) : (m)
     dz (m) : (m)
   Accuracy (mm) : (mm)
   Survey method : (GPS CAMPAIGN/TRILATERATION/TRIANGULATION/etc)
   Date Measured : (CCYY-MM-DDThh:mmZ)
   Additional Information : (multiple lines)

6. Frequency Standard

6.1 Standard Type      : INTERNAL
   Input Frequency     : (if external)
   Effective Dates     : 2001-09-26/CCYY-MM-DD
   Notes               : (multiple lines)

6.x Standard Type      : (INTERNAL or EXTERNAL H-MASER/CESIUM/etc)
   Input Frequency     : (if external)
   Effective Dates     : (CCYY-MM-DD/CCYY-MM-DD)
   Notes               : (multiple lines)

```

## 7. Collocation Information

7.x Instrumentation Type : (GPS/GLONASS/DORIS/PRARE/SLR/VLBI/TIME/etc)  
 Status : (PERMANENT/MOBILE)  
 Effective Dates : (CCYY-MM-DD/CCYY-MM-DD)  
 Notes : (multiple lines)

## 8. Meteorological Instrumentation

8.1.1 Humidity Sensor Model : NONE  
 Manufacturer :  
 Serial Number :  
 Data Sampling Interval : (sec)  
 Accuracy (% rel h) : (% rel h)  
 Aspiration : (UNASPIRATED/NATURAL/FAN/etc)  
 Height Diff to Ant : (m)  
 Calibration date : (CCYY-MM-DD)  
 Effective Dates : (CCYY-MM-DD/CCYY-MM-DD)  
 Notes : (multiple lines)

8.1.x Humidity Sensor Model :  
 Manufacturer :  
 Serial Number :  
 Data Sampling Interval : (sec)  
 Accuracy (% rel h) : (% rel h)  
 Aspiration : (UNASPIRATED/NATURAL/FAN/etc)  
 Height Diff to Ant : (m)  
 Calibration date : (CCYY-MM-DD)  
 Effective Dates : (CCYY-MM-DD/CCYY-MM-DD)  
 Notes : (multiple lines)

8.2.1 Pressure Sensor Model : NONE  
 Manufacturer :  
 Serial Number :  
 Data Sampling Interval : (sec)  
 Accuracy : (hPa)  
 Height Diff to Ant : (m)  
 Calibration date : (CCYY-MM-DD)  
 Effective Dates : (CCYY-MM-DD/CCYY-MM-DD)  
 Notes : (multiple lines)

8.2.x Pressure Sensor Model :  
 Manufacturer :  
 Serial Number :  
 Data Sampling Interval : (sec)  
 Accuracy : (hPa)  
 Height Diff to Ant : (m)  
 Calibration date : (CCYY-MM-DD)  
 Effective Dates : (CCYY-MM-DD/CCYY-MM-DD)  
 Notes : (multiple lines)

8.3.1 Temp. Sensor Model : NONE  
 Manufacturer :  
 Serial Number :  
 Data Sampling Interval : (sec)  
 Accuracy : (deg C)  
 Aspiration : (UNASPIRATED/NATURAL/FAN/etc)  
 Height Diff to Ant : (m)  
 Calibration date : (CCYY-MM-DD)  
 Effective Dates : (CCYY-MM-DD/CCYY-MM-DD)  
 Notes : (multiple lines)

8.3.x Temp. Sensor Model :  
 Manufacturer :  
 Serial Number :  
 Data Sampling Interval : (sec)  
 Accuracy : (deg C)  
 Aspiration : (UNASPIRATED/NATURAL/FAN/etc)  
 Height Diff to Ant : (m)  
 Calibration date : (CCYY-MM-DD)  
 Effective Dates : (CCYY-MM-DD/CCYY-MM-DD)  
 Notes : (multiple lines)

8.4.1 Water Vapor Radiometer : NONE  
 Manufacturer :  
 Serial Number :  
 Distance to Antenna : (m)  
 Height Diff to Ant : (m)  
 Calibration date : (CCYY-MM-DD)

Effective Dates : (CCYY-MM-DD/CCYY-MM-DD)  
 Notes : (multiple lines)

8.4.x Water Vapor Radiometer :  
 Manufacturer :  
 Serial Number :  
 Distance to Antenna : (m)  
 Height Diff to Ant : (m)  
 Calibration date : (CCYY-MM-DD)  
 Effective Dates : (CCYY-MM-DD/CCYY-MM-DD)  
 Notes : (multiple lines)

8.5.x Other Instrumentation : (multiple lines)

9. Local Ongoing Conditions Possibly Affecting Computed Position

9.1.x Radio Interferences : (TV/CELL PHONE ANTENNA/RADAR/etc)  
 Observed Degradations : (SN RATIO/DATA GAPS/etc)  
 Effective Dates : (CCYY-MM-DD/CCYY-MM-DD)  
 Additional Information : (multiple lines)

9.2.x Multipath Sources : (METAL ROOF/DOME/VLBI ANTENNA/etc)  
 Effective Dates : (CCYY-MM-DD/CCYY-MM-DD)  
 Additional Information : (multiple lines)

9.3.x Signal Obstructions : (TREES/BUILDINGS/etc)  
 Effective Dates : (CCYY-MM-DD/CCYY-MM-DD)  
 Additional Information : (multiple lines)

10. Local Episodic Effects Possibly Affecting Data Quality

10.1 Date : (CCYY-MM-DDThh:mmZ)  
 Event : (TREE CLEARING/CONSTRUCTION/etc)

10.x Date : (CCYY-MM-DDThh:mmZ)  
 Event : (TREE CLEARING/CONSTRUCTION/etc)

11. On-Site, Point of Contact Agency Information

Agency : Queen's Harbour Master  
 Preferred Abbreviation :  
 Mailing Address : HM Naval Base  
 : Portsmouth  
 : Hampshire  
 : UK

Primary Contact  
 Contact Name : CPO Surveyor for Queen's Harbour Master  
 Telephone (primary) :  
 Telephone (secondary) :  
 Fax :  
 E-mail :

Secondary Contact  
 Contact Name :  
 Telephone (primary) :  
 Telephone (secondary) :  
 Fax :  
 E-mail :  
 Additional Information : (multiple lines)

12. Responsible Agency (if different from 11.)

Agency : IESSG  
 Preferred Abbreviation : IESSG  
 Mailing Address : University of Nottingham  
 : University Park  
 : Nottingham NG72RD  
 : UK

Primary Contact  
 Contact Name : Richard Bingley  
 Telephone (primary) : +44 (0)115 9513932  
 Telephone (secondary) : +44 (0)115 9513880  
 Fax : +44 (0)115 9513881  
 E-mail : richard.bingley@nottingham.ac.uk

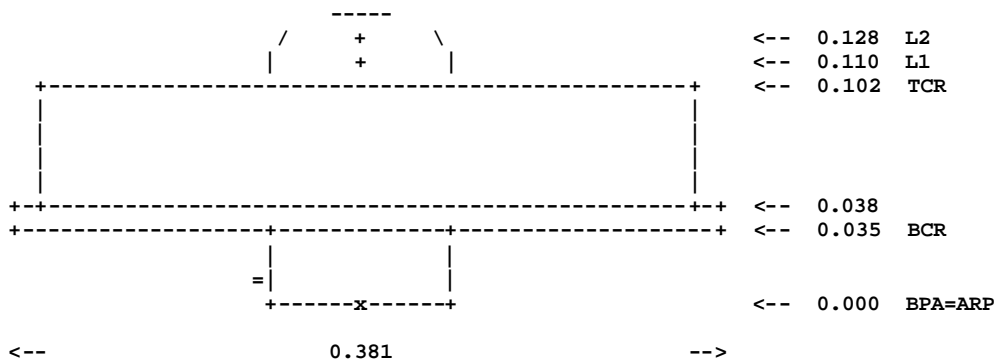
Secondary Contact  
 Contact Name : IESSG Experimental Officers  
 Telephone (primary) : +44 (0)115 9513921

Telephone (secondary) : +44 (0)115 9513880  
 Fax : +44 (0)115 9513881  
 E-mail : iessg@nottingham.ac.uk  
 Additional Information : PMTG is operated by the IESSG for the  
 Proudman Oceanographic Laboratory and  
 the UK Department of Environment, Flooding  
 and Rural Affairs (DEFRA)

13. More Information

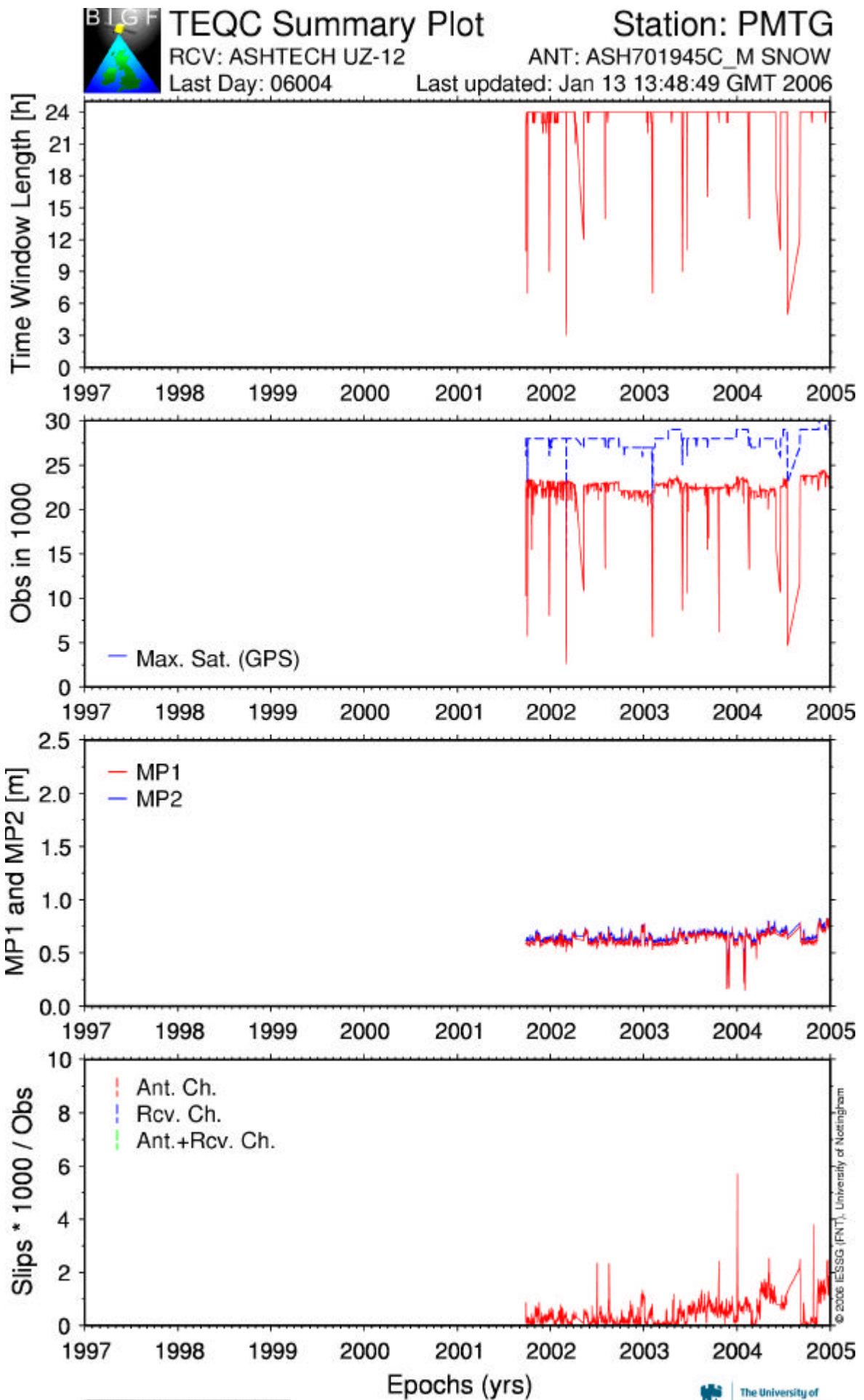
Primary Data Center :  
 Secondary Data Center :  
 URL for More Information : <http://www.bigf.ac.uk>  
 Hardcopy on File  
 Site Map : Y  
 Site Diagram : Y  
 Horizon Mask : Y  
 Monument Description : Y  
 Site Pictures : Y  
 Additional Information : (multiple lines)  
 Antenna Graphics with Dimensions

ASH701945C\_M



ARP: Antenna Reference Point  
 L1 : L1 Phase Center  
 TCR: Top of Choking

L2 : L2 Phase Center  
 BCR: Bottom of Choking



## Sheerness

SHEE Site Information Form (site log)  
 International GPS Service  
 See Instructions at:  
[ftp://igsch.jpl.nasa.gov/pub/station/general/sitelog\\_instr.txt](ftp://igsch.jpl.nasa.gov/pub/station/general/sitelog_instr.txt)

### 0. Form

Prepared by (full name) : Richard Bingley  
 Date Prepared : 2001-06-01  
 Report Type : NEW  
 If Update:  
 Previous Site Log :  
 Modified/Added Sections :

### 1. Site Identification of the GNSS Monument

Site Name : Sheerness Tide Gauge  
 Four Character ID : SHEE  
 Monument Inscription :  
 IERS DOMES Number : 13236M001  
 CDP Number : (A4)  
 Monument Description : STEEL BRACKET  
 Height of the Monument : 0.16m  
 Monument Foundation : ROOF  
 Foundation Depth : (m)  
 Marker Description : TOP OF 5/8" THREAD ON STEEL BRACKET  
 Date Installed : 1997-03-05T12:00Z  
 Geologic Characteristic : ALLUVIUM (CLAY, SILT, PEAT)  
 Bedrock Type : SEDIMENTARY (CHALK)  
 Bedrock Condition : (FRESH/JOINTED/WEATHERED)  
 Fracture Spacing : (1-10 cm/11-50 cm/51-200 cm/over 200 cm)  
 Fault zones nearby : (YES/NO/Name of the zone)  
 Distance/activity : (multiple lines)  
 Additional Information : The monument is mounted on the concrete  
 : slab roof of the tide gauge building,  
 : which is a single storey brick building  
 : located on a jetty with piled foundations.  
 : The GPS antenna is located on the monument  
 : which consists of a 0.16m high steel bracket  
 : fixed to the concrete roof of the tide gauge  
 : building.  
 : The GPS antenna is attached to the steel bracket  
 : using a 5/8" thread.  
 : The male part of the 5/8" thread is on the steel  
 : bracket and has a domed top, which serves as the  
 : survey marker.

### 2. Site Location Information

City or Town : Sheerness  
 State or Province : Isle of Sheppey  
 Country : England  
 Tectonic Plate : EURASIAN  
 Approximate Position (ITRF)  
 X coordinate (m) : 3983074.5  
 Y coordinate (m) : 51683.0  
 Z coordinate (m) : 4964639.6  
 Latitude (N is +) : +512644.44  
 Longitude (E is +) : +0004436.27  
 Elevation (m,ellips.) : 53.3  
 Additional Information : (multiple lines)

### 3. GNSS Receiver Information

3.1 Receiver Type : TRIMBLE 4000SSI  
 Satellite System : GPS  
 Serial Number : 16407  
 Firmware Version : 7.21  
 Elevation Cutoff Setting : 15  
 Date Installed : 1997-03-27T00:00Z  
 Date Removed : 1999-08-19T23:59Z  
 Temperature Stabiliz. : NONE  
 Additional Information : Full receiver serial number is 3628A16407.

```

: Operation using a direct modem connection.
: Download using RFILE v2.31 [21-MAR-97 TEST].
: Conversion to RINEX using DAT2RIN v2.20b.

3.2 Receiver Type      : TRIMBLE 4000SSI
   Satellite System    : GPS
   Serial Number       : 16407
   Firmware Version    : 7.29
   Elevation Cutoff Setting : 15
   Date Installed      : 1999-08-21T00:00Z
   Date Removed       : CCYY-MM-DDThh:mmZ
   Temperature Stabiliz. : NONE
   Additional Information : Full receiver serial number is 3628A16407.
: Operation using a direct modem connection.
: Download using RFILE v2.35 (20 DEC 99).
: Conversion to RINEX using DAT2RIN v2.35a.

3.x Receiver Type      : (A20, from rcvr_ant.tab; see instructions)
   Satellite System    : (GPS/GLONASS/GPS+GLONASS)
   Serial Number       : (A5)
   Firmware Version    : (A11)
   Elevation Cutoff Setting : (deg)
   Date Installed      : (CCYY-MM-DDThh:mmZ)
   Date Removed       : (CCYY-MM-DDThh:mmZ)
   Temperature Stabiliz. : (none or tolerance in degrees C)
   Additional Information : (multiple lines)

4. GNSS Antenna Information

4.1 Antenna Type      : TRM29659.00      NONE
   Serial Number       : 66923
   Antenna Reference Point : BPA
   Marker->ARP Up Ecc. (m) : -0.0070
   Marker->ARP North Ecc(m) : 0.0000
   Marker->ARP East Ecc(m) : 0.0000
   Alignment from True N : 0
   Antenna Radome Type  : NONE
   Radome Serial Number :
   Antenna Cable Type   : TRIMBLE 14553-00
   Antenna Cable Length : 10m
   Date Installed      : 1997-03-27T00:00Z
   Date Removed       : CCYY-MM-DDThh:mmZ
   Additional Information : Full antenna serial number is 0220066923.

4.x Antenna Type      : (A20 from rcvr_ant.tab; see instructions)
   Serial Number       : (A*, but note the first A5 is used in SINEX)
   Antenna Reference Point : (BPA/BCR/XXX from "antenna.gra"; see instr.)
   Marker->ARP Up Ecc. (m) : (F8.4)
   Marker->ARP North Ecc(m) : (F8.4)
   Marker->ARP East Ecc(m) : (F8.4)
   Alignment from True N : (deg; + is clockwise/east)
   Antenna Radome Type  : (A4 from rcvr_ant.tab; see instructions)
   Radome Serial Number :
   Antenna Cable Type   : (vendor & type number)
   Antenna Cable Length : (m)
   Date Installed      : (CCYY-MM-DDThh:mmZ)
   Date Removed       : (CCYY-MM-DDThh:mmZ)
   Additional Information : (multiple lines)

5. Surveyed Local Ties

5.x Tied Marker Name      :
   Tied Marker Usage     : (SLR/VLBI/LOCAL CONTROL/FOOTPRINT/etc)
   Tied Marker CDP Number : (A4)
   Tied Marker DOMES Number : (A9)
   Differential Components from GNSS Marker to the tied monument (ITRS)
     dx (m)              : (m)
     dy (m)              : (m)
     dz (m)              : (m)
   Accuracy (mm)        : (mm)
   Survey method         : (GPS CAMPAIGN/TRILATERATION/TRIANGULATION/etc)
   Date Measured        : (CCYY-MM-DDThh:mmZ)
   Additional Information : (multiple lines)

6. Frequency Standard

6.1 Standard Type       : INTERNAL

```

```

Input Frequency      : (if external)
Effective Dates     : 2001-03-27/CCYY-MM-DD
Notes               : (multiple lines)

6.x Standard Type   : (INTERNAL or EXTERNAL H-MASER/CESIUM/etc)
Input Frequency     : (if external)
Effective Dates     : (CCYY-MM-DD/CCYY-MM-DD)
Notes               : (multiple lines)

7. Collocation Information

7.x Instrumentation Type : (GPS/GLONASS/DORIS/PRARE/SLR/VLBI/TIME/etc)
Status               : (PERMANENT/MOBILE)
Effective Dates     : (CCYY-MM-DD/CCYY-MM-DD)
Notes               : (multiple lines)

8. Meteorological Instrumentation

8.1.1 Humidity Sensor Model : NONE
Manufacturer         :
Serial Number        :
Data Sampling Interval : (sec)
Accuracy (% rel h)   : (% rel h)
Aspiration           : (UNASPIRATED/NATURAL/FAN/etc)
Height Diff to Ant  : (m)
Calibration date    : (CCYY-MM-DD)
Effective Dates     : (CCYY-MM-DD/CCYY-MM-DD)
Notes               : (multiple lines)

8.1.x Humidity Sensor Model :
Manufacturer         :
Serial Number        :
Data Sampling Interval : (sec)
Accuracy (% rel h)   : (% rel h)
Aspiration           : (UNASPIRATED/NATURAL/FAN/etc)
Height Diff to Ant  : (m)
Calibration date    : (CCYY-MM-DD)
Effective Dates     : (CCYY-MM-DD/CCYY-MM-DD)
Notes               : (multiple lines)

8.2.1 Pressure Sensor Model : NONE
Manufacturer         :
Serial Number        :
Data Sampling Interval : (sec)
Accuracy             : (hPa)
Height Diff to Ant  : (m)
Calibration date    : (CCYY-MM-DD)
Effective Dates     : (CCYY-MM-DD/CCYY-MM-DD)
Notes               : (multiple lines)

8.2.x Pressure Sensor Model :
Manufacturer         :
Serial Number        :
Data Sampling Interval : (sec)
Accuracy             : (hPa)
Height Diff to Ant  : (m)
Calibration date    : (CCYY-MM-DD)
Effective Dates     : (CCYY-MM-DD/CCYY-MM-DD)
Notes               : (multiple lines)

8.3.1 Temp. Sensor Model : NONE
Manufacturer         :
Serial Number        :
Data Sampling Interval : (sec)
Accuracy             : (deg C)
Aspiration           : (UNASPIRATED/NATURAL/FAN/etc)
Height Diff to Ant  : (m)
Calibration date    : (CCYY-MM-DD)
Effective Dates     : (CCYY-MM-DD/CCYY-MM-DD)
Notes               : (multiple lines)

8.3.x Temp. Sensor Model :
Manufacturer         :
Serial Number        :
Data Sampling Interval : (sec)
Accuracy             : (deg C)
Aspiration           : (UNASPIRATED/NATURAL/FAN/etc)
Height Diff to Ant  : (m)

```

Calibration date : (CCYY-MM-DD)  
 Effective Dates : (CCYY-MM-DD/CCYY-MM-DD)  
 Notes : (multiple lines)

8.4.1 Water Vapor Radiometer : NONE  
 Manufacturer :  
 Serial Number :  
 Distance to Antenna : (m)  
 Height Diff to Ant : (m)  
 Calibration date : (CCYY-MM-DD)  
 Effective Dates : (CCYY-MM-DD/CCYY-MM-DD)  
 Notes : (multiple lines)

8.4.x Water Vapor Radiometer :  
 Manufacturer :  
 Serial Number :  
 Distance to Antenna : (m)  
 Height Diff to Ant : (m)  
 Calibration date : (CCYY-MM-DD)  
 Effective Dates : (CCYY-MM-DD/CCYY-MM-DD)  
 Notes : (multiple lines)

8.5.x Other Instrumentation : (multiple lines)

9. Local Ongoing Conditions Possibly Affecting Computed Position

9.1.x Radio Interferences : (TV/CELL PHONE ANTENNA/RADAR/etc)  
 Observed Degradations : (SN RATIO/DATA GAPS/etc)  
 Effective Dates : (CCYY-MM-DD/CCYY-MM-DD)  
 Additional Information : (multiple lines)

9.2.x Multipath Sources : (METAL ROOF/DOME/VLBI ANTENNA/etc)  
 Effective Dates : (CCYY-MM-DD/CCYY-MM-DD)  
 Additional Information : (multiple lines)

9.3.x Signal Obstructions : (TREES/BUILDINGS/etc)  
 Effective Dates : (CCYY-MM-DD/CCYY-MM-DD)  
 Additional Information : (multiple lines)

10. Local Episodic Effects Possibly Affecting Data Quality

10.1 Date : (CCYY-MM-DDThh:mmZ)  
 Event : (TREE CLEARING/CONSTRUCTION/etc)

10.x Date : (CCYY-MM-DDThh:mmZ)  
 Event : (TREE CLEARING/CONSTRUCTION/etc)

11. On-Site, Point of Contact Agency Information

Agency : Medway Ports  
 Preferred Abbreviation : (A10)  
 Mailing Address : Sheerness Docks  
 : Sheerness  
 : Kent ME121RX  
 : UK

Primary Contact  
 Contact Name : Mike Hillier  
 Telephone (primary) :  
 Telephone (secondary) :  
 Fax :  
 E-mail :

Secondary Contact  
 Contact Name : Phillip Woodgate  
 Telephone (primary) :  
 Telephone (secondary) :  
 Fax :  
 E-mail :  
 Additional Information : (multiple lines)

12. Responsible Agency (if different from 11.)

Agency : IESSG  
 Preferred Abbreviation : IESSG  
 Mailing Address : University of Nottingham  
 : University Park  
 : Nottingham NG72RD

```

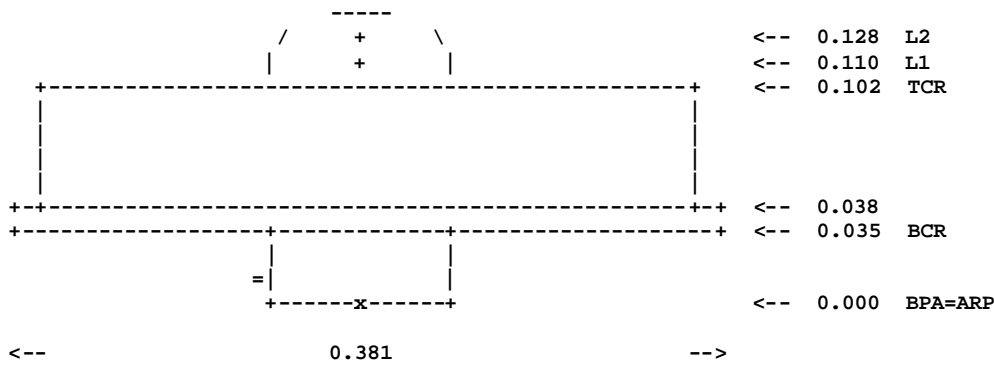
: UK
Primary Contact
Contact Name      : Richard Bingley
Telephone (primary) : +44 (0)115 9513932
Telephone (secondary) : +44 (0)115 9513880
Fax              : +44 (0)115 9513881
E-mail          : richard.bingley@nottingham.ac.uk
Secondary Contact
Contact Name      : IESSG Experimental Officers
Telephone (primary) : +44 (0)115 9513921
Telephone (secondary) : +44 (0)115 9513880
Fax              : +44 (0)115 9513881
E-mail          : iessg@nottingham.ac.uk
Additional Information : SHEE is operated by the IESSG for the
                  : Environment Agency of England and Wales
    
```

13. More Information

```

Primary Data Center :
Secondary Data Center :
URL for More Information : http://www.bigf.ac.uk
Hardcopy on File
Site Map            : Y
Site Diagram       : Y
Horizon Mask       : Y
Monument Description : Y
Site Pictures      : Y
Additional Information : (multiple lines)
Antenna Graphics with Dimensions
    
```

TRM29659.00



```

ARP: Antenna Reference Point
L1 : L1 Phase Center
TCR: Top of Chokering
L2 : L2 Phase Center
BCR: Bottom of Chokering
    
```

