

Technical Support for ISDB-T in Uruguay

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1. Introduction

NHK has been cooperating with the Ministry of Internal Affairs and Communications by dispatching technical experts to provide technical support to countries that have adopted the Japanese terrestrial digital TV system (ISDB-T). From August 2012 to August 2014, I was dispatched to Uruguay, where I spent two years working as a technical expert. This article presents an overview of my activities during this period.

2. Technical assistance for the introduction of ISDB-T in Uruguay

Uruguay is a small country in the southern part of South America with a population of approximately 3.3 million. Its culture is strongly Europe-oriented, and it was the first of the countries in South America to announce that it would be adopting the European DVB standard for digital terrestrial television. However, to keep pace with Brazil and other South American countries, Uruguay announced in 2010 that it was switching from DVB to ISDB-T.

When this announcement was made, the Ministry of Internal Affairs and Communications decided to dispatch a long-term technical expert and provide technical assistance to the Uruguayan government. In August 2012, the state-owned broadcaster began test broadcasts in Montevideo with the help of equipment provided by the Ministry of Internal Affairs and Communications, and I was dispatched from NHK to Uruguay at almost the same time.

3. Technical assistance operations in Uruguay

In Uruguay, a digital switch-over study group had been set up by the government, telecom operator, and broadcaster, and had been working on issues such as the channel plan and the design of the broadcasting facilities for the state-owned broadcaster. My role was to be consulted about various issues from this study group and to propose solutions as a technical assistance advisor. This included a various range of activities from the delivery of programs from production studios to the equipment design used for transmission and reception. My main activities are detailed below.

3.1 Assisting in the drafting of a channel plan

The creation of a broadcasting channel plan is crucial to the initial stages of the transition to digital television and was mainly carried out by Uruguay's telecommunications regulatory agency URSEC (Unidad Reguladora de Servicio de Comunicaciones). When I was first dispatched to Uruguay, the information for their study was insufficient, and I was able to provide technical assistance

in a wide variety of ways such as meeting for technical discussions, preparing materials on the prerequisites of their studies, verifying the settings of parameters, and finding ways to resolve issues.

Uruguay's analog TV only broadcasts in the VHF band; therefore, the UHF band is almost completely free. Since the entire country is almost completely flat with no large mountains, it is possible for a single broadcast station to cover a wide geographical area. Furthermore, people predominantly live in urban areas, while almost all suburban households have access to satellite broadcasting and CATV and are therefore not considered part of the terrestrial service area. For this reason, finding suitable channels was thought to be relatively easy. However, since the majority of provincial cities are adjacent to neighboring countries such as Brazil and Argentina, we also had to study and coordinate channel plans with neighboring countries. In the end, about one year of study was required, including international coordination, and Uruguay's national channel plan became law in October 2013.

3.2 Assistance with measurement technology

I guided the basic method and evaluation of measurements for digital broadcasting by confirming the reception of radio wave propagation from the digital test broadcast station provided by

■ Photo 1: Measuring the radio wave characteristics of an area

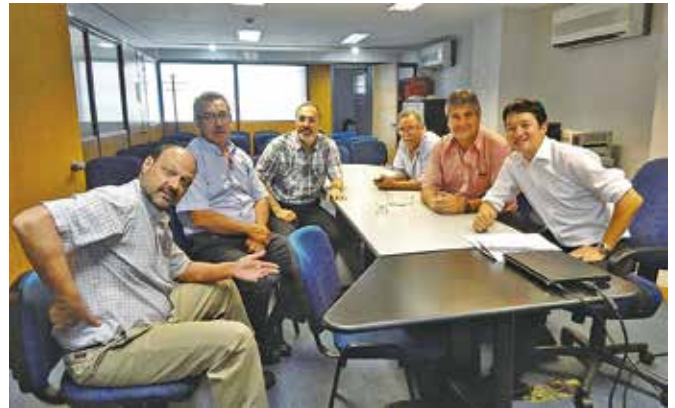


the Ministry of Internal Affairs and Communications. In analog broadcasting, the monitoring inspectors in URSEC had only checked video quality, so they had little experience of the numerical evaluation of radio waves and signal quality. However, URSEC recognized the importance of monitoring the quality of radio waves by numerical evaluation in digital broadcasting, and since they owned the same high-performance digital measuring analyzer, they could perform adequate measurements. Since there were few people who were able to use this analyzer function properly, I wrote a simple manual and set up the measurement parameters with the engineers and inspectors of URSEC, and we could record the measurement results while traveling in a car. This made it possible to construct a system that was capable of performing rough checks on the status of a geographical area. Furthermore, by providing a simple manual for measurements and making it possible for every Uruguayan engineer and inspector to use this analyzer, when private-sector broadcasters contacted URSEC at the start of test broadcasting, it became possible for URSEC's inspectors to check areas in a short period of time. For the URSEC monitoring team of just five inspectors that had to monitor all frequencies in the country, this made their work a great deal easier. I also provided URSEC with technical assistance in the form of training and the like on the basis of Japanese practices with regard to management approach for monitoring the quality assurance status of radio waves and the operational status of broadcast stations.

3.3 Human resource development

One of the main goals of my technical assistance activities was to cultivate ISDB-T specialist engineers. Through a range of daily activities, technical training, outside events, and university lectures, I introduced Japan's various technologies and provided technical guidance to cultivate Uruguayan experts in the field of ISDB-T technology. In particular, since there is a shortage of jobs for engineers in Uruguay, young talented engineers can end up emigrating and causing a lack of young television engineers capable of supporting the digital era. Therefore, with the aim of transferring new digital broadcasting technology to Uruguay's young engineers, I opened up a short-term course specializing in ISDB-T and also gave advice about R&D for ISDB-T at the University of the Republic (Universidad de la República), from which large numbers of broadcasters, communication business people, and Uruguayan government engineers graduated. By establishing close relations through these lecturers and R&D, I aimed to produce more engineers who were interested in ISDB-T. Although Uruguay's engineers are both highly knowledgeable and inquisitive, they are also self-educated and have had to make a considerable investment in their own studies. As a result, the advancement of technology is not progressing very well because they are not so keen to pass their knowledge on to others. Since this seemed like a big challenge to me, on various occasions during the two-year period I pointed this out as one of the difficulties Uruguay faces. In order to convey my thoughts, I prepared some Spanish materials for Uruguayan engineers and told them that they should give lectures for other engineers. Although I can take pride in the fact that I was able to increase the number of people interested in the TV broadcasting industry, I hope that this technology will be handed down to others.

■ Photo 2: URSEC technical training



■ Photo 3: A lecture at the university



4. Conclusion

The two years I spent in Uruguay provided me with very valuable experiences, not only for my work but also for my life. I have heard that the implementation of terrestrial digital television equipment in Uruguay has continued to make steady progress. I hope that the efforts made by me and other Japanese engineers have helped Uruguay in its switch to digital television, and I send my best wishes to everyone I worked and met with while in Uruguay. Finally, I would like to take this opportunity to thank the Uruguayan people who helped me during my stay, the Ministry of Internal Affairs and Communications, who provided a lot of support, DiBEG (ARIB international digital broadcasting outreach group), everyone from Japanese organizations such as NHK, and my family.

■ Photo 4: Farewell party at URSEC

