

Logistic Work Carried Out During the Wintering Period of the 19th Expedition

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Objectives

Main Tasks: Operation, maintenance and repairs of:

- (a) Power generation and distribution system.
- (b) Vehicles.
- (c) Central heating and water supply.
- (d) Waste water treatment and disposal.
- (e) Deep freezers.
- (f) Wood works.
- (g) Fuel decanting, storage and supply.
- (h) Fire fighting and its prevention.
- (i) Running of service convoys and handling of fuel.
- (j) Support in the conduction of scientific activities.

Work carried out

- (a) **Power generation & distribution** : At the time of handing over the station of us, only 3 generators out of 9 were in working condition. This created a shortage in the power supply. The generators were not sufficient even to maintain the minimum of two pairs required during the wintering period.
 - i. Winding for three stators was done. Two generators were repaired using these stators and one was kept for future use.
 - ii. By replacing defective alternators two generators were repaired.
 - iii. Alternator of another generators was repaired.

- iv. Defective auto shut down system of five generator engines (at low oil pressure) was rectified. This system is now functional in 7 generators (including 2 new generators) out of 10. It will help in saving the life of the engines.
- v. One generator was shifted from Bhaskara to Surya complex so that both the 125 KVA generators can be installed in Bhaskara complex
- vi. Two new 125 KVA generators have been installed in Bhaskara complex. The original containers for installation of these generators did not reach Antarctica.
- vii. From January 2000 to December 2000 a total of 234 maintenance and repair tasks have been carried out to get uninterrupted power supply.
- viii. One 30 KVA generator kept at Dakshin Gangotri for use of the scientific teams was repaired.
- ix. All the ten generators were to handed over to the next team in working condition, along with one spare engine.
- x. Electrification : Apart from the routine repairs on electricity lines, the following was undertaken:
 - x. (a) The Surya, Aditya and the Bhaskara generator houses were re-electrified.
 - x. (b) The new MI room was fully electrified.
 - x. (c) The summer camp electrical distribution point "Khasi" was simplified, fitted with MCB's and all huts and toilets electrically isolated from each other for better safety and load distribution.
 - x. (d) Spare line for the boiler room was laid alongside in-use line.
 - x. (e) The kitchen klargester unit was re-electrified.
 - x. (f) The green house is on the station electricity map.
- (b) Running of service convoys :** A total of 330 KL of fuel and 16 containers (8 of which came by a Russian ship) were unloaded on the ice shelf. Twelve containers and 240 KL of fuel was transported to Maitri and 6 containers were back loaded from Maitri (with used oil and garbage) to the shelf, in 8 convoys. New barrels for marking the convoy route were kept between shelf and barre No. 39.
- (c) Support in the conduct of scientific activities :**
 - i. (a) Vehicles were regularly taken to western Schirmacher for GSI work at DG Glacier snout (Glaciological Studies).

- i. (b) To "Sankalp Point" for SASE work (Weather data and ice sample collection).
- i. (c) To Veteheia hill for the work of DEAL (installation and maintenance of repeater station for communication).
 - ii. Stabilizing of Log periodic antenna of DEAL to withstand high winds, by first correcting the position with the help of a crane and then properly anchoring the mast.
 - iii. The defunct towers of DEAL were removed for back loading.
 - iv. Fabrication of a mast for the spherical antenna of IIG and its erection.
 - v. The panel below the dome of the Inmarsat Satellite Terminal was cut open to create a hatch-door for its accessibility during its breakdown.
 - vi. An aluminum tower was erected in close vicinity of the existing HF tower. This served for the safety of the radioman carrying out repairs on the antenna.
 - vii. A separate laboratory for the NGRI equipment was built within the existing "Tirurnala" hut for effective heating, with minimum heaters during peak .
 - viii. Earth cable was laid for the scientific huts in the summer camp to minimize static charge and safeguard the instruments.

(d) Station maintenance tasks :

- i. Boiler room:
 - i. (a) Expansion tank and both the hot water tanks were replaced. The new tanks were received in pieces of two each, which were welded in the station.
 - i. (b) Chemical treatment of the central heating system was introduced on a round the clock basis. Prior to this arrangement, leakage in the piping and bursting of the radiators was a regular feature. Extensive welding was undertaken to stop the leakages. There has been a visible improvement in the state of the heating system.
 - i. (c) The existing fire fighting water pipeline within the boiler room was found to be highly rusted and mended at a number of points, nearing a state of disuse. It was replaced.
 - i. (d) Boiler no. 3 handed over to the team in a semi working condition was repaired and has given trouble free performance.

- i. (e) All the radiators have been fitted with stopcocks, for ease of drainage during cleaning and for removal for airlock.
- ii. Water Supply:
 - ii. (a) Separate inlet manifolds were fitted in the pump house on the two existing water pipelines.
 - ii. (b) Propylene blankets were made use in sealing of the duct line at the duct joints. This helped to maintain the duct temperature at a minimum of 15° C even during the coldest and windiest hours.
 - ii. (c) A copper water pipeline has been laid from the station to the summer camp. It is of a permanent nature and replaces the makeshift rubber line. Adequate slope has been given to do away with water clogging and subsequent freezing.
- iii. Toilet block:
 - iii. (a) A wooden bathroom was constructed for the loan Lady member in the team, complete with hot and cold water line, water discharge and electricity.
- iv. "A" block:
 - iv. (a) The new MI room not being used presently for its desired purpose was electrified and modified to house the following:

Guest rooms 02, to accommodate a minimum of three individuals. Cold storage room: To store food items at temperatures ranging from +5° to +7° C. Storage racks have been fitted for utmost utilization of the space. The desired temperature is maintained using relays of heater and exhaust fan. The much needed carpentry workshop has been set up in another room, which previously housed the TT table.
- v. Main Block:
 - v. (a) The Lounge and the kitchen take pride in a change of appearance. A new television cabinet, visitor's book-stand, memento platforms and fresh paint on the wall boost up the lounge. More staking and store space and improved furniture give the kitchen a neat look.
 - v. (b) The room adjoining "A" block entrance is now a reading room.
 - v. (c) Wooden enclosures for the book library and the audio library in the station lofts were built.

- v. (d) The MI room door was extended to twice its original size and converted into a sliding door. This was done for ease of passage of the stretcher into the operation theatre, at the time of any emergency.
- v. (e) Permanent fixtures for floodlight poles in and around the station have been welded and erected to withstand even the severest blizzards.
- vi. Fire fighting and its prevision :
 - vi. (a) Fire points have been adequately distributed and equipped with sufficient fire extinguishers for each type of fire. Fire fighting hoses to reach every niche and corner of the station.
 - vi. (b) A major fire accident in the water duct line was nipped before it could assume alarming proportions.
- (e) **Vehicles:** A total numbers of 23 vehicles including snow cat (2), piston bully (10), crane (4), snow scooter (4) and dozer (3) were handed over to this team. Out of this, two piston bullies were under repair, one at the shelf and the other at barrel no. 19. The previous team recommended for the back loading of one crane at DG and one dozer at Maitri.
 - i. The two vehicles were brought back to Maitri and repaired.
 - ii. The Dozer that was recommended for back loading was repaired at Maitri by changing the radiator and flushing out ice and water from engine.
 - iii. There was a lot of correspondence for the back loading of Mantis crane to Cape Town or to USA, for needed repairs. The convoy team camped at DG for more than a week in hostile weather conditions and doggedly pursued the repair and retrieval of the half buried Mantis crane that was lying there idle for the past year. The crane was repaired, by removing the engine and replacing the malfunctioning clutch housing. Later the crane was freed from the ice by digging.
 - iv. All the vehicles are in working condition, as handed over to the next team.
- (f) **Miscellaneous :**
 - i. Two toilet modules were shifted (without dismantling) from the edge of the lake to the summer camp toilet area with the help of crane and dozer.

- i Placement of containers for food waste, tin and glass waste, hydrogen cylinders, storing engineering equipment, gas cylinders and food items.
- iii. One container was placed in workshop area and shelves were made inside the container for the safe keeping of vehicle spares.
- iv. One 20 KL storage tank, which was lying at barrel on 133 since 1994, was shifted to Maitri.
- v. One 10KL tank was provided for the disposal of wastewater.
- vi. Three new water storage tanks for use in the boiler room (which came as two pieces each for ease of shifting into the station) were welded together, inside the station, and installed. Old tanks were cut into two pieces and shifted out of the boiler room.

Highlights

1. Two new 125 KVA generators were installed successfully.
2. Mantis crane buried and abandoned at DG was dug out, repaired and made operational.
3. Dozer at Maitri, kept for back loading, was repaired.
4. As against 3 generators given to us, 10 generators were brought to running condition.
5. All the vehicles are in working condition.
6. A new water pipeline has been laid for summer camp.
7. A new bathroom has been constructed for Lady members.
8. Face lift given to Maitri lounge and kitchen.
9. Three new water storage tanks installed in boiler room.
10. The entire A-block of the station that was lying in disuse has been furnished, electrified and heated. It now houses guest room accommodation for 6 persons, one +4 deg freezer for fresh foods, one x-ray room, one TT-room and a carpentry shop. Due to this work done during wintering, it became possible in the subsequent summer season to house the helicopter crew, the Leader of the new team and the NCAOR Observer within the station on a long term basis.