



MOTOROLA TETRA RADIO SYSTEM SUPPORTING NAGOYA'S CHUBU CENTRAIR INTERNATIONAL AIRPORT



Nagoya's Chubu Centrair International Airport, where TETRA is employed

The aviation industry has been hard hit by COVID-19, but Japanese airports are also concerned about natural disasters such as typhoons and heavy snow every year.

Typhoon No. 21 in September 2018, which triggered a flood at Kansai International Airport and isolated the airport island, and Typhoon No. 15 in September 2019, which blocked traffic access on the ground and left many passengers stranded at Narita International Airport, are still fresh in our memory.

When a natural disaster occurs, it is often difficult to communicate by means of mobile phone; however, as it is necessary for ground staff of airport and airlines, to share important information across their various internal teams and provide evacuation guidance to passengers in a timely manner. This is made possible by the radio system they use in their daily operations.

DEDICATED RADIO SYSTEM FOR THE AIRPORT

Looking at commercial radio systems employed around the world, TETRA (TErrestrial Trunked RAdio) is the mainstream. TETRA, a digital mobile communications system for public safety networks based on unified European standard, is used in various fields, including summits, sports events, military, police, fire departments and government agencies.

TETRA has a track record of being deployed at **80** airports across the world since 2016.

It has been in operation as the telecommunications infrastructure in place of airport MCA radio at Narita and Naha airports in Japan, and has begun operation at Haneda and Centrair airports. TETRA has dedicated base stations, so it is not affected by congestion or obstruction in mobile phone networks. Simple and designed with redundant parts, the system configuration is highly reliable and stable, so its deployment at airports in Japan is expected to expand in the future.

Centrair has been operating the TETRA radio system since July 2019. Similar to Narita and Naha, Nippon Airport Radio Services Co., Ltd. (NAR, Narita City, Chiba), a wholly owned subsidiary of Nippon Telegraph and Telephone Corporation (NTT East), installs and provides TETRA services. In all of these cases, base stations and terminals developed by Motorola Solutions are installed, and these enable communication between airports, and are useful for coordination, which is essential in the rescue and recovery following a major disaster.

MIGRATION TO TETRA

We asked Masanori Otsubo, head of the Centrair Operations Center in the Airport Operations Department of Central Japan International Airport Co., Ltd., which operates Centrair, after their migration from conventional radio to TETRA.

The Centrair Operations Center, also known as COC, is a place that collects various types of information on Centrair, which operates 24 hours a day. Conventionally, airports operate the airfield, lighting and radio, and security and disaster prevention separately. However, at Centrair, which opened in February 2005, interacts with more than 20 agencies including:

- air traffic controllers.
- police and fire services.
- aircraft refuelling services.
- CIQ (customs, immigration, quarantine).
- ground handling companies and freight forwarders.
- transportation system to and from the airport, such as trains and buses.

The day-to-day linkages to each institution, with COC as the hub, leads to a coordinated response to the emergency.

“When something happens at the airport, such as an accident or when a customer is having a problem, the matter is dealt with swiftly.”

“STRONG SENSE OF REASSURANCE DURING A DISASTER”

One feature of TETRA is the simultaneous call-waiting function with flexible group call and priority settings. At Centrair, it is possible to make simultaneous calls from COC corresponding to several levels of a related organisation to a group call for the whole airport including other organisations, according to the scale of the emergency. The system facilitates rapid and accurate information sharing with organisations related to the airport and can be regarded as a model case for implementing TETRA in airport operations.

Otsubo’s impression of TETRA after one year of operation is that it “gives a strong sense of reassurance during a disaster. We are confident that a dedicated communications infrastructure is essential for us to take action.” Otsubo rates the TETRA system highly, saying that it has no blind areas (areas without reception) and the sound is clearer within the airport, compared to conventional radio. It is crucial to have clear audio to support all airport communications. Centrair is an airport on an artificial island in Ise Bay, but the radio signals can reach the Tokoname City Hall, which is about 3 km away on the mainland.



COC head Otsubo of Centrair sharing his impressions about TETRA

BENEFITS OF USING THE TETRA RADIO SYSTEM

- Track record of being in operation at about 80 airports worldwide.
- Successful installation at Narita and Naha airports in Japan.
- High reliability and stability (Even under Typhoon No. 15 in 2019, which caused problems with ground communications, Narita airport was unaffected).
- Simple operability and flexible group settings.
- Clear audio for ease of communication and enhanced operational efficiency.
- High scalability.
- Location services, such as vehicle tracking.
- Future-proof - expansion and integration with different systems to enable transmission of images, videos etc. in addition to voice and text.
- Interoperate with broadband network to extend communication beyond the airport with the WAVE PTX solution.





Otsubo, Head of COC (Left) and staff member Suematsu, who is holding a TETRA terminal

EMERGENCY OPERATIONS CAN BE MONITORED ANYWHERE

TETRA can be used not only for voice calls, but also for sending and receiving text messages. It also supports GPS or iBeacon in sending location information, and the locations of radio terminals can be displayed on PCs, etc, enabling management of staff and vehicle location information. In addition, although still currently in trial, the WAVE (TM) feature, which interconnects TETRA and the public network, enables communication with TETRA radio equipment from outside the TETRA area using a mobile phone.

For example, company staff and officers on overseas business trips will be able to interact directly with TETRA radio equipment. COC operates in shifts comprising six members each, and when an emergency occurs at night or during a holiday, Otsubo also receives a phone call.

TETRA is a superior system that not only ensures highly reliable voice calls within the airport, but is also highly scalable to allow the provision of various means of contact through linking with broadband systems, and can be expected to be more active in improving day-to-day airport business and enhancing disaster response.

“it is convenient being able to monitor TETRA even from home.”

“Also by integrating with systems such as LTE and 5G, it will be possible to build a system that can be used to send photos, videos, files and live images of a site captured by cameras attached to a security guard to the department in charge of countermeasures.”

By Otsubo, Head of COC

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