

First cargo spacecraft boosts China's space dream



China's first cargo spacecraft Tianzhou-1 blasts off from Wenchang Space Launch Center in south China's Hainan province, April 20, 2017.
[Photo/Xinhua]

China has taken another step toward its goal of putting a space station into orbit around 2022, by sending its first cargo spacecraft Tianzhou-1 into space on Thursday evening.

Atop a Long March-7 Y2 carrier rocket, Tianzhou-1 rose into the air from the Wenchang Space Launch Center in south China's Hainan Province at 7:41 p.m.

China declared the launch a success after it entered designated orbit minutes later.

The cargo ship will dock with the orbiting Tiangong-2 space lab where two Chinese astronauts spent 30 days in the country's longest-ever manned space mission, provide fuel and other supplies to the latter, as well as conduct space experiments before falling back to Earth.

If the Tianzhou-1 mission is successful, China will become the third country besides Russia and the United States to master the technique of refueling in space.

China aims to build a permanent space station that is expected to orbit for at least 10 years, and the debut of the cargo ship is important as it acts as a courier to help maintain the space station.

Without a cargo transportation system, the station would run out of power and basic necessities, causing it to return to Earth before the designated time.

“The Tianzhou-1 mission includes the breakthrough of in-orbit refueling and other key technology needed to build a space station, laying a foundation for future space station operations,” said Bai Mingsheng, chief designer of the cargo ship.

Three Dockings

Measuring 10.6 meters long and boasting a maximum diameter of 3.35 meters, the Tianzhou-1 cargo ship has a maximum takeoff weight of 13.5 tonnes, and could carry over 6 tonnes of supplies.

Tianzhou-1 is larger and heavier than Tiangong-2, which is 10.4 meters in length and has a maximum diameter of 3.35 meters, weighing 8.6 tonnes.

Bai said that supplies loaded on the cargo spacecraft are nearly as heavy as the ship's own weight, exceeding the loading capacity of Russian cargo ships in active service.

Tianzhou-1 will dock with Tiangong-2 three times, said Bai. After the first docking, aerospace engineers will test the controlling ability of the cargo spacecraft over the two spacecraft.

The second docking will be conducted from a different direction, which aims to test the ability of the cargo ship to dock with the space station from different directions.

In the last docking, Tianzhou-1 will use fast-docking technology. Previously, it took China about two days to dock, while fast docking will take about six hours, according to Bai.

Refueling is conducted during docking, a process that is much more complicated than refueling vehicles on land.

The refueling procedure will take 29 steps and last for several days each time.

This means the Tianzhou-1 will stay in space for about six months. It will fall into a designated sea area after fulfilling its tasks.

Supporting space station

Space cargo ships play a crucial role in the maintenance of a space station.

Cargo ships can send all kinds of supplies to the space station which can be an experiment field for developing technology in space.

Huang Weifen, a deputy chief designer of the Astronaut Center of China, said that supplies carried by Tianzhou-1 include goods that will meet the basic living and working needs of three astronauts for 30 days in space, including drinking water, oxygen bottles and nitrogen bottles.

Also onboard include facilities for microorganism tests, and sensors are installed to obtain data such as mechanics and temperature for the future design of the space suit outside a spacecraft.

“We hope to gather relevant data through this mission and accumulate experience for sending material for the future space station,” she said.

Vision of space power

Although China has achieved many giant steps in space exploration, the country's space odyssey is far from over as it eyes building its own space station and far beyond that: landing on Mars.

In 1992, the central authority approved a three-step manned space program.

The first step, to send an astronaut into space and return safely, was fulfilled by Yang Liwei in Shenzhou-5 mission in 2013.

The second step was developing advanced space flight techniques and technologies including extra-vehicular activity and orbital docking.

The final step will be able to operate a permanent manned space station.

Chinese scientists said they plan to launch a core module of the country's first space station around 2018, followed by two experiment modules.

The station in the primary stage will be composed of three modules: core module, experiment module I and experiment module II. Each module will weigh more than 20 tonnes and together the three will be structured in the shape of T. The core module will be in the middle with an experiment module on each side.

During its operation, the space station could be linked to one additional cargo ship and two manned spacecraft at one time, and the maximum weight of the whole assembly could reach up to 90 tonnes.

Based on such design, scientists will keep updating capsules in accordance with scientific research and extend their abilities.

With the International Space Station set to retire in 2024, the Chinese space station will offer a promising alternative, and China will be the only country with a permanent space station.

So far, China has successfully launched 11 Shenzhou series spacecraft, including six manned spacecraft that lifted 11 astronauts into space.

The country strives to realize the third step of its lunar program in 2017: sending Chang'e-5 lunar probe onto the moon which will return with samples.

HSL: Upper Limb Disorders Risk Assessment of Repetitive Tasks – Buxton, 13 July 2017

[Book Course](#)

HSL is to run a 1 day course on Upper Limb Disorders Risk Assessment of Repetitive Tasks.

13 July 2017

Introduction

Musculoskeletal Disorders (MSDs) are the most common occupational illness in Britain affecting over 500,000 people a year. Nearly half of these illnesses are joint injuries and repetitive strain injuries of various sorts affecting the upper limbs.

To support employers, health and safety professionals and inspectors with risk assessing repetitive work, the Health and Safety Laboratory and Health and Safety Executive have developed the Assessment of Repetitive Tasks (ART) tool. Launched in Spring 2010, the ART tool is used to assess the frequent handling of light loads or other repetitive tasks that can contribute to upper limb disorders (ULDs).

This course will equip you with the knowledge to use the ART tool to help recognise, assess, and reduce upper limb disorder risks in your organisation. It will benefit those already involved in workplace MSD risk management (e.g. manual handling risk assessments) who wish to expand their knowledge on the topic of upper limb disorders.

What will the course cover?

- Common ULDs and their development
- Key ULD risk factors
- ULD risk management (including legal duties)
- ULD risk assessment using the ART tool
- Practise using the ART tool with case studies
- ULD risk controls

Who should attend?

Employers and their representatives who wish to undertake or improve ULD risk assessment and control within their organisation

Health and safety or occupational health professionals who wish to learn about the ART tool, or further their abilities in this area.

The course is targeted at organisations that carry out some manual production, processing, packaging, packing, and sorting activities. The course will not cover assessment of Display Screen Equipment (DSE)

Previous experience of manual handling risk assessment is beneficial but not required.

Venue

The course will be run at the HSL laboratory in the spa town of Buxton. Buxton is in the heart of the Peak District and has good links to mainline train stations and Manchester International Airport.

Details of hotels in the Buxton area can be found at www.visitbuxton.co.uk

Cost

The cost of this course is £450 per person (includes course notes, lunch and refreshments).

[Book Course](#)

Please note the invoice option is not available within 4 weeks of the course date, or for overseas customers. If you are selecting the invoice option for payment, it will be mandatory to input a purchase order/reference number as we are unable to process booking forms without this.

For further dates and additional information email: training@hsl.gsi.gov.uk or contact the Training & Conferences Unit at HSL directly on +44 (0)1298 218806.

[Back to Health & Safety Training Courses](#)

[HSL: Site and Transport Safety – Birmingham, 12 July 2017](#)

[Book Course](#)

HSL is to run a 1 day course on Manual Handling for Assessors.

12 July 2017

Introduction

Manual handling is one of the main causes of musculoskeletal disorders (MSD), which are the second most common occupational injuries within the UK and make

up nearly half of all work-related ill health seen by general practitioners (GPs) are MSD related. The most recent HSE statistics on MSDs show a 20% increase in MSDs with **184,000** new cases (2013/14), around 80 per cent of which are attributable to work conditions.

Prevention and control of work-related musculoskeletal disorders (MSD) is a major priority and as such HSE have published a simple but effective risk assessment method called the MAC tool. This enables risk identification of key manual handling risk factors so that these can be eliminated or managed in the most cost effective way.

This course will equip you with the knowledge to help recognise, assess and reduce manual handling risks in your organisation. It is suited to employers and employee representatives who intend to begin the process of manual handling risk assessment and control within their companies. It will also benefit those already involved in manual handling risk reduction who require more formal or in-depth training in this subject, including training in the use of specific manual handling assessment tools.

The course will cover:

- Principles of manual handling
- Understanding injuries
- Common types of injuries
- Legal aspects
- Key risk factors
- Manual handling risk assessment (MAC and L23)
- Pushing and pulling
- Control and reduction of risk
- Key principles of good handling techniques
- Case studies

Presenters include:

- Matthew Birtles, HSL – Ergonomics specialist in MSDs

Venue

The course will be run at the HSL laboratory in the spa town of Buxton. Buxton is in the heart of the Peak District and has good links to mainline train stations and Manchester International Airport.

Details of hotels in the Buxton area can be found at www.visitbuxton.co.uk

Cost

The cost of this course is £450 per person (includes course notes, lunch and refreshments).

[Book Course](#)

Please note the invoice option is not available within 4 weeks of the course date, or for overseas customers. If you are selecting the invoice option for payment, it will be mandatory to input a purchase order/reference number as we are unable to process booking forms without this.

For further dates and additional information email: training@hsl.gsi.gov.uk or contact the Training & Conferences Unit at HSL directly on +44 (0)1298 218806.

[Back to Health & Safety Training Courses](#)

[Back to the top](#)

[Press release: Arrests made following dawn raids](#)

Today (Thursday 20 April 2017), the Environment Agency and police carried out 5 dawn raids following an in-depth investigation into illegal dumping of waste. There were 2 people arrested pending further enquiries. A third person will also be helping Environment Agency officers with their enquiries.

Enforcement action took place at 5 separate addresses in Staffordshire, Herefordshire and Hertfordshire this morning following an investigation into illegal dumping of 20,000 – 25,000 tonnes of waste at 17 sites across the Midlands, North West and North East.

More than 25 Environment Agency investigators, supported by over 20 police officers from Staffordshire, West Mercia, Warwickshire and Hertfordshire Police forces were in action at suspects' homes and business addresses seeking evidence as part of Operation Cesium.

The investigation will now continue with the evidence seized today. This investigation is expected to continue for many more months.

Paul Clarke, lead investigator in the Environment Agency's National Investigation Team, said:

The Environment Agency takes waste crime seriously and we will persistently pursue those suspected of illegally dumping waste.

In this case we have 17 landowners and communities blighted by significant amounts of dumped waste. We've already seen some of these sites catch fire, causing significant impact on communities, the environment and our emergency services partners who have to tackle them.

Illegal waste activity of the likes we're investigating here diverts £1 billion from legitimate businesses and the treasury, and at the Environment Agency we do everything we can to bring those responsible to account.

This investigation has been ongoing since last summer and enquiries will continue to examine the evidence to determine the full extent of the suspected offences.

The Environment Agency takes waste crime extremely seriously. This is a live and complex investigation, anyone with further information should contact Crimestoppers on 0800 555 111.

Further exchange with Education Minister

Yesterday I lobbied an Education Minister again about the proposed fair funding of schools and Wokingham's needs. I am also pressing for a suitable pledge in the Conservative Manifesto.