

REPORT OF THE ARMY TEAM

XVII INDIAN ANTARCTIC EXPEDITION.

Maj G Narayan, VSM,
Indian Army

Introduction

The XVII Indian Antarctic Expedition sailed from Goa on 08 Dec 97. An Army team comprising of two officers, two JCOs and nine ORs from the Corps of EME and Corps of Engineers formed the logistic team of the XVII IAE/XV WOT. The composition of the team was as under :-

- | | |
|-----------------------------------|--|
| (a) Maj G Narayan | (EME) - OIC, Army team |
| (b) Capt KS Panesar | (Engrs) - Deputy-in-charge,
Army team |
| (c) Sub (Tech/Elect) RS Aswal | (EME) |
| (d) Nb/Sub (Tech/B veh) BS Mor | (EME) |
| (e) HMT (B veh) RV Ghatge | (EME) |
| (f) HMT (B veh) Ratan Singh | (EME) |
| (g) Hav (Elect/MV) GD Reddy | (EME) |
| (h) Hav (EE.Mech) Jahabar D | (EME) |
| (j) Hav (EE Mech) Rajbir Singh | (EME) |
| (k) Hav (Elect) K Madhavan | (Engrs) |
| (l) Hav (Ftr) NN Maharana | (Engrs) |
| (m) L/Hav (Carp & Jnr) Anil Kumar | (Engrs) |
| (n) L/Nk (DPMT) Devi Singh | (Engrs) |

HMT RV Ghatge subsequently returned to India on medical grounds along with the summer contingent of the expedition after developing symptoms of Hepatitis. List of the appointments held by the members of the logistic team is given in Appx 'A'.

The following tasks were assigned to the logistic team of XV11 IAE as per the guidelines provided by DOD :-

- (a) Establishing a full fledged Medical Complex comprising of an Operation Theatre, Examination Room, X-Ray Room, Sterilization Room, Linen and Medical Room within the 'A' Block of Maitri.
- (b) Relaying of the water supply line with electrical trace heating system.
- (c) Upkeep of station infrastructure and all life support systems as part of the regular maintenance task.
- (d) Upkeep and regular maintenance of convoy support vehicles.
- (e) Upkeep of fire fighting equipments of Maitri and updating the serviceability of all fire fighting equipments.
- (f) Construction of an underground vault for permanent Seismic Station at Maitri.
- (g) Transportation of fuel and stores from Dakshin Gagotri / shelf to Maitri.
- (h) Stock taking of spares of all life support systems and vehicles and projecting demands for future procurements.
- (j) Upkeep and restoration of the natural habitat of Maitri and it's surroundings complying with the environmental requirements.
- (k) Providing logistic support to the scientific activities.
- (l) Any other task as assigned by the Leader of the Expedition.

Activities Prior to Departure From India

Acclimatisation training

Acclimatisation training was imparted to the wintering team members at ITBP Establishment at Auli from 17 Sep to 25 Sep 97. The main aim of the training was, to familiarise with the scientific team with the difficulties that are prevalent in Antarctica and' also to provide a platform for the winter team members to interact with themselves. Both of the above mentioned goals were achieved during the training period at Auli

There were a series of lectures by leaders of the earlier expeditions that imparted valuable knowledge of Maitri to the

members. Experts also gave lectures pertaining to the psychology and the effects of the stay at Antarctica.

Technical Training at R&DE (Engrs), PUNE

The training provided was mainly of a theoretical nature. It was based on slide shows and videos that were shot during the previous expeditions. A visit to the premises of M/s Thermon Heat Tracers Ltd. who supplied the electrical trace heating system for the water supply line was educative and useful and helped in installing the water pipe line and trace heating system at Maitri.

Training at EME School, BARODA

The EME components of the Army Team were given a week long orientation course at EME School, Baroda. As no equipment of the type used at Antarctica was available, this part of the training had limited usefulness.

Activities at GOA

The Army Team reported at GOA on 04 Dec 97. They were attached to 3 Military Training Regiment, Navelim Camp of 2 Signal Training Centre for the duration of the stay in Goa. Identity Cards and Pay Books were deposited with the Adjutant, 5 Technical Training Regiment, Bambolim Camp of 2 Signal Training Centre. Pay and allowances including an amount of Rs. 70,000/- as advance of hardship allowance per person were drawn from their imprest fund.

Activities on Board Ship MV Polar Bird

Physical Fitness

Regular physical training was carried out on the onward journey to Antarctica. This was helpful in overcoming the seasickness and getting gradually acclimatised to the same. These activities stopped when the sea became rough and unsafe to go to the deck.

Participation in organised games

To overcome the monotony of the sea journey, games were organised. Tournaments were organised for indoor and out door games like Carrom, Table Tennis, Volley Ball etc. and all the members actively participated. This also helped in bonding the team together.

Issue of Clothing

The Extra Cold Climate (ECC) Clothing was issued to the entire team as per the entitlement and directives of the DOD. The issue was organised in an orderly fashion keeping in consideration the size of the individual.

Problems Faced. The main problem faced during the issue of the clothing was that there were inadequate numbers of Large and Extra Large sized clothing. This caused a lot of problems and inconvenience to the team members as a majority of them had to wear incorrect size clothing.

Readjustment of Cargo

The cargo in the containers was readjusted to minimise the number of loads to be taken by the convoys as well as to identify and separate the items that would be required to be sent on priority by the air sorties.

Planning of Helicopter Sorties

This was done with the utmost care so as to make optimum use of all sorties to and fro from the ship. Priority was given to the detachment of the logistic team to move to Maitri to set up the summer camp followed by scientists of the summer team and the stores required for the summer tasks and setting up the various field camps. This could save in time and organise the activities in a systematic manner.

Activities in the Summer Period

Activation of the Summer Camp

Due to lack of stores and other administrative problems, the summer camp had to be established by the new team. The camp could be established by a detachment of new logistic team members only after clearing the snow accumulated in the summer huts during the wintering period and setting up the water points. The summer huts could be activated in a record time.

Construction of the Underground Seismic Vault for NGRI, Hyderabad

This was the first task carried out by the logistic team of XVII IAE. The vault was to be made underground which made the task difficult, as explosives could not be used for excavation due to the close proximity of the summer camp buildings. A bulldozer was pressed into service to make a pit 1.5 times the size of the vault. Clearance of the debris and the final leveling of the ground had to be done manually. The prefabricated panels, which had been dispatched to Maitri in the initial helicopter sorties, were then placed in sequence to complete the structure and the joints between the panels sealed with silicon jelly to prevent ingress of snow. The vault was inaugurated on 26 January 98, the 38th Indian Republic Day by Mr. A Kondratyev, the Leader of 42nd Russian Expedition.

Problems Faced : The main problem faced was the digging of the pit without the use of explosives, Therefore, the same had to be done with the bulldozer that was a time consuming process particularly since the rocks beneath the ground were rigidly held by permafrost. At times manual effort had to be resorted to free the rocks from the permafrost and clear the debris.

Taking Over of Various Stores and On the Job Training

The important task of taking over of the vehicles, life support systems and stores was carried out simultaneously along with the other summer activities with an aim to take over the station as soon as possible. Training on operation, maintenance and repair of

the above was also received by way of on the job training.

Establishment of the Dakshin Gangotri Summer Camp

Members from both the new and old Army teams were moved to Dakshin Gantori (DG), the old Indian Antarctic Station, by helicopter to establish the camp in order to enable the scientists to carry out their projects as well as to act as a base for the fuel transfer operations. Setting up the camp included starting up of the 30 kVA generator, placing the living modules in fresh positions and relocating the fuel storage tanks

Transfer of Fuel from the Ship to Dakshin Gangotri Fuel Dump

A team comprising of members of both the old and new teams was inducted to DG by helicopters to carry out the transfer of the fuel from the ship to DG. About 120 kl of fuel in bulk was offloaded from the ship to the storage tanks at DG.

Problems Faced : The main problem faced was the inability of the ship to transfer the fuel to a safe distance from the edge of the ice shelf due to short delivery pipes used to pump out fuel from the ship's hold to the storage tanks. This resulted in a loss of a 20 kl fuel tank into the sea due to the collapse of a portion of the ice shelf. The close proximity to the shelf's edge is also unsafe for the personnel working there.

Repair of Unserviceable Sledges on the Ship

Two sledges were taken aboard the ship for repair by welding. This increased the number of load carrying platforms available for the convoys.

Repair of the Mantis Crane on the Shelf.

One vehicle and engineer equipment mechanic from the new and old teams were inducted to DG for repair of the crane which had major problems of mobility due to failure of the hydraulic motor. As the required spares were not available, the repair was only partially successful and the crane was moved to the shelf on a

sledge and was helpful in the offloading operations.

Laying Out of the Construction Stores of Medical Complex

The construction stores for the MI Room, which had been sent to Maitri during the earlier expeditions, were unloaded from the containers and laid out behind the 'A' Block with an aim to segregate the stores as per the construction sequence. The containers, once emptied, were used to load the scrap / unserviceable material from the A Block for back loading to India.

Clearing of the 'A' Block at Maitri

The 'A' Block was being used as a utility annex where large amount of material had been stored. This had to be cleared to enable to start the construction work of the medical complex. The useful items were shifted to different locations at Maitri and the salvage/unserviceable items were loaded into containers. The floor of the 'A' Block was leveled manually for placing of the floor panels of the MI Room.

Modification to the Pump House

Due to the vintage of the pump house structure and leakage, it was difficult to maintain the temperature within the pump house. It was extremely difficult to open / close the door of the pump house during strong winds since the opening of the door was towards the wind direction. To do away with all these difficulties, the door was shifted from the windward side to the leeward side, strengthened the structure and fitted with annodised sheets to prevent leakage. The modification has been successful and could solve all the existing problems

Laying a New Pipeline from the Pump House to Maitri

A major task given to the logistic team was the laying of a new water pipeline from Priyadarshini Lake to Maitri as the old pipeline had developed leaks during the previous year. Stores for this task were shifted to Maitri in the initial helicopter sorties and the work was carried out on a war footing. The old pipeline was

repaired and a new pipeline was also laid with electrical trace heating system. The task was completed in record time by the new team on its own which helped in gaining experience and familiarising with the system. Representative from R&DE (Engrs) provided guidance and actively participated in this task.

Modification and Repair Carried out to the Ductline

The water supply duct which has been in use at Maitri for more than 10 years has developed noticeable sagging at a few points along its length. This resulted in unwarranted stresses coming on the joints of the pipelines inside the duct and also caused retention of water in the pipeline. This water retained in the pipeline freezes thereby causing the pipes to burst. As a remedy to this problem, the portions with large sagging were propped up with additional support using resources available.

Establishing the Satellite Communication Terminal Antenna

An improvised platform for the new satellite communication terminal was fabricated from scrap material available at Maitri and installed the system. System functioned satisfactorily throughout the period of the expedition.

Cargo Handling on the Ship

All the cargo, which had been brought by the ship, was off loaded on the ice shelf. This included stores, food, fuel and other essential items necessary for survival of the team during the winter months.

Problems Faced : The ship's crane was unable to load the containers directly onto the trailers and sledges. Also, the Mantis crane not being fully functional compounded the problem. The containers had to be offloaded on the edge of the ice shelf from where they were hauled by vehicles using tow ropes nearer to the Mantis crane and then loaded on the sledges/trailers. This was quite risky to the men, resulted in unnecessary fatigue to the vehicles and waste of time due to double handling of all the loads.

Joint Convoy

Joint convoy was carried out on 26 Feb 98. The convoy enabled the new team to get acquainted with the route and the problems encountered. Stores that were to be back loaded to India were taken in this convoy and essential cargo brought back from the shelf.

Activities in the Winter Period

Convoys

A total of seven convoys, including two special convoys to provide help to the Russian station, were run from Maitri to DG / ice shelf in the winter period. All the cargo including fuel was shifted to Maitri in these convoys. Containers and equipment to be back loaded were also taken from Maitri and placed on the ice shelf. During the last few convoys a number of fuel storage tanks have been placed at the ice shelf for the receipt of the fuel for the new team.

Two special convoys were run to render assistance to the neighboring Russian station. The first special convoy was organized in very short time in the month of June when the Russian helicopter carrying personnel and cargo crashed soon after taking off from the ship. Indian assistance was sought to help the Russian convoy, which was already on the Russian Bay. The second convoy was launched during mid-winter to locate the Russian convoy which had got stranded on the polar ice and with out communication with the station for three days. The Russian convoy was located and escorted to the Russian Bay and back. This was the first time a convoy had been launched during the mid-winter period. Details of the convoys are given in Appx B.

Problems faced : The following problems were faced :-

- (a) It was found that the mobility and reliability of the Pisten Bully 270 did not match up with the Pisten Bully 330 due to their vintage. The fleet of Pisten Bully 270 needs to be phased out and replaced by

Pisten Bully 330. Two PB 270 developed engine failure during the convoys and had to be transported to Maitri on sledges.

- (b) It was noticed that the hydraulic fluid (ATF 66) and the winter grade engine oil developed grease like consistency at low temperatures, which made starting up of these vehicles extremely difficult.

Preparation of Demands

Thorough stock taking of all items held on charge by the logistic team was carried out and updated the ledgers. Demands for the items required for the next expeditions were meticulously prepared and forwarded to the DOD within the stipulated time. An effort was made to identify and separate unserviceable items for discard / backloading to India.

Maintenance of Power Supply System

Rigorous maintenance of generators was carried according to the laid down procedures. Generator No. 4 of the Surya complex was removed for backloading. The generators Aditya No.1, Surya No.1 and Bhaskara No.1 were overhauled. The details of all the repairs carried out on the generators, the hours run and other data has been attached as an Appx 'C'.

Problems faced :- The main problems were :-

- (a) Snow ingress and accumulation in the containers was a recurrent problem during the winter months during the blizzards and had to be physically removed.
- (b) The brush type generators of the Surya complex gave considerable problems of running and maintenance due to their vintage and therefore sparingly used.

Repair and Maintenance of Vehicles

Periodic maintenance of vehicles was carried out in addition to rigorous inspection before and after each convoy. An engine of Pisten Bully-330 was changed after the vehicle developed engine failure during the convoy. A new engine was also fitted on the Bulldozer - D50 A15. These added to the vehicle fleet.

Problems faced. The main problems faced were :-

- (a) No workshop manual and spare parts list for Pisten Bully 330 is held at Maitri. This caused repair problems as it was a newly inducted equipment for the Indian Antarctic Expedition and sufficient repair expertise had not yet been built up. Now the fleet is no longer new and started developing defects.
- (b) Welding jobs keep arising from time to time for which expertise is not available.
- (c) The deficiency of one vehicle mechanic caused by HMT RV Ghatge's return to India put considerable pressure on the logistic team.

Renovation of Mobile Generator Module, Jeevan Jyoti

The mobile generator module, Jeevan Jyoti, was overhauled and replaced the existing 12.5 kVA generator, which got out of action during the second convoy, with a 30 kVA generator. The work was carried out on a war footing to get the module ready as soon as possible for the convoys. Certain structural modifications also have been made in the same module. Earlier the entire structure of the module had to be opened to remove the generator, but after the modification, now the access can be gained by opening the roof panels only.

Waste disposal

Due to the subzero temperatures prevailing in Maitri for almost the entire year, problems are faced in the disposal of the waste water. The main problem faced is that the waste water freezes in the pipes, thereby blocking them. To tackle this problem, electric

trace heating tapes have been put around the incoming to the Klargestors and outgoing pipes to the soakage pits. Immersion rods had been fixed at the ends of the pipes so that the water does not freeze and flows freely into the disposal pit. Despite these steps, the system required constant repair and maintenance particularly as the pipes used to leak and give way at the joints. There are no proper stands/support for the waste water pipes to rest on and only temporary arrangements have been made to support them.

Water supply

With the laying of the new pipeline and the repair of the old pipeline in the summer period of the expedition and regular attendance, there were no major problems, except for minor leakages, faced for the operation of the water supply system. The trace heating system was kept switched on for the entire duration of the winter period. The water supply system functioned very well during the entire expedition period.

Retrieval of Polar Bear trailer

The Polar Bear vehicle, which was inducted to Antarctica with the XIII IAE, had developed major defects on its maiden convoy to Maitri when it was towing 20 Kl of fuel on its trailer. The vehicle was subsequently back loaded to the manufacturer for repairs. The trailer was left behind and in course of time it was gripped with ice. Earlier expedition team tried to retrieve but could not be succeeded as such the trailer was almost abandoned. As no specialised drilling tools were available, the tracks of the trailer was freed from the ice manually by using crow bars and pickaxes. It was a challenging task and but finally our team could succeed in retrieving the trailer. The 20 Kl of precious fuel that was in the tank was decanted into a transportation tank and brought to Maitri.

Dismantling of Balloon Launching Shelter

The balloon launching shelter, which had been partially erected by the earlier expedition, had been blown off by the wind. The derelict structure was dismantled piece by piece and the scrap was loaded into containers for back loading to India.

Maintenance of DG area

During the last convoy of the winter period in October '98, the Portacabin (a portable accommodation), generator container and the improvised living module, Sankalp, was relocated with the help of the crane. Earlier, repairs to the Mantis crane had been carried out on the shelf with the spares that were received with the Russian ship. The crane was made partially functional and brought to DG for these tasks. Four 20 kl fuel storage tanks that had been buried in the snow were recovered and relocated at a safer place.

Activities in the Post Winter Period

Construction of the Medical Complex

Although this was the logistic task for the last expedition, the same could not be completed due to technical and administrative problems. This task was, therefore, entrusted to the logistic team of the XVII IAE.

The work was completed in two phases. In the first phase, the 'A' block was completely cleared. This involved removal of the partition walls, shifting of all the items that are required to be stored in a controlled environment to alternate sites within Maitri and leveling of the floor. All this was done during the summer period. The actual construction of the medical complex was carried out during the second phase ie the post winter period.

During the summer period, the prefabricated panels of the medical complex had already been stacked near the rear door of the 'A' block for ease of handling and construction at a later stage. The panels were brought in the 'A' block sequentially and laid out within the 'A' block. At first the floor panels were fitted. Some of the floor panels had to be cut to fit in the nibs. Fixing of the side walls followed this. The roof panels were cut in a similar fashion as the floor panels and fitted accordingly. This was followed by the construction of the rooms within the medical complex. The final stage of the construction was the fixing of all the doors and the flashing and other strengthening members that were provided to

improve the strength and the aesthetic appearance of the medical complex. Mr Alexander Kochin, Leader, 43 Russian Expedition, on the occasion of the 218 th Corps of Engineers Day inaugurated the medical complex.

Problems Faced. The following problems were encountered during the construction of the Medical Complex :-

- (a) The Floor and the Roof panel of the Medical Complex were single piece structures and were extremely difficult to handle within the restricted space within the A Block due to their bulky size.
- (b) Due to the sagging of the roof trusses of the 'A' block, there was no clearance between the roof of the 'A' block and the roof of the Medical Complex. At places the roof panels of the Medical Complex had to be cut and modified to half their thickness to fit in the 'A' block.
- (c) No construction training could be provided to this team prior to departure from India due to which the actual erection had to be done with the help of the instruction booklet which was not self explanatory. Certain important steps in the construction were described as "as explained on ground" and decisions had to be taken on site to proceed with the work.
- (d) The panels were to be cut at site, for which there was only one power tool provided which slowed down the work.

Relaying of New Main Power Supply Cable

A large number of separate electrical power cables were emanating from the distribution panel in the generator complex and leading to the Maitri main block. This made tracing the fault difficult, particularly during the winter period. Also, as the distribution panel was in the generator complex, the switching on and off of various circuits had to be controlled from that location. To over come the difficulties, the old wiring was removed and a

single new power cable was laid in the existing duct. The distribution panel was also shifted to the 'A' block and the main line connected through a changeover switch. Provision has been made for an alternate power line as standby through the changeover switch.

Preparation of Summer Camp

The preparation of the summer camp was started well in advance. The snow that had accumulated in the living accommodations was removed and the rooms were cleaned. The toilets were made functional and rewiring of the electric cables carried out wherever necessary. Improvements were made in the various laboratories and the common lounge by dismantling unwanted structures and shelves and working platforms provided where ever required. A water point was established and the area surrounding the summer camp was cleared. A new water tank staging was also made to replace the adhoc arrangements made earlier. The summer camp was made functional and ready to occupy in all respects before the arrival of new team.

Construction of a Field Observatory for SASE

The field observatory of the Snow and Avalanche Studies Establishment (SASE) Manali, originally consisted of a cabin of a discarded Pisten Bully 170 vehicle. Apart from having very little working space, there was no provision for storage, space for portable generator and no toilet facility. Further, the cabin used to tilt over as the supports on which it was placed used to sink into the ice due to melting and strong wind. This required that the cabin be relocated periodically.

Considering the importance of the scientific program and inadequate facility, it was decided to fabricate a field lab with the resources available at Maitri. A discarded and unserviceable sledge was located and cabin was subsequently mounted on a sledge. With the surplus panels available, cubicles were made on either side for housing the portable generator, space for storage and a toilet. This was extensively used and found to be convenient for staying and carry out field work. Since it was mounted on sledge, same can be easily shifted to any place where ever required.

Dismantling of Old Workshop Shelter

The erstwhile workshop shelter was dismantled by cutting of the structure made up of angle iron using arc welding. The angle irons were used for making of a duct for the laying of electrical power cable for the boiler room. Rest of the scrap material was stacked for back loading to India along with other items.

Decanting Fuel from Barrels

The fuel barrels that have been inducted in the earlier expeditions were decanted. Approximately 20 kl of fuel was decanted in this way. This was done with an aim to augment the fuel stock and also reduce the number of fuel filled barrels at Maitri. The barrels were emptied into a 5 kl tank with the help of the Liebherr crane and the fuel then pumped into the 20 kl tanks.

Environmental Cleaning of Maitri

All scrap/unwanted items around Maitri was cleared and disposed off accordingly. The scrap material that had been generated in the course of clearing of the 'A' Block, dismantling of the derelict structures and the waste generated in the generator complex, boiler room and the workshop was loaded into half bins and containers for back loading. Utmost importance was given to maintain and keep Maitri And surrounding clean and tidy as per the protocol.

Construction of Ductline for Boiler Room Power Cable

Due to the heavy snow accumulation behind Maitri, during the winter months, the power cable from the generator room to the boiler room used to be buried in the snow making any fault finding/repairs to the cable impossible. To overcome this problem a duct was made out of angle iron channels salvaged from scrap, which were welded onto metallic props at an average height of a metre from the ground.

Activities on Arrival of the XVIII IAE

Training

The Army contingent led by Maj. VV Kadam, EME was put through a rigorous training schedule that included theoretical as well as practical classes and on job training. The following were covered in details.

- (a) Operation, maintenance and repair of life support system for the personnel from Corps of Engineers.
- (b) Operation, maintenance and repair of vehicles, handling of dozers and crane for personnel from Corps of EME
- (c) Planning and preparation for convoys, driving and towing of heavy loads.
- (d) Operation, maintenance and repair of generating sets.
- (e) General maintenance of structure and installed equipment.

The problems faced during show fall, blizzard and winter were highlighted.

Handing/Taking Over

Handing/Taking over of life support system, spares and other items was carried out in a systematic and very smooth manner. Ample opportunity was given to the new team to handle all the items independently so that they could gain confidence of being able to manage on their own.

Fuel Handling

Fuel handling is one of the important activities of the logistic team. Utmost care is to be taken to see that there is no leakage or spillage of fuel during the handling of the fuel. A total quantity of 420KL of fuel was off loaded from the ship MV POLAR BIRD. This was a massive operation, which involved

repeated trips between the shell and DG to fill the storage tanks at DG. The balance fuel was off loaded into tanks place on the shelf itself. This operation itself provided excellent training to learn in fuel handling and convoy driving.

Joint Convoy

Joint Convoy was organised from Maitri to India Bay and back incorporating maximum possible number of person from the new team. This enabled the team to get familiarised with route as well as the problem faced during the convoys.

Administration

Situation Reports have been sent to Military Operatio-2 (MO-2) Directorate on a fortnightly basis, on first and fifteenth of each month. MO-2 was also contacted on a regular basis on telephone to apprise them about the progress of events taking place at Maitri as well as any other important occurrence. Annual Confidential Reports were forwarded well in time. Sainik Sammelans were held on a monthly basis to discuss the points of the Army Team. Considering the outstanding contribution to the expeditions, citation for a number of Army personnel were forwarded during the course of the expedition. Correspondence in respect of pay and allowances, documentation and other welfare points were also communicated to the concerned Army and civil authorities. Greetings have been sent and received from Army Head Quarters, EME Training, Engineer-in Chief's Branch on all important occasions

Recommendations

Administrative Aspects

The following recommendations are made:-

- (a) A uniform policy should be governed for the grant of ante-date seniority for JCOs and Ors in the Wintering and Summer teams from Corps of Engineers similar to that for EME personnel

detailed to Antarctic Expedition.

- (b) The telephone connections provided through Army source to some of the members of Army team were disconnected during the course of expedition causing a lot of mental trauma to them. It should be ensured that the telephone connections are not disturbed till the members returned to India.
- (c) All the activities of the AHQ and the respective Directorate preceding the expedition including the ceremonial formalities should be completed well in advance, at least a month, prior to their departure from India so as to allow the personnel enough time to proceed home/to their units. This will allow them to settle all the pending personal and administrative problems before leaving India.
- (d) The training imparted to the EME personnel at EME School, Baroda should be discontinued as there is no similar equipment that is being used at Antarctica are available. The orientation training should be held at New Delhi when the EME team is carrying out its documentation and other pre-expedition formalities.
- (e) The Army Team is the single largest contingent of the expedition and has the maximum inventory under its charge. This gives rise to a large amount of paper work including preparation of inventory and demands, periodical situation report and other correspondence. The personnel from Army Team have to rely upon other's computers, which is not a satisfactory arrangement. To overcome all these problems, a computer and a printer are required exclusively for the use of Army Team.
- (f) Hardship Allowance should be paid to the Army team personnel in full prior to their departure from India.

Technical Aspects

The following recommendations are made:-

- (a) The clothing that is procured for the expedition members should be of the correct size and quality as demanded.
- (b) The ship should have the capability of handling cargo, particularly fuel, at a safe distance of about 150-200 metres from the ship. This will ensure safety of the men and equipment working on the shelf.
- (c) The brush type 62.5 kVA generators in the Surya complex need to be phased out due to their vintage and replaced by the brushless type. The feasibility of inducting higher capacity (125 KVA) generators should be looked into. This will enable only one generator at a time to run for the entire station even during winters.
- (d) The Pisten Bully 270 vehicles should be phased out due to their vintage and replaced by Pisten Bully 330.
- (e) The equipment that has been back loaded from Maitri for repairs should be sent back at the earliest duly repaired.
- (f) Technical literature including the manual & spare parts list in English should be supplied along with all the new imported equipment being sent to Antarctica.

Conclusion

It was a challenging task to the Army Team to provide able support to the entire expedition, during the Summer and Winter period. All the assigned tasks to the team and additional work completed successfully. This could be possible only with proper planning, die whole hearted support and dedicated team work carried out by each and every member of the expedition team out casting the extreme weather conditions of Antarctica. The two convoys taken out during the extreme winter period to assist the Russian Expedition Team during their distress is worth mentioning here.

Acknowledgement

The Army Team is thankful to AHQ, DOD and all others for providing able support, which helped the team to keep their moral high to carry on with the work smoothly. We are indebted to the expedition Leader, members from R&DE (Engrs) and others for their valuable guidance and cooperation in carrying out the logistic tasks and providing support for successfully completion of the assigned program of the expedition.

Appendix 'A'

(Refers to paragraph number 2)

LIST OF ARMY TEAM MEMBERS & ASSIGNMENT

- (a) Maj. G Narayan, EME - OIC Army Team
- (b) Capt. KS Panesar, Engrs - Station Engineer

Corps of Engineers

- (c) Hav /Ftr NN Maharana - Boiler Room I/C
- (d) Hav/ Elect Madhavan K - Station Electrician
- (e) L/ Hav Anil Kumar - Station Carpenter
- (f) L/Nk Devi Singh - Dozer Operator & Fuel I/C

Corps of EME

- (g) Sub (Tech/ Elect) RS Aswal - Senior JCO & Clothing I/C
- (h) Nb/Sub (Tech/B veh) BS Mor- Chief Vehicle Mechanic
- (j) HMT (B Veh) Ratan Singh - Vehicle Mechanic
- (k) Hav (Elect/MV) GD Reddy - Convoy Electrician
- (l) Hav (EE Mech) Jahabar D - Crane Operator,
Vehicle Mechanic
- (m) Hav (EE Mech) Rajbir Singh- Generator Room I/C

XVII IAE : XV WOT (1998 - 99):CONVOY DETAILS

FIRST CONVOY (JOINT CONVOY)

Departure from Maitri :26th Feb 98.(0530hrs) Arrival at Maitri : 07th Mar 98(0200hrs)

Vehicles	:	PB 270	- 3	Vehicles	:	PB 270	: -4
		PB 330	- 3			PB 330	: -4
Men	:	Officers	- 4	Men	:	Officers	: 4
		JCO/OR	- 4 + 3			JCO/OR	: 4 + 3
		Sci	- 5 (Summer Team)				
Material	:	Containers	: 6	Material	:	Containers	: 8
		Half Bin	: 2			Half Bin	: 6

Container No	- 1	: Summer [eam luggage.	Container No	- 1	: Food items.
do	- 2	: Winter team luggage	do	- 2	: Clothing
do	- 3	: Backloading items.	do	- 3	: Liquor
do	- 4	: Scientific eqpts.	do	- 4	: DOD items
do	- 5	: Clothing.	do	- 5	: RDE Store
do	- 6	: Scrap material.	do	- 6	: IMD gas cylinders.
Half Bins No	- 1	: Gas cylinders.	do	- 7	: Empty.
do	- 2	: W/Shop scrap.	do	- 8	: LPG cylinder.
			Half Bins No.- 1	: Vehicle spares	
			do	- 2	: Vehicle spares
			do	- 3	: ATF (Helicopter)
			do	- 4	: ATF (Helicopter)
			do	- 5	: ATF & Lub oil.
			do	- 6	: Empty.

SECOND CONVOY

Departure from Maitri :19th Mar 98(0545hrs) Arrival at Maitri : 25th Mar 98(1130hrs)

Vehicles	:	PB 270	- 3	Vehicles	:	PB 270	- 2(1 broke down)
		PB 330	- 4			PB 330	- 4
Men	:	Officers	- 2	Men	:	Officers	: 2
		JCO/OR	- 2+4			JCO/OR	: 2+4
		Sci	- 1			Sci	: 1
Material	:	Containers	: 1	Material	:	Containers:	4
		Half Bin	: 1			Half Bin	: 2
						Fuel Tank	: 3

Load details

Container No - 1 : IMD Shelter scrap.

Half Bins No - 1 : W/Shop scrap.

Load details.

ContainerNo -1 : RDE Stores.

do - 2 : Super bazaar items

do - 3 : Empty.

do - 4 : Empty

Half Bins No. - 1 : ATF(16th Expdn)

do - 2 : ATF (Helicopter)

45 Kl Fuel & PB 270 loaded on sledge.

THIRD CONVOY

Departure from Maitri : 20th Apr 98(0600hrs) Arrival at Maitri:23rd Apr 98(0010hrs)

Vehicles	:	PB 270	-4	Vehicles:	PB 270	-3(1 broke down left behind)	
		PB 330	-3			PB 330	-3
Men	:	Officers	-2	Men	:	Officers	: 2
		JCO/OR	-2 +4			JCO/OR	: 2+4
		Sci	-1			Sci	: 1
Material	:	Containers	:2	Material	:	Containers	: 3
		Half Bin	:0			Half Bin	: 2
						Fuel Tank	: 3

Load details.

Container No - 1 : IMD Shelter scrap.
do - 2 : Scrap material

Load details.

Container No - 1 : RDE Stores,
do - 2 : Empty
do - 3 : Skidoo
Half Bins - 2 : Empty
45 Kl of fuel from DG to Maitri.

FOURTH CONVOY (for Russian Expdn after Helicopter Crash)

Departure from Maitri : 02 Jun 98(0615hrs) Arrival at Maitri: 08 Jun 98(1530hrs)

Vehicles	:	PB 270	- 2	Vehicles	:	PB 270	- 2
		PB 330	- 3			PB 330	- 3
Men	:	Officers	- 2	Men	:	Officers	: 2
		JCO/OR	- 1 +5			JCO/OR	: 1 + 5
Material	:	Container	: 1 empty	Material	:	Container	loaded with
							Russian cargo.
		Half Bin	: 1 empty				

One container loaded with Russian food and other items was carried and also guided the new convoy team all the way to Russian Station. The convoy was specially taken out on request of Russian Team leader to assist the team due to the helicopter accident.

FIFTH CONVOY (For Rescue of Russian Expdn convny members)

Departure from Maitri : 20 Jun 98(1430hrs) Arrival at Maitri: 23 Jun 98(0030hrs)

Vehicles	:	PB 270	- 1	Vehicles	:	PB 270	- 0 (broke down)
		PB 330	- 3			PB 330	- 3
Men	:	Officers	-2	Men	:	Officers:	2
		JCO/OR	- 1+5			JCO/OR:	1+5

Convoy was run in response of SOS call to search/rescue their 4 convoy team members stranded on Polar ice, lost their way and without communication for more than four days with Russian Station, The team was located on 21 Jun 98 and was escorted to Russian Barrier and then to Russian Station.

SIXTH CONVOY

Departure from Maitri : 13th Sep 98(0600hrs) Arrival at Maitri : 16th Sep 98(2400hrs)

Vehicles	:	PB 270	- 2	Vehicles	:	PB 270	- 1(one each broke down &
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	PB 330 - 4		PB 330 - 3 left behind)
Men	: Officers ' 2	Men	: Officers : 2
	JCO/OR - 2 14		JCO/OR : 2 + 4
	Sci - 1		Sci : 1
Material	: 1X170 PB vehicle for back loading.	Material	: 40kl fuel.
	3 x 20 kl fuel tanks.		

Load details.

1x170 vehicle for back loading.

3x20 Kl fuel tanks (empty) placed at shelf. 70kl fuel decanted at DG

SEVENTH CONVOY

Load details.

40 Kl fuel brought to Mailri.

Departure from Maitri : 27th Sep 98(0600hrs) Arrival at Maitri : 03rd Oct 98(2300hrs)

Vehicles	: PB 270 - 1	Vehicles	: PB 270 - 1
	PB 330 - 3		PB 330 - 3
Men	: Officers - 2	Men	: Officers : 2
	JCO/OR - 2+4		JCO/OR : 2+4
Material	: 4 empty fuel tanks	Material	: 10 kl fuel
	Half Bin : 1		2 off road vehicles.

Load details.

lx. Half bin ,w/s scrap for back loading

4x20 Kl fuel tanks(empty) placed at shelf. 10 Kl fuel brought to Maitri.

EIGHT CONVOY

Load details.

2 off road vehicles loaded on sledges.

Departure from Maitri ; 16th Oct 98(0600hrs) Arrival at Maitri : 23rd Oct 98(2330hrs)

Vehicles	: PB 270 - 2	Vehicles	: PB 270 -2
	PB 330 - 4		PB 330 -2(2 left for 18 IAE)
Men	: Officers - 2	Men	:Officers :2
	JCO/OR - 2+3		JCO/OR :2 + 3
	Sci - 1		Sci :1
Material	: Containers : 3	Material	:24 kl fuel (2 loads)
	1 empty fuel tank.		1x270PB loaded on sledge.

Load details.

3xContainers with IMD cyldrs, Old food items, and commn.eqpts, UNSV items, deep freezer (4nos etc) for back loading.

1x20kl empty fuel tank.

1x20kl fuel tank shifted from DG to ice shelf.

Load details.

1x270PB(Godavari) brought to Maitri.

24kl fuel in 2 loads from DG to Mailri.

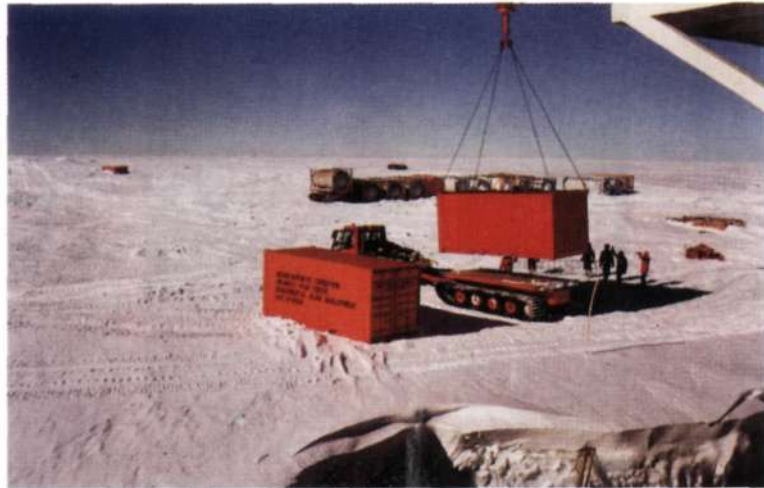
Crane brought from ice shelf lo DG and Porlacabin, Containerised 30 kVA gen. Set, Sankalp and 3x20kl fuel tank partially buried with snow were excavated and relocated. All the old food stuff and waste accumulated in Portacabin and Sankalp was cleared and made ready for the use of 18 IAE.



Under slung operation by Jayrow helicopter



Preparation for Convoy



▲
Loading/unloading operation at India Bay
▼

