A Report of Bharat Sanchar Nigam Limited Activities during XXI Indian Scientific Expedition to Antarctica

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Bharat Sanchar Nigam Limited participated in 21st Indian Antarctic Expedition by deputing one personnel from Department of Telecommunication / Bharat Sanchar Nigam Limited as Winter Member for maintaining the telecom setup in Indian Base Station, Maitri in Antarctica. Broad objectives were as follows.

1. Day to day operation and Maintenance of Telecom Equipment in Maitri.

2. Exploring new possibilities for improvement.

3. Day to day misc works assigned by the Team Leader

The followings tasks were performed by the member:

Operation and Maintenance of Newly installed INM-M terminal in Nanda Devi: The newly installed INM-M terminal is used for

(a) Voice communication - Later on the permission was granted by the NCAOR to use the terminal for personal calls. Some members has utilized this facility.

(b) Fax Terminal was very useful for receiving the fax messages from NCAOR. Although some fax messages were also sent, but mostly used for receiving the fax.

(c) E-mail: Terminal is having capability to send and download e-mails @2400 bps. The attached computer is configured for e-mails from VSNL server, as the terminal is registered for data with VSNL. One e-mail ID 641902723 ©inmarsat.vsnl.com was used sometimes.

(d) Doctoranywhere.com: The attached PC is loaded with doctoranywhere.com software, to take medical advice form any doctor in India or abroad. One web cam was also supplied with terminal and USB port installed with PC.

(e) Terminal is tested for e-mail chatting and video conferencing, but never used during the expedition.

The above terminal was maintained and operated through out the year and performance was quite satisfactory.

E-mail terminal of Girinar Hut: e-mail equipment i.e. concern INM-B terminal and PC is installed in Girinar was used through out the expedition for sending and down loading the e-mail. Following activities were done

(a) Sending approximately 650 e-mails every month.

(b) Downloading approximately 650 e-mails every month.

(c) Printing of e-mails and distribution.

(d) Formatting of News received almost six days in a week and printing the news for reading by various members.

(e) During handing over the fax was not working. Re-configured the fax ID and terminal used for sending and receiving the fax letters.

INMARSAT - B Equipment installed in Girinar Hut

The equipment was installed during 20th expedition and normally used for e-mail facility. The IDs of the equipment are

    1. For Telephone   00873 - 341900348

    2. For Fax   00873 - 341900349

    3. For Data   00873 - 341900350

In the beginning of 20th expedition, the Internet Services was through ARVI, VSNL, India. But due to some technical changes in VSNL server, the services suddenly stopped working and there was no e-mail facility in Maitri for 46 days. Lot of testing and discussions were held with VSNL, but nothing improved. Then other options were tried and Internet Services was accessed through Station12 of Netherlands. Since then, the Internet Services in Maitri are provided by Station12 server and since then working quite satisfactorily.

When we took over the terminal in the last week of Feb 02, the Fax ID was not in working order and it was informed that the Interface Card (PAX Card) is not working since long. Later on, during detailed testing it was found that the PAX card is good and ID was reconfigured and since then working all right. We sent and received the many fax messages from NCAOR and VSNL three-four times during our 21st expedition.

Outlook express is used as the Software to send and download the bulk mails everyday. Mails were sent once a day and 365 days in a year.

Once in a week, Yahoo ID was also accessed and for that Internet Explorer software was used.

One Russian electric heater of 2 KW is also running round the clock to maintain the temperature of the hut to + 20 degree C or above. Essential fire fighting equipments are also available inside and outside the hut. The INMARSAT equipment requires - 24 Volt DC regulated power supply. A power supply is also available to convert the 230 V AC to - 24 V DC regulated. INMARSAT equipment can work from - 20 to- 30 V DC.

We generally download the mails in Girinar and prints in the main building normally in the computer room. Continuous Fanfold paper was used throughout the expedition with Dot-matrix printer. There is still lot of continuous paper available in Maitri, only printer ribbons are required, for which the demand has already been placed. The main advantage of the printing on Fanfold Paper is—

1. We utilized an old stock of Fanfold paper during our expedition.
2. Lot of persons, who were not very familiar with PC etc, also learned printing.

Earthling is most important, specially during May to Oct as magnetic activities generally remains very high and there is good chance the delicate INMARSAT equipment can be damaged. Therefore e-mail hut is marked as restricted area and no body is allowed inside other then the concerned.

Over all the performance of the whole equipment was satisfactory throughout the expedition. Our experience shows that the 30-kilo bytes data can be sent in a minute. If e-mails are small in size, four-five e-mails can be transmitted in a minute.

We are getting the National and International News through Internet. Luckily we were getting both the news daily through two well wisher of our 21st expedition:

1. Shri K. Amar of IIG, Mumbai, due to friendship with Mr. Mahender of IIG.
2. Shri Bhagwati Prasad of DEAL, Dehradun, as he was here as winter member with 20th.

News downloaded as e-mail, normally three-four mails are coming, formatted and printed in the main building. So news was not at all the problem throughout the expedition and even it was excessive.

We were maintaining the following records:
1. Daily and monthly time utilization log.
2. Daily and monthly consolidated Modem log.
3. Number of mails sent by any member i.e. name, date and size etc.

Problem Faced during 21st Expedition:

In April, we faced the Password problem in our main ID and we were not able to download the e-mails. We were able to send the mails were not able to download. Station 12 was contacted and they allotted new password. New password was tried and ID started functioning well. Later on the Station 12 server website was accessed and password was re changed to our convenience.

Once during Blizzard, lot of ice deposited on the roof of hut and as the hut kept at + 20 degree C, it started melting and lot of water were dropped over the equipment. Equipment were dismantled and taken to main building, dried for six hors, relocated and re-installed and found working all right.

Major problem faced in Aug, 02, when the filter size of incoming mail was increased from 25 kbs to 50 kbs, as virus downloaded as an attachment with one e-mail. Even the Norton Antivirus got corrupted. Hard disk of the PC was reformatted and new software as Windows Millennium and Office 2000 were loaded. We registered Office 2000 with Microsoft Office in Kalka Ji Delhi. Since then equipment worked fine.

In Oct, 02 the incoming filter of the mails were increased to 100 kbs. On 18th of Oct, 02 the virus infected the PC and even the Norton stopped working. Norton was deleted and re-loaded, but nothing improved. In between, rescue version of AVG Antivirus was sent by NCAOR through e-mail, which was downloaded and tried, but nothing succeed. Still the PC in infected by I-Worm Bugbear virus and we are waiting for the new team to bring latest version of Norton etc. At least three more PCs are having same infection.

Earthling was broken during sever blizzard and it was extremely difficult to repair during blizzard. It was restored temporarily and repaired properly later. We observed that static charge increases during blizzard and one should be very careful in grounding himself before entering in the hut. No one should touch any equipment specially the INMARSAT, before grounding oneself. The continuity and the physical inspection of the earth wire should be done regularly.

E-mail System in Maitri Antarctica

E-mail is the most important means of communication for sending scientific data, official data and personal e-mail of the members. It is the most vital system in Maitri, although fax is also important for those members not getting e-mail.

For sending and receiving the bulk e-mails, we use Outlook Express software and for receiving the bigger size mails, the "Internet Explorer" software is used. For telephone equipment, we use INM - B Terminal installed in Girinar Hut, 100 meter from the main Maitri building. E-mails are sent and downloaded once in a day and for all 365 days in the year. INM-B Terminal is having the capability to send the data @9600 bit per second, so associated PC modem must be configured with either 9600 bps or 19200 bps. The 19200 bps is the better option and recommended by the manufacturer.

In good weather conditions, the actual byte rate achieved is 30 kbs (1 byte = 9 bits). After imposing some restrictions in sending and receiving e-mails, it was possible to manage 15-16 minute daily use of satellite time or 480 -500 minutes in a month. On an average, 600-650 mails were sent and almost similar amount of mails are received in a month. The Internet service provider is Station 12, situated in Neitherland. We use the following IDs for sending and receiving the e-mails.

1. maitribase@   mail,   station   12.co.   - Main ID
2. smaitri@mail.stationl2.com   - Standby ID
3. maitribase@yahoo.co.in   - For higher size mails

The second ID is rarely used in case of some problem like Password in the main ID.

As the Station 12 Land Earth Station is falling in the coverage area of Atlantic Ocean Satellite, we lock our INM-B terminal always in AOR (E). INM-B terminal equipment is quite user friendly and one can learn the basic operations in few hours. As we keep the terminal switched off everyday, we have to feed only the geographical location of Maitri (Lat. - 70 40' and Long. - 11 40') daily at the time of switching on the terminal. Rest parameters are retained in the memory of the terminal and automatically it locks in AOR (E) with Station 12 LES and ready for the use. The IDs of the terminal are as follows,

1. For Voice   - 00871 - 341900348
2. For Fax   -00871 -341900349
3. For Data   -00871 -341900350

AOR (E) Satellite area code is 00871, while the other ocean region used very occasionally is IOR and access code is 00873.

Operational problems

E-mail was always the hot issue throughout this expedition and it was the matter of big resentment in the members. The reasons were:

Members want unlimited e-mail facility, as some used in the main land. Through INMARSAT, we have to pay regarding the telephone time charges as US $ 03.70 per minute, while in the main land as Rs 01.20 per three minute. In addition to this, Internee server utilization charges has to be paid extra.

Some members want to send colourful mail in HTML format daily. Which increases the size unnecessarily. When we tried to send all messages in "Plain Text", few members showed lot of resentments.

Some members wants to send photographs of Antarctica, its fauna and flora etc to there near and dears regularly, which increases the mail size out of proportion.

We use "message rule" as to delete all the mails from the server, if size is more than the fixed size. Lot of resentments were shown by many members and they want no filter should be impose in the receive path.

The reason for imposing the filter were :

(a) Sometimes mails of size more than 1 MB mail are coming very often, which takes lot of time to download and after downloading, in last we found it is some unwanted picture.

(b) Sometimes the total mail size in the box goes to several megabytes, which is impossible to download. So we have to send a fax to Station 12 to reset the mailbox and all wanted mails are also getting deleted

(c) In March one fax message were received from NCAOR stating to restrict the mail facility to avoid huge bills, without any clear-cut guidelines.

During the expedition, first the 25 Kbs mail filter were imposed to avoid various problems and later on in the end of June, it was relaxed to 50 Kbs and then further relaxed to 100 Kbs.

The e-mail facility to the members is not free at Novo Station, so some Russians want to send the mails through our station in exchange of some gift items.

During any special occasion like Holi, Mid Winter Day, Deepawali and New Year day etc, members wants to send good wishes mails along with photographs.

Some members want to see the various websites and want to download some information. We are not accessing any website except Yahoo, that too for checking the e-mails in Yahoo Id once in a week.

Some e-mail are received with switch installed on the body of the e-mail and marked as "click here" to download the greetings etc. Many members are insisting to download, while it was not allowed during the expedition.

Problem faced due to increase the filter size of receive mails

In the beginning, 25 kbs filter was imposed and things were running quite smooth. When the filter size increased to 50 Kbs, the virus infected the PC, as downloaded through one E-mail in July and hard disk was reformatted.

Again when the filter size was further increased to 100 Kbs, the PC got infected with the virus permanently. It was downloaded as an attachment with one e-mail of 69 kbs. Thereafter even the Norton antivirus was not able to clean the system and at least three PCs in Maitri are infected. We downloaded the Rescue version of AVG sent by NCAOR, but it was not able to clean.

Annual Report regarding the INMARSAT - M Terminal installed in Nanda Devi

The INMARSAT - M terminal of Nanda Devi was installed during summer period of 21st IAE. It was installed by Shri B.TRokade of ARVI, VSNL and handed over for operation on 07th Mar 02.

The IDs of the terminal are as follows.

1. For Telephone   -00873 641902723
2. For Fax   -00873 641902724
3. For Data   -00873 641902723
4. E-mail ID   - 641902723 @inmarsat.vsnl.com

This terminal was mostly utilized for receive the Official and Personnel fax messages from NCAOR. The voice quality of the terminal is the best in all the terminals. Therefore on request of various members, approval was sought from NCAOR to use this terminal for making personal call by individual members, which was approved in Toto. Some members have made their private calls through this terminal. The time is calculated by using stopwatch.

The data speed of the terminal is 2400 bits per second, which is quite low than INM-B of Girinar Hut.

Earlier the terminal was installed in the hall of Nanda Devi, but shifted inside one cabin in Nanda Devi due to some safety reason. Satellite Dome Antenna for the terminal is installed outside between Nanda Devi and Annapurna.

Equipment worked on 24 V DC supply, which is derived through Power Supply Module. Power supply should be "Constant Voltage Type" with AC Input as 230 V and DC Output is 24 V DC. It should be constant voltage type power supply. There is no UPS with the system, so one has

to rush to Nanda Devi in case of power problem to shut down the equipment. Although AC mains power interrupted more than hundred times in the expedition, but equipment behavior remained unaffected.

Earthling to the equipment is extended from the main earth, near to shivlingam adjacent to lake. As static potential is high during April to Oct, one has to discharge itself by touching the ground before touching the equipment. Antenna dome is also earthed with the same earth.

RG - 214 U RF Cable is used to connect the Above Deck Equipment (ADE) installed in the antenna dome to the Below Deck Equipment (BDE) installed inside the Nanda Devi. Same RF cable is also carrying - 40 V DC required for the operation of ADE.

Overall performance of the terminal remained satisfactory throughout the expedition, except once when lot of fresh snow entered in the antenna dome through one minor hole in the bottom during severe blizzard. Terminal stopped functioning and was displaying "Antenna Movement Failure" alarm. Later on the dome was open in good weather condition and found lot of fresh snow entered in the dome. Entire snow was removed and all components were cleaned and reaffixed. The equipment started functioning well. Now dome has been sealed from all the side with packing tapes.

One more problem observed once, when incoming fax stopped coming and the transmission of fax was all right. Request was made to ARVI LES through 33# to send the test fax and found no fax is corning. On contacting ARVI, they informed that the fax is no reply, but we did not got any ring. Later on the Fax ID 641902724 was reconfigured and found started functioning well.

One PC is also installed with the terminal to for sending and receiving the e-mail from the newly created ID 641902723@inmarsat.vsnl.com. We did not use much for the reason:

1. The VSNL server is not user friendly and requires IP address daily, which has to be fed after connection to the mail server. IP address is not fixed and displayed after connection.

2. The speed of the terminal is 2400 bits per second, so takes long time compare to INM-B installed in the Girinar Hut.

Terminal is having the following capabilities.

1. Voice call
2. Fax
3. Sending and receiving of e-mail through VSNL server and Station 12 server.

4. Doctoranywhere.com
5. E-mail chatting
6. Video conferencing

Doctoranywhere.com is the facility available in Maitri to take medical consultation from the expert group of doctors of India and abroad. The main office of the company is in Pune and we can refer any case to them and they will send the reply through e-mail with in 72 Hours. In case the chatting is requires, they are arranging the concerned doctor on-line for chat. One web camera is also supplied with the terminal for sending the photographs of any patient to doctoranywhere.com. This facility was used during summer, but not used later since Feb 2002, as no consultancy was required as no member fell severely ill. Similarly e-mail chatting, and video conferencing was never used during winter period.

Terminal was used to send and down load the e-mails through Station 12, when our PC of Girinar Hut was affected with virus and stopped working. The antenna was pointed to AOR (E) and Station 12 LES was selected. The Outlook Express was configured for Stationl2 server (very similar to the setting of Outlook Express in the Girnar Hut PC) and found the e-mails were successfully sent and received for two days. This terminal takes more time in sending and downloading the e-mails compare to Girinar due to its low speed.

Annual Report of Post Office Maitri Antarctica

Sri Misha Bajpai was also working as Honorary Post Master of Maitri Post Office in Antarctica. It is the Branch Office of North Goa post office. He took over the charge of Maitri Post Office from Shri M.K.De of 20th IAE in Feb 02. We purchased the postal stamps of worth Rs. 3609/= remained with Mr. M.K.De at the time of taking over. Our Team Leader of 21st IAE also handed over postal stamps of worth Rs. 10000/= in India. We sold postal stamps of Rs. 8109/= during our expedition till Dec 02.

The post office is working mostly for Philatelic purpose and no other stationery are available in the stock, although there is demand of good quality of envelops etc. Similarly the postal stamps should be of impressive quality, as we brought like "Panchtantra ki kahaniya". All these stamps sold very quickly and even we could not meet out the demand.

The postal tickets cancellation cachets are very old type and changing of date is extremely difficult. Except very few dates, other dates of the calendar are not possible. This system requires complete replacement with new technology cancellation cachets, as these cachets looks as of British period.

When tourists and our neighbouring Russians are visiting our station, they also want some postal stamps and cancellation. That time it looks very odd, when impression of the cachets is not at all clear, even after full force hit. It spoils the reputation of the whole postal department.

Similarly the various Rubber Seals are outdated, as supplied long back. Even many of them are of Dakshin Gangotri. All new rubber stamps should invariable be supplied by NCAOR, as the tourists and neighbouring Russians desires these rubber stamps impressions on their diary/passport as when visits Maitri.

There are ample opportunities for Post Office to function in a better way, which requires supports from NCAOR. To replace these all outdated items, does not require huge money. NCAOR should take necessary action, so that things can be improve at least by 23rd expedition.