European Space Agency

Dongara joins ESA's tracking network for XMM-Newton

Dongara 13m tracking station

31 October 2007

With ESA's Perth station off-line for regular maintenance, the 13m station at Dongara, Western Australia, temporarily joined ESTRACK to support XMM-Newton.

The 15m ESTRACK station at Perth, Australia, was taken out of service for scheduled maintenance in September, leaving a coverage gap for current missions.

The Perth station is normally used for routine TT&C (tracking, telemetry and commanding) for the Agency's XMM-Newton space observatory. XMM-Newton has no on-board storage, so science data must be immediately down-linked, making planning, scheduling and conducting ground tracking passes particularly challenging.

Dongara in great location

Attention quickly fell on Dongara, a 13m station owned by Universal Space Network (USN) Inc., which is sometimes used to augment the regular ESTRACK network.

"We looked for an alternate station, and as Dongara is only 300 km north of Perth, it was a perfect geographical replacement. Also, we had used Dongara before, for the MetOp launch and early orbit phase," says Marko Butkovic, the Dongara project manager at ESOC, ESA's Space Operations Centre, in Darmstadt, Germany.

XMM-Newton spacecraft

The deadline to bring Dongara into operation was tight - 30 September 2007, when Perth went off-line - and it was determined that the station would require hardware and software upgrades to meet stringent XMM-Newton requirements.

Dongara would also have to fully implement the Service Link Extension (SLE) protocol, which is used by tracking network operators worldwide to standardise data exchange between otherwise incompatible systems (SLE is developed by

the CCSDS consortium, which includes ESA and other major space organisations - see link at right).

Intense testing and close cooperation

The hardware and software was tested at ESOC in July and August 2007, using the reference ground station in ESOC's ESTRACK simulator facility.

At the same time, close planning and coordination between internal ESOC teams, USN and USN's partner company, Swedish Space Corp. (SSC - which co-operates the Prioranet network of which Dongara is part), took place.

Testing also included live 'shadow' tracking of actual spacecraft, and some 15 ESTRACK operators, who work in ESOC's ESTRACK Control Centre (ECC), had to be trained. All stations in the ESTRACK system are remotely controlled from the ECC.

15m antenna at ESTRACK's Perth station

Dongara successfully tracks XMM-Newton

The intense activity paid off, however, when Dongara assumed live XMM-Newton tracking responsibility on 30 September 2007, as scheduled. The last tracking pass came on 28 October, with Dongara providing just over 130 hours of support to XMM-Newton.

The successful integration of Dongara into ESTRACK also makes the station a candidate when a replacement is again required in 2008 - when Perth is scheduled to be out of operation for additional maintenance - and also for future LEOP (Launch and Early Orbit Phase) control and tracking activities for other missions.

- Cebreros webcam (http://www.esa.int/SPECIALS/Operations/SEM26DSMTWE_0.html)

More news

- ESA tracking support essential to Chinese mission (http://www.esa.int/SPECIALS/Operations/SEMB0DJJX7F_0.html)
- Future deep-space missions drive ESA ground station evolution (http://www.esa.int/SPECIALS/Operations/SEMW1613J6F_0.html)

Related

- Perth station (http://www.esa.int/SPECIALS/Operations/SEM4SDSMTWE_0.html)
- XMM-Newton operations (http://www.esa.int/SPECIALS/Operations/SEMI2HZTIVE_0.html)

More information

- USN Inc. (http://www.uspacenetwork.com/)
- Dongara station
  (http://www.uspacenetwork.com/site_locations/western_australia_01.html)
- Consultative Committee for Space Data Systems
  (http://public.ccsds.org/default.aspx)