Verification highlights

The main activity of the CTBTO Preparatory Commission is the establishment of a global verification regime, capable of detecting nuclear explosions underground, underwater and in the atmosphere. As defined in the Treaty, this regime consists of an International Monitoring System supported by an International Data Centre, consultation and clarification mechanisms, on-site inspections and confidence-building measures, all of which must be operational at the Treaty's entry into force.

IMS network status

The establishment of the International Monitoring System (IMS) network has continued in all four technologies – seismic, hydroacoustic, infrasound and radionuclide. The complete network includes 321 stations and 16 laboratories in 89 countries.

As of 1 January 2006, 156 stations have been certified, including six radionuclide laboratories, 63 stations were installed and substantially met specifications. In addition, 62 stations were either already under construction or under contract negotiation, and 95 stations as well as four radionuclide laboratories had contracts for operation and maintenance. During the last six months, five additional stations have been certified. Furthermore, approximately 182 stations were configured in the International Data Centre (IDC) operational system.

As the IMS network approaches completion, the focus shifts from the building of stations towards their sustainable maintenance. By the end of 2007, the PTS expects that approximately 90 per cent of the IMS network will be installed. ■

Challenges of establishing infrasound station IS39 in Palau

PALAUAN WORKERS CONSTRUCTING THE REPEATER SITE OF INFRASOUND STATION IS39, PALAU

When establishing International Monitoring System (IMS) stations, staff members of the Provisional Technical Secretariat (PTS) are not only confronted with logistical and engineering hurdles, but need to handle carefully the political, social and cultural sensitivities in the host country.

A particularly good example of this multi-faceted approach to IMS station building is infrasound station IS39 in Palau. From the political negotiations to obtain permission to use land for IMS station purposes in 2001 through identifying suitable sites for the infrasound arrays and the actual station construction, to the final certification visit in 2005, the station establishment process was filled with challenges that are specific to the social, political and environmental contexts of Palau.

ON THE WAY TO THE INFRASOUND ARRAY SITE

The Republic of Palau is located about 800 kilometres east of the Philippines and 800 kilometres north of Papua New Guinea in the North Pacific Ocean. It consists of over 200 islands, of which only nine are continuously inhabited. The Palau archipelago stretches almost 650 kilometres in a north-south direction with a total land area of nearly 460 square kilometres and an exclusive economic zone of 600,900 square kilometres.

Palau's topography varies from the mountainous island of Babeldoab with its dense rainforest, where IS39 is located, to coral atolls typically fringed by large barrier reefs. Palau is considered one of the most biologically diverse countries on earth. Its abundant marine life makes it one of the world's top scuba-diving destinations.

With a population just under 20,000, the small island nation's economy is based on tourism. Government is currently the major provider of infrastructure, services and employment. Agroforestry is the traditional

agricultural practice in the country. It accounts for one percent of national output and income, the same as manufacturing.

In 1994, Palau became independent in free association with the United States, with a constitutional government and a market-based democracy. Palau`s society is a complex blend of old traditions and western concepts. The system of government has three interdependent authorities – national, state and traditional. The traditional culture is based on clans and chiefdoms, which still operate both within and outside constitutional government. There is a strong matrilineal tradition in Palau and women remain powerful in family life, particularly through their influence in land matters.[1]

'AIRAI BAI', TRADITIONAL MEETING HOUSE FOR THE GOVERNING ELDERS, KOROR, PALAU

Land played a major role in the unfortunate colonial history of Palau. Germans began taking land from Palauans in 1899 and the Japanese brought large portions of Palauan land under their control after they succeeded the Germans in 1914. Between 1947 and 1994, Palau was part of the United Nations Trust Territory of the Pacific Islands, administered by the United States. The Americans began to return land to dispossessed Palauans. There is, however, a fundamental difference in the Anglo-American concept of ownership and the traditional Palauan understanding of land rights. Today, land ownership is one of the main issues in Palau. Foreign ownership of land is prohibited by the Constitution. The Land Claims Reorganization Act of 1996 determines ownership of all land. Land once owned by individuals, clans or lineages will have to be returned to them, which led to the situation that thousands of Palauans are involved in an estimated 30,000 cases of real estate litigation.

CENTRAL POWER SITE WITH SOLAR PANELS, IS39, PALAU

It is against this background that a senior PTS manager convinced the Palauan authorities to have an IMS station built on Palauan land. To achieve this, he needed to navigate carefully between local traditional and state authorities, as well as the Ministry of Foreign Affairs. Key players in this context were Mr John B. Skebong, Governor of the State of Ngaremlengui[2], where IS39 is located, and Mr Isaac Soaladaob, Chief, Division of Foreign Relations, in the Ministry of Foreign Affairs.

Besides the land issue, the small island nation is highly sensitized about nuclear issues. In 1979, the people of Palau voted overwhelmingly for a Constitution which prohibited the use, testing, storage or disposal of nuclear, chemical and biological weapons, and the entry into State territory of both nuclear-power and nuclear-armed ships and aircraft. Consequently, when voting for the Compact of Free Association

[1] Palauan women were also at the forefront of the grassroots movement to keep Palau nuclear-free.
[2] Palau consists of 16 states. Each of them has its own Constitution and independent government headed by an elected governor. His responsibilities include land use planning, environmental protection and health and welfare.

Verification highlights

Challenges of establishing infrasound station IS39 in Palau

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CERTIFICATION TEAM USING U-BEAM TO ACCESS INFRASOUND SITE WHILE BRIDGE IS BEING RECONSTRUCTED, PALAU, JUNE 2005

with the United States, they did not approve the second question in the referendum that would have allowed nuclear materials in its territory. The struggle of upholding the constitutional right of Palau to be nuclear-free nearly split the closely-knit society of the island State. Ten referenda were held on either the Compact or the Constitution. None yielded the 75% majority required to change the Constitution. The Palau Supreme Court

CERTIFICATION TESTS AT INFRASOUND ARRAY ELEMENT H5 OF IS39, PALAU, JUNE 2005

finally ruled that the three-quarters majority needed to amend the Constitution could be replaced by a simple majority (51%). In 1993, the Palauans voted to suspend the anti-nuclear provisions of the Constitution and the Compact was finally approved in 1994.

The awareness created by the political struggle for a nuclear-free Palau made it easier for the PTS negotiator to convince the Palauan authorities that the goals of the Comprehensive Nuclear-Test-Ban Treaty (CTBT) are consistent with their own goals. The next step was to identify a suitable site for the IMS station close to the Treaty location coordinates on a rocky outcrop on the western shoreline of the Babeldoab Island. It turned out that the area was insufficient for an infrasound array. Hence, an area further east, in the interior of the Babeldoab Island, was identified.

The terrain on the Babeldoab Island is characterized by small hills and knolls with steep gullies in between which are covered with thick jungle forest vegetation. Creeks often run at the bottom of the gullies. The height of the trees increases with the depth in the gully and can reach more than 15 metres. The low-lying flat areas are covered with coarse, one and a half metres high grass, whereas the tops of the hills are frequently covered wit thick ferns of the same height. During rain seasons, low-lying areas are subject to flooding and the whole terrain becomes very muddy and slippery.

During a three weeks site survey mission in 2001, three PTS staff members and Dr Milton Garces from the Infrasound Laboratory of the University of Hawaii, United States, with the assistance from the Palauan Bureau of Foreign Affairs, tried to determine a suitable location for the seven elements infrasonic pipe array. They were confronted with exceptional challenges in difficult environmental conditions, such as carrying heavy equipment up- and downhill on muddy and slippery jungle ground, finding a path in the dense rainforest without GPS and no good maps, having to use machetes to slash a way through the thick vegetation of lacerating grasses and stinging trees. One can easily imagine that in a climate with nearly 100 percent humidity and a temperature of 32˚C even the simplest tasks require great effort.

In the following narrative, Mr Milton Garces describes a typical field day in Palau, when the installation team had to check the array site area for unexploded ordnances (UXOs). Hundreds of these dangerous remains from the Pacific War were buried by the Japanese in the jungle of the island.

"The fresh colours of dawn clash against the blast of humidity that greets us when we open the hotel door. After yesterday's downpour, the air is finally cleared of the volcanic ash from the eruption of Anathan volcano in the Marianas, located about 1500 kilometres away from Palau. In the dim twilight, we wave to the friendly neighbours sitting on the side of the road by our hotel. We load our mud-crusted shoes and equipment in the four-wheel-drive car, and take off to the car rental company to change it for the third time. The 4WD on the

first car did not really work, as we learned before the excavator pulled us off the swamp. This second car did not have any threads on the tires, which prevented us from going uphill in the mud, a distressing realization to make after going downhill. Fortunately, we had enough flat ground to get a running start, and after a few slippery tries we made it back up the hill. Today the car rental agent greets us with the anticipated relish of another good story to laugh about. He congenially gives us car number three, which has some tire threads and a functional 4WD, but no air conditioner.

On our way to the array site with our vehicle upgrade, the service engine light goes on. We ignore it, as this is a permanent feature of almost every rental. We take the dirt track that leads to the central array site, where we meet our unexploded ordnance (UXO) consultant at the gate, who will help us look for potentially explosive surprises in the jungle.

Past the gate, we descend through the taro farms to find yesterday's rains have swept off our access bridge to the array site. We park the car a safe distance from the river bank and cross the river by foot, washing yesterday's mud off our boots. The sun is now approaching the zenith, and we are completely soaked from the steam and evaporation of yesterday's rain.

We enter the forest with our metal detectors and survey tape, invariably taking a few slips until we remember the sensitive walking style required in dark, muddy, mossy, vine tangled tropical jungles. There is no GPS reception under the deep canopy, so we navigate using small but recognizable signs in the forest ecosystem, light cues, topographic changes, and massive amounts of flagging tape. We find rifle shells, some sake bottle shards, but no large munitions, so we leave the central array site.

The last, and most challenging sensor vault is at the bottom of a steep incline held together primarily by tree roots. After one of our engineers rolled down the hill, coming to an abrupt and painful stop by straddling a tree, we deployed a descending rope system to assist in the lowering of personnel and material. We slowly make our descent into the forest, slipping in the soaked ground and hanging on to the rope for dear life. At the bottom of the incline we survey a deep horizontal tunnel dug into the mud by Japanese troops. We find no UXO's. We release accumulated stress with a volley of dark humour, and privately heave a sigh of relief at having kept our limbs.

PTS RENTAL CAR BEING TOWED OUT OF THE MUD BY EXCAVATOR, PALAU

As we begin driving back to town under the waning light of dusk, the clouds burst open with heavy, impenetrable rain. The road is now a river of mud. Our windows are mostly up, but since we have no air conditioner, we need to have them partly down to prevent complete fogging of the windshield. Driving at a crawl, we watch as all light is extinguished, leaving us in a dark and slippery obstacle course. As rapidly as the rain came, it dissipates.

We cruise into our hotel, waving from our mud-encrusted vehicle to the same friendly neighbours, who are (still?) sitting by the side of the road, but now surrounded by children.

Tired from another challenging day in the field, we dine on local fish and vegetables and go to bed with hopes that our shoes dry a bit better tonight."

LEFT-OVER AIRPLANE FRAGMENT FROM WORLD WAR II FOUND LYING NEAR THE INFRASOUND SITE, PALAU

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Verification highlights

Preparations for the Integrated Field Exercise in 2008

In February 2006, Working Group B endorsed the planning for the preparation and conduct of the 2008 On-Site Inspection (OSI) Integrated Field Exercise (IFE08) which will be held in the second half of 2008. The planning phase started in early 2006 and the exercise will be concluded with the final debriefing in 2009.

According to the OSI Strategic Plan, integrated field exercises are considered a pre-eminent activity of the first development cycle of the OSI regime. The IFE08 aims at integrating the many techniques and activities identified by the Comprehensive Nuclear-Test-Ban Treaty (CTBT) throughout the various phases of an OSI. It also aims at integrating the efforts of the various units of the Provisional Technical Secretariat (PTS) which will contribute to the preparation, conduct or support of an OSI. There will be a need to coordinate areas such as training, human resources, finance, logistics, communications and infrastructure.

A two-level managerial approach has been set up for addressing the challenges raised by the preparation of the IFE08: The first level foresees a project coordinator, who organizes and prepares meetings of an 'Expert Advisory Group' (EAG) and a 'PTS-wide Coordination Group'.

ENVIRONMENTAL SAMPLING, 2005 DIRECTED EXERCISE (DE05), KAZAKHSTAN

BOARDING M18 HELICOPTER FOR VISUAL OBSERVATION AND GAMMA SURVEY, 2005 DIRECTED EXERCISE (DE05), KAZAKHSTAN.

The EAG, consisting of national experts in their personal capacity, meets with PTS staff members to consider issues requiring particular attention and expertise. Initial discussions so far included general design, scenario and equipment issues. PTS staff members, representing their units, constitute the PTS-wide Coordination Group that meets as required to consider issues that need enhanced coordination. Specialized sub-groups have been identified for areas such as communications and infrastructure. They focus on specific issues and report to the main group.

The second level comprises a project manager and a task force that includes consultants, national experts and PTS staff members. Building on the recommendations of the EAG and the PTS-wide Coordination Group as well as on the decisions by the OSI Director, the project manager will arrange for the detailed preparation and support of the IFE08. In coordination with the host country, the project manager will make sure that equipment, already in PTS custody or lent by Member States, could be transported, utilized and maintained in the field. He will ensure that participants, who should have received prior training, as well as members of the control team or the evaluation team will benefit from logistical and administrative support. Another important task is to set up the whole exercise, including the preparation of a suitable inspection area and the development of a detailed test-scenario. This should allow for the implementation of the provisions in the 'test manual', which were developed by Working Group B to support the IFE08. Furthermore, additional documentation such as standard operating procedures and guidelines are currently under development.

Both the project coordinator and the manager are working under the supervision of the OSI Director, who is responsible for decisions regarding the Integrated Field Exercise and for reporting about the status of preparations to the Executive Secretary and the Preparatory Commission.

These arrangements for the preparation of the IFE should allow the PTS to maximize the benefits from the unprecedented interest and the financial efforts made by the Commission for an activity of this kind. ■

The role of National Data Centres in the System-wide Performance Test

National Data Centres (NDCs) are the main recipients of data, products and services provided by the Provisional Technical Secretariat (PTS). As such, NDCs have a valuable role to play in many aspects of the evaluation of the first System-wide Performance Test (SPT1). This was also recognized by Working Group B, when preparing for the performance testing phase which took place from April to June 2005. To ensure that the development of the verification regime would benefit fully from the cooperation efforts of the NDCs, the PTS set up guidelines and indicated specific areas where NDCs then chose to focus their work. The evaluation was based on the comparison of results obtained independently from the International Data Centre (IDC) and from the NDCs.

For this purpose, the IDC received relevant contributions from several NDCs:

- two NDCs provided seismoacoustic detection lists,
- nine NDCs shared seismological bulletins, and
- four NDCs submitted radionuclide analysis reports.

The comparisons between the IDC Reviewed Event Bulletin (REB) and NDC bulletins focused on assessing the IDC detection capability and event locations accuracy within corresponding national networks. As a result, it turned out that in many regions detection thresholds are at magnitude four or below, as inferred from the magnitude of missed events and in general fitting into the theoretical model of monitoring thresholds produced by the IDC. Contributions from NDCs can be a valuable source of events whose location and origin time were measured with high accuracy. These data are very important for assessing the IDC's location accuracy. Within SPT1, some 20 events in Scandinavia and the Baltic Sea – and additional ones from former years – were obtained for further assessment of IDC location procedure.

Another important field of cooperation within the SPT1 was the assessment of analysis capabilities in the radionuclide technologies. During the April - May 2005 phase, the SPT1 focused on the analysis of the IDC radionuclide products through comparison with results of analyses carried out at NDCs. In a specific test case conducted in June 2005, the PTS released a set of 100 artificially spiked radionuclide spectra to perform benchmarks on the capability of the various analysis software modules available at the IDC and the NDCs in finding the corresponding signals.

A total of twelve NDCs participated in the implementation of specific test case scenarios that included testing of:

- the PTS's capability to incorporate, upon an NDC request, data from the prototype Cooperating National Facilities into IDC analysis of specified events;
- the capacity of the IDC request system to provide the NDCs with quick access to a large amount of data; and
- the capability of automatic and interactive data processing at the IDC and radionuclide laboratories by analyzing a set of hundred artificial radionuclide spectra.

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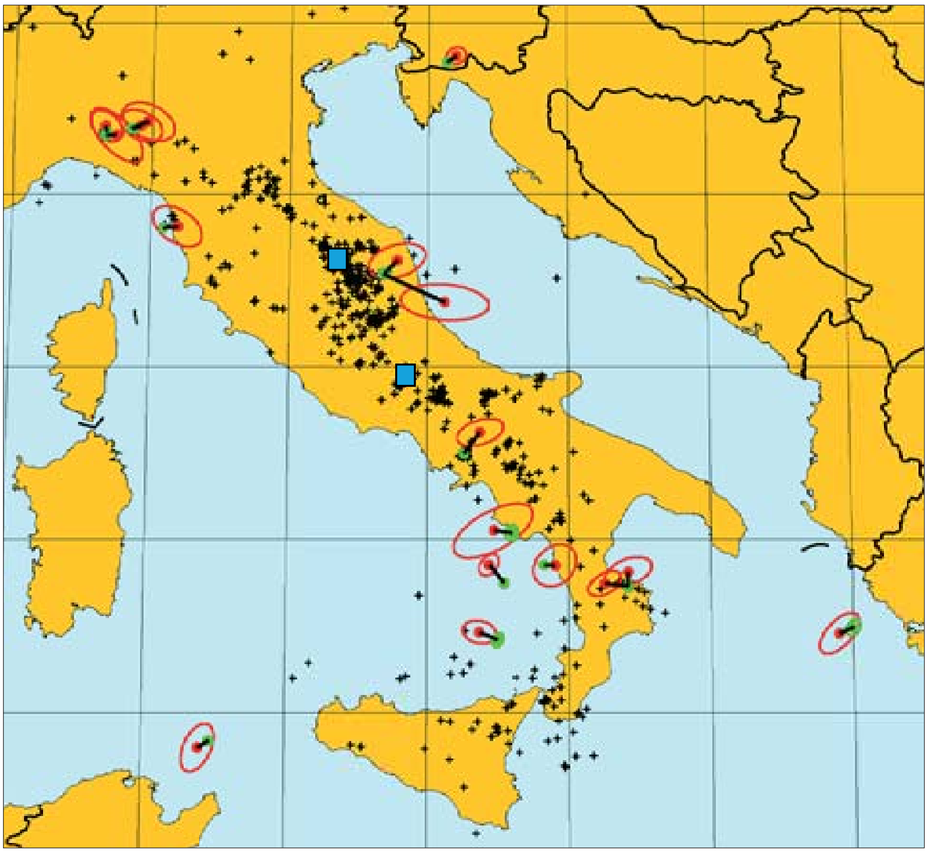


MAP OF 801 EVENTS DETECTED BY THE ITALIAN NDC WITHIN OR CLOSE TO THE NATIONAL NETWORK (BLACK CROSSES). EIGHTEEN EVENTS WERE LOCATED BY BOTH IDC AND NDC (MAGNITUDE ML =3.0-4.1), WHICH ARE DEPICTED BY RED AND GREEN CIRCLES THAT CORRESPOND WITH ERROR ESTIMATES. THE LOCATIONS OF THE TWO LARGEST EVENTS FROM THE NDC BULLETIN (MAGNITUDE ML =3.5-3.6) NOT FOUND IN THE REB ARE DEPICTED BY BLUE SQUARES.

Verification highlights

Potential contributions of IMS stations to an Indonesian Tsunami Warning System

More than one and a half years after a massive earthquake off the coast of Sumatra sparked a tsunami that killed or left missing 216 000 people, the countries of the region are working hard to establish efficient tsunami warning systems.

Indonesia, which bore the brunt of the devastating December 26 tsunami, plans to spend US$ 125 million on setting up its own tsunami detection system. The unique geography of the country with nearly 18,000 islands, extending more than 5,000 kilometres from east to west and nearly 2,000 kilometres from north to south, makes this a challenging task.

Under the terms of the Treaty, Indonesia[1] hosts six International Monitoring System (IMS) auxiliary seismic stations which are located in such a way that they can capture any major disturbance on the Indonesian territory. Data from the IMS stations can be sent in real time to Jakarta using satellite communication. In combination with other resources, such as early-warning buoys and the local seismic stations, data from the IMS stations can contribute to decrease substantially the time span needed for issuing a timely tsunami warning.

NANOMETRICS ENGINEER INSTRUCTING LOCAL STATION OPERATOR, AS43, PARAPAT, INDONESIA, JAN. 2004

[1] Indonesia is one of the 44 States mentioned in Annex 2 of the Treaty, whose ratification is a condition for its entry into force.

The six IMS stations use the most advanced technology that is available on the market and is compatible with the equipment employed in the Indonesian Tsunami Warning System. Furthermore, they are part of the IMS seismic network that receives data from around the globe which are also distributed to other countries of the region for tsunami warning purposes.

DIGGING A TRENCH FROM THE SENSORS TO THE CENTRAL RECORDING FACILITY, AUXILIARY SEISMIC STATION AS44, KAPPANG, INDONESIA

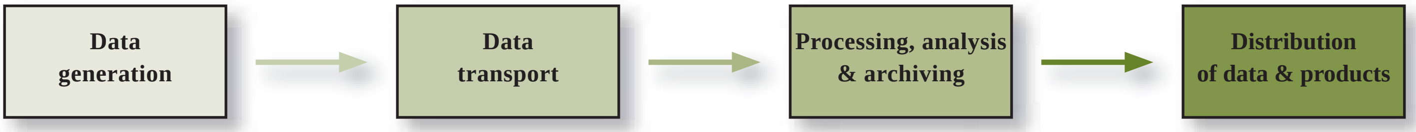
So far, one auxiliary seismic station, AS43, located on Sumatra, has been certified. Two more stations, AS44 on Sulawesi and AS45 on Timor, are expected to be certified in the course of this year. For the rest of the stations, the Provisional Technical Secretariat (PTS) is in negotiations with the Indonesian authorities. Construction work for AS40 located on Java and AS41 and AS42 on Irian Jaya is scheduled to start in the course of this year.

Once all six stations are fully operational, the seismic data sent to Jakarta could make a significant contribution to the Indonesian Tsunami Warning System. Furthermore, the Indonesian scientific community would be in a position to benefit from the exchange of information on the latest seismic and satellite communication technologies, from data produced by the entire IMS network as well as from technical capacity building and training offered by the CTBTO Preparatory Commission.

Other States in the region are utilizing IMS data in support of their national tsunami warning efforts. For example, data from several IMS stations are being forwarded to Malaysia for this purpose. Other efforts towards enhancing tsunami warning capability include the forwarding of IMS data from the International Data Centre (IDC) in Vienna to recognized international tsunami warning centres on a test basis, under a decision of the Preparatory Commission dated 4 March 2005. The Northwest Pacific Tsunami Information Centre in Japan has reported that such data forwarded from the IDC provides more timely and reliable IMS data than they obtain by other data receiving methods. ■

INSTALLATION OF GCI ANTENNA, AS44, KAPPANG, INDONESIA, NOVEMBER 2002

State of health monitoring of the International Monitoring System



THE HANDLING OF IMS DATA

According to the Treaty, the main elements of the International Monitoring System (IMS) are the stations where data are generated, the Global Communication Infrastructure (GCI) through which the data are transported to Vienna, and the International Data Centre (IDC) where data are received, archived, processed and analyzed, and from where the data and resulting products are redistributed to States Signatories.

The Provisional Technical Secretariat (PTS) is responsible for monitoring, assessing and reporting on the operational status of all parts of this system as these functions are performed. The PTS manages the detection and resolution of any 'incident' that affects the availability, timeliness or quality of the data or the resulting products, wherever it may occur.

In order to monitor the data effectively, the PTS relies on an Operations Centre, a system-wide incident tracking tool, and state of health (SOH) monitoring.

The Operations Centre provides centralized monitoring as well as supervision of incident detection and resolution. The PTS Operations Centre continuously monitors the data from all IMS stations and ensures its readiness for processing at the IDC. When no data are being received in Vienna, an incident 'outage alarm' is generated. This triggers a process of troubleshooting which, depending on the complexity of the problem, requires actions from one or several responsible parties inside or outside the PTS. The ultimate goal is to restore data acquisition in the minimum possible time. The incidents are logged and tracked with the system-wide incident tracking tool.

SOH monitoring provides permanent surveillance of the operational status, or 'health', of all IMS elements. Its main functions are the collection of SOH information using specially designed software, the rapid display of this information for operators, the detection of incidents, the initiation of alarms when an incident occurs, and the storing of previous SOH information for later examination.

The PTS currently uses several SOH monitoring tools. Waveform and

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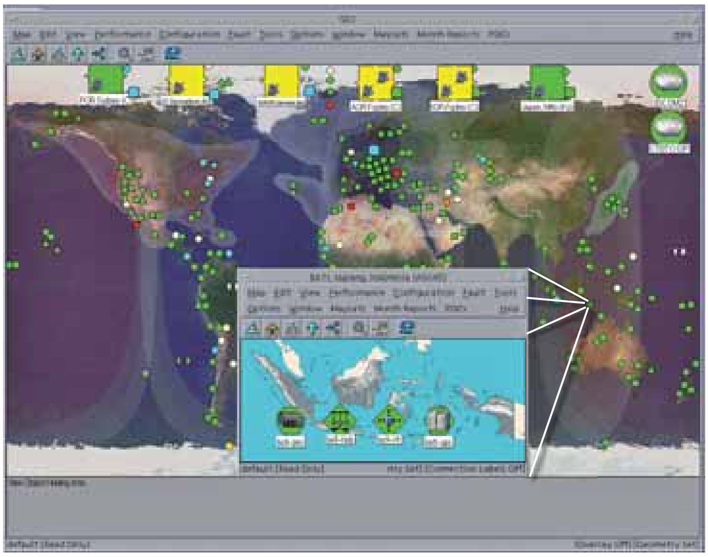
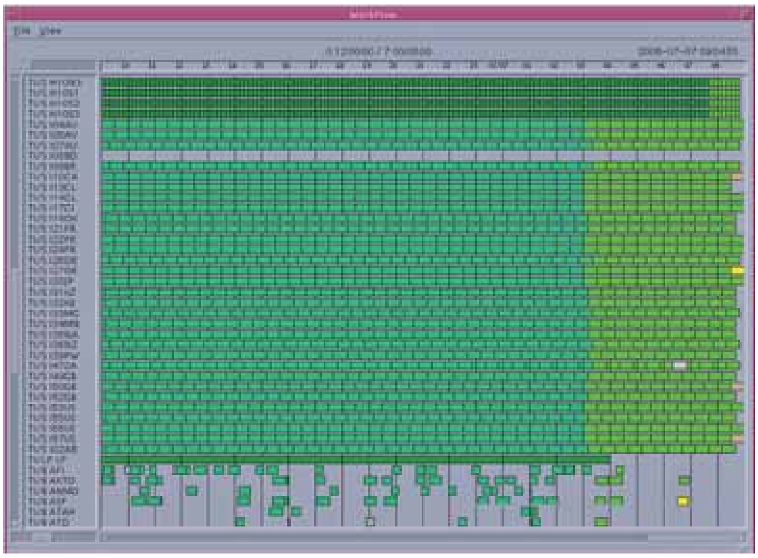


SCREENSHOT OF GCI NETWORK MANAGEMENT SYSTEM DISPLAYING REAL TIME STATUS OF GCI LINKS



SCREENSHOT OF PROCESSING WORKFLOW SOFTWARE SHOWING IMS DATA ACQUISITION STATUS AT THE OPERATIONS CENTRE

Challenges of establishing infrasound station IS39 in Palau

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FIXATING 11 METRE HIGH PLASTIC TUBE WITH ANTENNA ON TOP FOR DIFFERENTIAL GPS MEASUREMENTS

Every day in the construction phase of IS39 had a scent of adventure and presented its own unique challenges. This is also true of the certification visit, which took place from 31 May to 9 June 2005. The certification team, consisting of two PTS staff members and two infrasound experts from the University of Hawaii, discovered that the only bridge leading to the central array and the central power site was removed because it needed to be rebuilt. Instead of crossing the bridge comfortably and securely with their 4WD-vehicle, they had to carry the equipment on their backs, crossing the creek on a 30 centimetres-wide U-beam several times a day.

When checking the primary summing point[3] of the infrasound station, the certification team was unable to receive a signal through the dense canopy of the rainforest. This procedure, which is necessary for station certification, requires the antenna to be positioned exactly above the primary summing point with only one metre of divergence. Luckily, both of the infrasound experts from the University of Hawaii had experience in Alpine climbing. In a creative outburst, plastic tubes, initially foreseen for plumbing, were stuck together to create an eleven metres high plastic tube ‘tunnel’. On top of it the antenna was taped to the plastic tubes and attached with ropes to the trees on three levels. With this creative solution, the certification team was able to measure four out of seven primary summing points and provide the necessary documentation for the certification of the station.

IS39 was certified on 14 September 2005 and is now continuously sending data to the International Data Centre in Vienna. Without the help of the Palauan people, both at the local and the government levels, the station would not exist. They keep a watchful eye over what goes on in their territory and ensure that the array site is protected from vandalism and theft. There is a Palauan station operator, Mr Swenny Ongidobel, and technical services are provided by a Palauan construction company. Last but not least, the Palauan Government perceives the IMS station as a sign of prestige and international recognition, as their contribution to a safer nuclear-free world. ■

[3] The primary summing point corresponds to the location of the central element of the infrasound array. All the relative distances of the other array elements are computed taking as a reference the position of the primary summing point.

State of health monitoring of the International Monitoring System

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radionuclide data acquisition and processing are monitored by a software product called WorkFlow. A separate tool has been implemented to monitor the computer infrastructure. A third system, the GCI Network Management System (NMS) monitors the status of the GCI communications links.

The NMS of the GCI is the principal tool used within the PTS and by the GCI contractor to benchmark the performance of the GCI, to identify and to diagnose network problems.

SOH is currently composed of matured products such as the GCI NMS and other software tools under development. With about sixty percent of the IMS network in place, the development and testing of an integrated SOH monitoring system is essential to ensure effective and efficient operations.

A prototype integrated SOH software tool is being developed. Based on a variety of SOH software modules and a centralized database, it will provide an integrated view of the status of IMS stations, telecommunication links, data acquisition and processing. Moreover, such information is not intended only to be viewed by the PTS Operations Centre. Those outside the PTS, who are responsible for parts of the system such as station operators, also need to see how the SOH information affects their responsibilities. ■

Treaty Status

Signatures	176
Ratifications	134
Annex 2 Ratifications	34

AS OF 17 JULY 2006

Calendar of Meetings 2006

Preparatory Commission:

26th Session	20 – 23 June 2006
27th Session	13 – 17 November 2006

Working Group A:

29th Session	29 May – 2 June 2006
30th Session	2 – 6 October 2006

Working Group B:

26th Session	13 Feb. – 3 March 2006
27th Session I	15 – 26 May 2006
27th Session II	28 August – 8 Sept. 2006

Advisory Group:

26th Session I	24 – 28 April 2006
26th Session II	15 – 19 May 2006
27th Session	11 – 15 September 2006

The role of National Data Centres...

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NDCs also contributed to the evaluation phase of the system-wide performance test. Many interesting results were reported during the NDC Evaluation Workshop which was held in Rome, Italy, from 17 to 21 October 2005. More than 25 NDCs and station operators participated and provided feedback during the workshop (see also CTBTO Spectrum No.7, page 5)

The cooperation between the PTS and NDCs is a very important factor in the build-up and fine-tuning of the verification regime. Based on the feedback received from the NDCs, the IDC is improving its systems within the guidelines of the draft International Monitoring System and International Data Centre Operational Manuals. ■

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