

# Canberra Deep Space Communication Complex

exploring the Solar System and beyond



## The Deep Space Network

The Canberra Deep Space Communication Complex (CDSCC) - also known as the Tidbinbilla Tracking Station - was opened on 19th March 1965. It forms part of the National Aeronautics and Space Administration's (NASA's) Deep Space Network (DSN), that spans the globe.

The facilities on this site are similar to the other DSN sites in Goldstone, California and near Madrid, Spain.

## What is our role in space exploration?

The CDSCC performs an essential role for NASA's Jet Propulsion Laboratory (JPL), providing two-way radio contact with robotic spacecraft and space telescopes exploring our solar system and beyond.

The CDSCC acts like a post office. We send and receive packages of information sent between mission scientists and the spacecraft of many nations exploring the planets, moons, and other objects throughout the Solar System.

Transmitted data includes commands sent for course corrections, mission activities and software updates. Received data includes vehicle health and position, plus images and data collected by science instruments.

## How is that done?

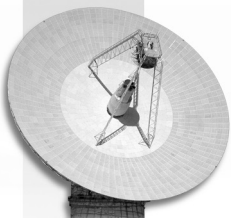
The data is encoded in digital form and the information carried by radio waves for transmission to and from Earth.

To send and receive the signals, CDSCC uses massive radio antennas. The antennas use transmitters to communicate with spacecraft that may be millions or even billions of kilometres from Earth.

When their data is received at the Complex, it is processed and recorded on site and relayed via optic fibre cable to JPL.

JPL then converts the signals into detailed images and data from the spacecraft, and sends that to the mission scientists.

The information is also made available to the public on a variety of websites.



CDSCC is managed on behalf of NASA and JPL by CSIRO

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## How is the Complex managed?

CDSCC is managed on behalf of NASA and JPL by the Commonwealth Scientific and Industrial Research Organisation (CSIRO).

Daily operations, maintenance and administrative services are performed on site by CSIRO personnel.

CDSCC comes under CSIRO's Astronomy and Space Science division.

All operational costs of CDSCC are paid for by NASA.

## Who works here?

CDSCC employs approximately 120 full- and part-time staff members.

The personnel at CDSCC are primarily Australian, along with team members from places like New Zealand and the U.K.

## What do they do?

There are five major sections at CDSCC which are responsible for operation of the facility 24-hours a day, 7-days a week.

Their jobs range from administration, logistics and stores, grounds maintenance, engineers and technicians, building services and allied trades, education, training, and spacecraft communication.

**Operations (OPS)** staff work in the main antenna control centre. Four teams work on a rotating 12-hour shift, ensuring that the antennas are operational and that spacecraft tracking and communication is being maintained.

OPS members are technicians with expertise in spacecraft communication, data analysis, antenna operation and radio frequencies.

**Antenna and Site Facilities (ASF)** looks after the overall maintenance and operational readiness of the mechanical and structural areas of the Complex.

ASF staff range from mechanics, electricians, engineers and antenna maintenance crews. They ensure that antennas are always working in peak condition, power systems are online and that all buildings, grounds and related services are maintained.

**Systems Engineering (SE)** employs engineers and technicians to maintain all of the electronics, and computer hardware and software systems at CDSCC.

SE teams are responsible for the antenna transmitters and receivers, timing systems, signal processors, antenna calibration, plus internal/external communication links.

As with any large facility of this kind, the



**Business Management Group (BMG)** performs the vital administrative tasks needed to ensure daily operation.

BMG staff provide services such as financial management, human resources, logistics and stores, documentation and catering.

**Public Relations (PR)** look after all of the education and outreach services provided by CDSCC to the public and media.

PR staff manage the Visitor Centre, providing information to 70,000 visitors a year including thousands of school children on excursions (field trips).

CDSCC also employs a number of contractors who provide a variety of services including operation of the Moon Rock Café, site security and cleaning.

## How does CDSCC help the community?

Apart from the vital communication link provided by CDSCC to the knowledge gained through the exploration of space, the Complex also contributes in direct ways to the local and national community.

We care for the local environment through power management, recycling of water and sewerage, and emissions management.

We contribute financially through local employment, paying for services (eg: power), and through tourism.

We also educate the next generation of space explorers, scientists and engineers.



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**For more information about CDSCC and the DSN:**

[www.cdsc.nasa.gov](http://www.cdsc.nasa.gov) <http://deepspace.jpl.nasa.gov>

