JOB DESCRIPTION FOR JPO

POST: Associate Performance Monitoring Officer

ORGANIZATIONAL SETTING: International Data Centre Division (IDC)
Office of the Director
Quality Management, Data Review and Fusion Unit

GRADE: P-2

RESPONSIBLE TO: Programme and Project Coordinator, IDC/OD

DUTIES AND RESPONSIBILITIES:

Under the supervision of the Programme and Project Coordinator, IDC/OD, to:

- Support and participate in the review and tracking of recommendations and improvements from the Experiments to test the Validation and Acceptance Test Plan (VATP) for the IDC;
- Support the planning of future Experiments to implement the Validation Tests from the VATP;
- Support the development and drafting of Test Implementation Test Plans for future Experiments;
- Collaborate with staff across the IDC to document and close open recommendations and improvements from previous Experiments;
- Participate in the planning, conduct and documenting of Technical Meetings (TMs), such as the annual VATP TM;
- Collaborate with team members and support other activities in the Office of the Director of the IDC as required;

QUALIFICATIONS:

- University degree in geophysics, nuclear physics, engineering or a related field;
- At least two years' relevant working experience in at least one the following areas:
    - Analysis of radionuclide monitoring data;
    - Analysis of station of seismic, hydro-acoustic, or infrasound (SHI) data;
    - Working within a National Data Centre
- Relevant computer and programming skills (Windows MS Office, Unix, Linux, Perl, Python, SQL, JIRA), would be an asset

LANGUAGE
Excellent written and oral communication skills in English are essential. Working knowledge of other official CTBTO languages is desirable.

COMPETENCIES:

Professionalism – Demonstrates professional competence and mastery of subject matter. Conscientious and efficient in meeting commitments, observing deadlines and achieving results.

Planning and Organizing – Develops clear goals that are consistent with agreed strategies; identifies priority activities and assignments; adjusts priorities as requested; allocates appropriate amount of time and resources for completing work; foresees risks and allows for contingencies when planning; monitors and adjusts plans and actions as necessary.

Communication – Very good skills in communicating with people from different backgrounds.

Teamwork - Proven interpersonal skills and the ability to listen and work in a multi-cultural, multi-ethnic environment with sensitivity and respect for diversity.

Technological Awareness - Ability to keep abreast of developments and relevant technologies applicable to the profession.

Client Orientation - Ability to identify clients' needs and establish and maintain effective relationships with internal and external stakeholders.

LEARNING ELEMENTS

At the end of the assignment, the Associate Seismoacoustic Operations Officer will have gained:

- Knowledge and understanding of the Commission's activities and the role of the Provisional Technical Secretariat (PTS) in the operations of the International Monitoring System (IMS) and IDC
- Thorough knowledge of and expertise in the progressive commissioning progress for the IMS and IDC
- Knowledge and relevant experience regarding the IDC and IMS operational manuals and the testing process for the validation and acceptance upon entry into force conditions

BACKGROUND INFORMATION

The Comprehensive Nuclear-Test-Ban Treaty (CTBT) bans nuclear explosions by everyone, everywhere: on the Earth's surface, in the atmosphere, underwater and underground.

The CTBT was negotiated in Geneva between 1994 and 1996. One hundred and eighty-six countries have signed the Treaty, of which 174 have also ratified it, including three of the nuclear weapon States: France, the Russian Federation and the United Kingdom. But 44 specific nuclear technology holder countries must sign and ratify before the CTBT can enter into force. Of these, eight are still missing: China, Egypt, India, Iran (Islamic Republic of), Israel, North Korea, Pakistan and the United States of America. India, North Korea and Pakistan have yet to sign the CTBT. The last Annex 2 State to ratify the Treaty was Indonesia on 6 February 2012.

Since the Treaty is not yet in force, the Organization is called the Preparatory Commission for the Comprehensive Nuclear-Test-Ban Treaty Organization (CTBTO). It was founded in 1996, has over 300 staff from over 90 countries, and is based in Vienna. The CTBTO's main tasks are the promotion of the Treaty and the build-up of the verification regime so that it is operational when the Treaty enters into force. The annual budget is around US$130,000,000 or €120,000,000.

The International Monitoring System (IMS) will, when complete, consist of 337 facilities worldwide to monitor the planet for signs of nuclear explosions. Around 90 percent of the facilities are already up and running. The IMS uses the following four state-of-the-art technologies (numbers reflect final configuration):

- Seismic: 50 primary and 120 auxiliary seismic stations monitor seismic waves on Earth. Primary stations transmit data continuously to the International Data Centre. Three-component stations are seismological stations with sensors that measure seismic motion in three orthogonal directions (one vertical and two horizontal) of the arriving seismic waves, enabling detection of the time and amplitude of arrivals from events such as earthquakes and explosions, and in many cases also an estimate of the direction to the source of the event. Array stations consist of geometrically arranged seismic sensors. These arrays are more sensitive than individual three-component seismic stations and, in particular, measure the

direction to the source of an event with a high accuracy. Most of these seismic waves, many thousands every year, are caused by earthquakes. But man-made explosions, such as mine explosions or the announced North Korean nuclear tests in 2006, 2009, 2013, 2016 and 2017, are also detected.

- Hydroacoustic: 11 hydroacoustic stations “listen” for sound waves in the oceans. The main reason for the vast area coverage offered by these stations is the efficient propagation of sound in the oceans. Hydrophone stations use underwater microphones (hydrophones) deployed in the oceans and are connected by 20 - 200 km long underwater cables to a land facility for real-time data transmission. Hydrophones are very sensitive acoustic sensors capable of picking up acoustic waves, including those generated by underwater explosions.
- Infrasound: 60 infrasound stations use sensors, called microbarometers, to detect infrasound waves, which are low frequency sound waves travelling over large distances in the atmosphere. Infrasound waves are produced by events such as atmospheric explosions or volcanic eruptions. Infrasound stations are arrays comprised of four to fifteen sites with an aperture typically ranging from one to three kilometers. Infrasound stations allow for the computation of the arrival time and direction of the incoming sound waves.
- Radionuclide: 80 stations measure the atmosphere for radioactive particles. Forty of them also pick up noble gas. They are supported by 16 radionuclide laboratories. Radionuclide stations sample the air to detect radioactive isotopes released into the atmosphere by nuclear explosions. Particulate stations capture and analyze particles which carry such isotopes that may give evidence about a nuclear explosion. Specific noble gas isotopes are also released from nuclear explosions. For nuclear explosions occurring underground or underwater, only noble gas isotopes may be detectable in the atmosphere.