

# NPL TWSTFT Status Report

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CCTF WG on TWSTFT

6-7 September 2012

National  
Measurement  
System



# NPL organisation

NPL organised into 5 science divisions

Time, Quantum &  
Electromagnetics Division  
*Rhys Lewis*

TQEM divided into 4 groups

Time & Frequency Group  
*Group Leader: Leon Lobo*  
*Technical Leader: Patrick Gill*

Time  
*John Davis*  
*Setnam Shemar*  
*Peter Whibberley*

Cs fountain  
*Krzysztof Szymaniec*  
*Stephen Lea*

Optical frequency  
& length standards  
*14 scientists*  
*3 students*

# Time transfer

- Both GPS and TWSTFT methods in use
- Operational GPS receivers at NPL:
  - Dicom GTR50 carrier-phase receiver
  - 3 Time & Frequency Solutions TimeTrace receivers
- Procurement of GPS/Glonass/Galileo receiver planned
- Investigation of time transfer over dark optical fibre



- One Ku-band TWSTFT earth station operational (NPL01)
- Second station being assembled
- Aim is to have one continuously operating station and one available as backup and for research



## Operational station NPL01

- Utilises Prodelin 1.8m antenna,  
Anacom SeKu 8W transceiver,  
Dual-Rx Satre modem s/n 74  
LabView control & scheduling software  
Linked to maser providing UTC(NPL) by ~900m of  
phase-stable coax (Andrew Heliax)
- Not currently operating USA links due to unreliability  
of frequency switching
- Last calibrated by travelling TW station in Sept 2008,  
calibrated against PTB GPS receiver in Oct 2010

## New station NPL02

- Located on raised platform roof of 'new' NPL building
- All components available; software under development
- Unlikely to be operational before early 2013



# National Measurement System



*The National Measurement System delivers world-class measurement science & technology through these organisations*



The National Measurement System is the UK's national infrastructure of measurement Laboratories, which deliver world-class measurement science and technology through four National Measurement Institutes (NMIs): LGC, NPL the National Physical Laboratory, TUV NEL The former National Engineering Laboratory, and the National Measurement Office (NMO).