

CTBTO Spectrum

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Who we are

The Comprehensive Nuclear-Test-Ban Treaty bans all nuclear weapon test explosions. It opened for signature in New York on 24 September 1996 and enjoys worldwide support.

The CTBTO Preparatory Commission was established to carry out the necessary arrangements for the implementation of the Treaty and to prepare for the first session of the Conference of the State Parties to the Treaty after its entry into force. It consists of all States Signatories and the Provisional Technical Secretariat.

Inside this issue

COVER STORY:

Forensic seismology and CTBT verification
 by Prof Paul Richards, Columbia University.... 1

EDITORIAL 2

MAP OF NAWE REGION 3

NOTES AND QUOTES 4

The importance of CTBT universalization

by Dr Javier Solana, Secretary-General of the Council of the European Union 5

COMMISSION UPDATE 7

IN THE SPOTLIGHT:

Dr Kim Howells, Minister of State at the Foreign and Commonwealth Office, UK 8

PERSPECTIVES:

Ten years of CTBT: achievements and challenges ahead by Michael Crowley, VERTIC Executive Director..... 10

VERIFICATION HIGHLIGHTS 12

POTENTIAL CIVIL AND SCIENTIFIC APPLICATIONS:

The importance of PTS data for tsunami warning centres by Dr Patricio A. Bernal, Executive Secretary of the IOC 20

VERIFICATION SCIENCE:

'Geological' phenomenology of nuclear test explosions from an OSI perspective by Dr Yosef Bartov, Director, Earth Science Research Administration, Israel 22

SECRETARIAT SNAPSHOTS 25

Forensic seismology and CTBT verification

By Professor Paul G. Richards

Lamont-Doherty Earth Observatory of Columbia University

The word 'forensic' means the application of scientific methods and techniques to the investigation of a crime. Various courts of law have developed standards of what it means to present objective technical evidence, derived from forensic studies. Such courts provide a framework, developed over decades, in which others will evaluate that evidence, to see if indeed a crime has been committed, and perhaps to identify the perpetrators.

In the context of Comprehensive Nuclear-Test-Ban Treaty (CTBT) verification, for a Treaty that is not yet in effect, it is not yet clear what will constitute persuasive evidence of a Treaty violation, nor how in practice such evidence will be prepared, or presented, or assessed. An underlying question here is: who will need to be persuaded? But with more than 2000 nuclear weapon test explosions conducted from 1945 to 1996, there are plenty of examples of what signals might be expected from a CTBT violation – that is, from a nuclear explosion conducted by a Signatory State – if a test explosion were conducted in the same fashion as most tests to date, that is, without attempts at concealment. And we can reasonably speculate what are the challenges to monitoring, if a test were to be conducted with an effort at evading the attention of monitoring systems.

continued on page 6

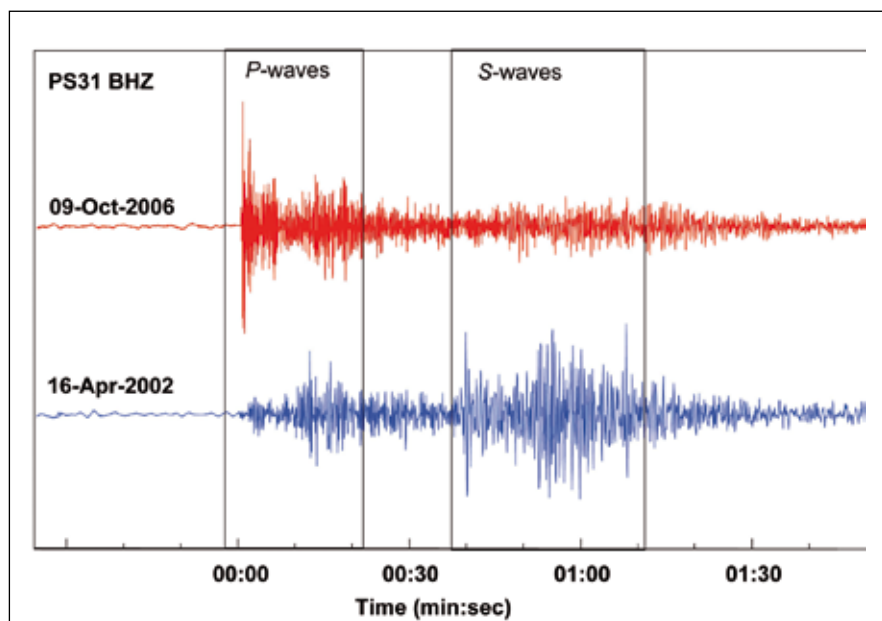


FIGURE 1: SEISMOGRAMS FROM PRIMARY SEISMIC STATION PS31, REPUBLIC OF KOREA. THE UPPER TRACE SHOWS THE WAVEFORM FOR THE ANNOUNCED NUCLEAR EXPLOSION IN THE DEMOCRATIC PEOPLE'S REPUBLIC OF KOREA ON 09-OCT-2006, MB=4.1. THE LOWER TRACE IS FOR A CLOSE-BY SHALLOW EARTHQUAKE, MAGNITUDE MB=3.9. THE EXPLOSION GENERATES A LARGE P-WAVE AND PRODUCES LITTLE S-WAVE ENERGY RELATIVE TO THE EARTHQUAKE.

