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Successes in improving Data Availability for RN station with long term issues

Wacel HAMANI, Claus JOHANNSEN, Hideaki KOMIYAMA, Nicholas MASCARENHAS, Nurcan MERAL OZEL, Halit TATLISU and Andreas WIENS

Maintenance Unit, Monitoring Facilities Support Section, International Monitoring System Division, CTBTO

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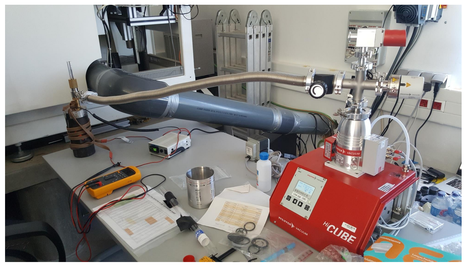
Abstract

Some RN stations have suffered from long term problems that affected their data availability. In the past problems were fixed as they occurred without using a strategic approach.
A strategy of dealing with station with long term issues was adopted to identify the root causes and address these in entirety. The poster presents various stations where the systematic approach of the root cause analysis followed by appropriate measures have lead to successful restoration of data availability.
Examples presented are:

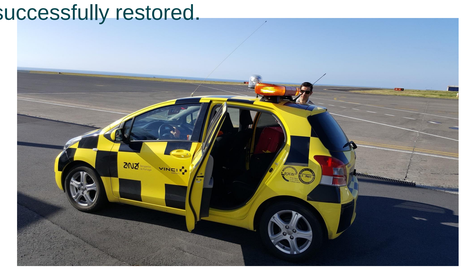
- KIP39 in Kiritimati Kiribati
- MXP44 in Guerrero Negro, Mexico
- PTP53 in Ponta Delgada, Portugal
- KWP40 in Kuwait City, Kuwait and TZP64 in Dar es Salaam, Tanzania.

Restoring data availability at PTP53 Ponta Delgada, Portugal

The IMS RN monitoring station at PTP53 Punta Delgada, Portugal is located inside the airport premises in a marine environment. A prolonged outage occurred at the station due to access limitations at the airport.



Maintenance staff visited the station to restore data availability. Severe corrosion had damaged the air sampler pump which was replaced. Detector vacuum was restored onsite. The station electronics: (Computer, MCA and weather station) were replaced. The station grounding was corrected. A power conditioner was installed, the Cinderella system serviced and the station was restarted. Successful arrangements were made to resume station access for the operators using a follow me car. After our intervention and measures Data availability has been successfully restored.



Restoring data availability at KIP39 Kiribati

The IMS RN monitoring station at KIP39, Kiribati is located on a small coral atoll in the south pacific. It is uniquely run on diesel generators. Lack of adequate maintenance and a poor choice on the type of generator led to failures of all the generators. The bad power damaged most of the station equipment.

MFS together with ED collaborated with the station operator to restore DA at the station. Two Deutz air cooled generators commonly used in the Islands were procured with specially treated alternators. A ORTEA power conditioner was installed. A SOCOMEC UPS was installed and two new DAIKIN split ACs were installed.

The grounding system was redone, a new HPGe detector, Lynx MCA, station computer, meteo system and DAS were configured and installed during the site visit. Following the visit and intensive onsite training of the local operators, data availability successfully was restored.

Improvements to power quality at Kuwait (KWP40), Tanzania (TZP64)

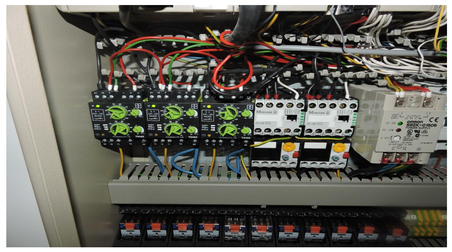
Issues related to bad power have been a frequent cause of station downtime. Most RN stations are equipped with auxiliary generators. Due to inadequate service, large switchover transients or poor supply regulation, Repeated equipment failures have been observed at some stations. These anomalies include damage to UPS systems, gamma detectors and other station electronics.

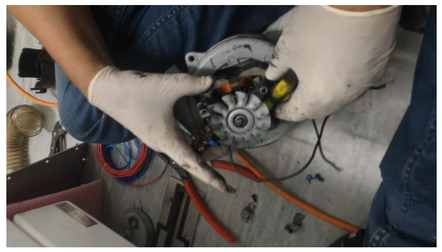
To prevent this power conditioners have been installed at many RN stations. The additional protection provided has reduced the number of failures and resulted in significantly improved data availability.

Restoring data availability at MXP44 and MXX44, Guerrero Negro Mexico

The station suffered from frequent outages related to bad power and poor station infrastructure. During a maintenance visit it was discovered that the air sampler motor wiring was badly burned and the entire air sampler motor and pump will soon be replaced. The motor controller settings were optimized. The station grounding was inspected and found to be incorrectly wired. The grounding errors were fixed.

The Cinderella system was serviced: new sampling chamber installed, new robot arm cutting blades installed , a new pump housing will be installed, the vacuum motor was repaired.





A new station computer, power conditioner, UPS were installed. The spare detector and MCA were tested. Following the extensive work done data availability has vastly improved.

Conclusion

While sustaining the network, we identified many **root causes of failures** at IMS stations with chronic data availability problems. Corrective measures included improving power quality, lightning protection and grounding, improving station infrastructure, performing detector evacuation, improving technical training and conducting equipment standardization. **These measures in conjunction with effective sparing have contributed to long term benefits and ensured the CTBT RN network remains operational, reliable and credible.**

In the future, the PTS, together with relevant Stakeholders, will continue to identify such areas based on historical data from the field and lessons learned. Furthermore, internally in the PTS, these lessons learned and expertise gathered with IMS RN technologies could be applied elsewhere, to support predictive, preventive and corrective maintenance for specific needs. The **Maintenance Strategy, including the effective Maintenance Program** continues to evolve. This should help improve data availability for the IMS.