

Army Team Activities during XIII Indian Antarctic Expedition

M.DAVID ALEXANDER and ATUL TANDON

Indian Army

Introduction

This army logistics team had the privilege of setting some milestones in human endurance. The total convoys done were 26, doing approximately, 800 hours of convoy time and chalking up an incredible 8000 route kilometers. This time and distance would not have been done by any Antarctic stations to date, including the super power stations. The troubles and agony which were undergone by the logistics team were innumerable and cannot be expressed. It is felt that the lessons learnt from this will be an eye-opener for future planning. (To compare, even the longest Antarctic convoy of the Russian Antarctic station from Mirni to Vostok is only 1500 kms and is done in 30 days both ways, only once in a year, due to the rigors of the convoy in the Antarctic environment.) Our sincere thanks to all the members of the expedition who had shared the agony and the ecstasy of the logistic team. The details of convoys done are given as Appendix A for ready reference.

The activities are covered as follows:

- (a) Activities at DG station**
- (b) Activities at Maitri**

Activities at DG

The Portacabin, Generator container were lifted using Mantis crane and placed on barrels. The garbage was also cleared and taken to ship for burning. The empty gas cylinders were also backloaded to container for transshipment to Goa. A 2 KW,36 volts battery charger was retrieved from main station DG. This had to be broken down into 5 pieces for taking out through the hatch. This has been successfully installed at Maitri thus saving expenditure for a new one. Both generators at DG have been serviced and overhauled. Lot of other items

have been retrieved from DG and these are appended as Appendix B causing substantial financial saving.

Activities at Maitri

The complete empty barrels lying around were stacked properly to give an orderly look. One generator of A block was fully overhauled by putting new standard cylinder liners and pistons. The new generators received in 3 containers were integrated and its insulation with available materials were done. This unit has been named Bhaskara. This was commissioned on June 21st, by the Leader of the Russian station Novolazareskaya Mr. Nicholai Dmitriev. With this it is felt that the generating power position is satisfactory.

The Mantis crane which was received in a damaged condition was repaired on the shelf itself and put on road. The Polar Bear which was received in damaged condition from U.S.A. was repaired by changing some parts as well as repairing the damaged circuits and it ran only for one convoy when its suspension gave way at barrel 132. This Polar tractor was loaded on a modified sledge and successfully moved to shelf for withdrawal for modification and repairs to its suspensions, by the manufacturers in USA. The summer huts were checked and sealed before onset of winter to prevent much ingress of snow. A total of 6 rooms have been done up and modified with wall paper and other amenities.

The new change over switching system was commissioned. This facilitates any pair of generators to run independently on any load circuit of Maitri giving better flexibility. The schematic diagram is appended as Appendix C. Two improvised antennas were put up for DEAL use. The complete aisle, kitchen and wash basin area including toilet entrance of station has been re-floored with linoleum sheets for better aesthetic look and ease of cleaning. The complete sofas of CHAUPAL and Station Commander's room have been refurnished to give a new look. These tasks were completed with the full help of all the expedition members in record time. The new washing machine was installed. The fuel tanks of various generators were inter connected to increase the tank capacity of the generator in operation, and this intun helped the generators to run continuously without refueling for a longer stretch. This will be a great advantage during the blizzards. A service hatch was made for the Klargestor for ease in cleaning of the system.

The electrical service wires from Aditya, Bhaskara and 30 KVA generators were enclosed in metal/PVC conduits to avoid vagaries of weather to a great extent. Earlier these used to short circuit during blizzards. This chance is removed by enclosing it in conduits upto control panel in 'A' block.

The sledge of Sankalp was fully re-fitted with new towing hook assy, fork, skis etc. to give prolonged service. The complete electrical panel board has been re-organized so as to facilitate running and supply from generator pairs at any time independently to any part of Maitri with its connected load. Totally there are 5 pairs of 62 KVA generators and a 30 KVA separate for HF supply.

Route marking was done with old, as well as new barrels. The area for work shop shelter was leveled and work shop shelter erected except its roof cladding, gantry erection and concreting work even though it was not scheduled during tile winter tasks of XIII IAE. This was done by putting in extra manhours after regular working. The national flag panels in front of station have been taken down for the first time and re-painted. All the exhaust fans of station were replaced/serviced.

The unserviceable items lying around the station was mustered and back loaded to give a cleaner look. The complete duct water heating pipes were removed, flushed and fitted back to give trouble free service for a long time. This was enclosed in glass wool also to enhance the heat retentivity of the duct thereby avoid failure of the duct freezing. The complete equipments at Maitri station were serviced. The two generators of A block were rebuilt. Two PB 170s were completely overhauled including engines and sub-systems. All the vehicles were repaired/overhauled to give trouble free service to next team. One alternator assembly is required in A block for putting an off road generator on road. One PB 270 which required an engine and sprocket assembly for putting it on road was repaired after the new team arrived with the much wanted spares in Jan'96. This was also an on-the-job experience for the new team.

There were joint convoys done with the new team to orient and familiarise them with the route as well as the procedure of running a convoy in Antarctica. The Naval Hydrography vessel was also repaired by the Army Team successfully. Necessary help as required when asked for was given to various scientific teams for conduct of the experiments by them.

Recommendations

These in exhaustive form have been forwarded to the agencies concerned for action at the earliest including DOD. These are based on the experience of the team members and can be modified suitably to give a better shape to the station and make it the best.

Acknowledgements

The whole team had to undergo innumerable hardships as usual for a new experiment, as it was the first time the the logistics was ground based. The Army Team is immensely thankful to all other members of the expedition including

the various laboratories and institutions with its team of scientists, the staff of DOD, the members of the neighbouring Russian and German stations, DGMO staff, Ship with its crew, who at all times were ready to burn the mid-night oil and come out with viable solutions for the various problems which cropped up. This in turn gave the logistic team confidence to try achieve higher and better goals. It is with immense gratitude the contributions of these people are being put on record for the future to know the hardship, be it mental and physical, undergone by each member of the team. It is also felt that without this help the achievements would have been next to impossible.

Appendix A

con/- voy No.	Date		Mem- bers	No. of Vehs,	Remarks
	Out	Return			
01	13/2/94	16/2/94	12	07	Joint Convoy. On return from shelf, one PB-170 had Hydr. failure and was left atDG
02	18/2/94	20/2/94	14	08	Polar Bear break down at barrel No 132. Heavy blizzard while return.
03	22/2/94	10/3/94 @21/3/94	14*	07	Unloading of stores from ship
04	12/3/94	14/3/94	04	03	3 Veh convoy
05	16/3/94	20/3/94	04	03	The team of three was stuck up in DG because of heavy blizzard.
06	27/3/94	30/3/94	08	07	—
07	06/4/94	08/4/94	06	06	One PB270 has hydraulic leak so left at Maitri. Two PB 170 have hydraulic and electrical failure on the way.
08	14/4/94	23/4/94	09	07	The two PB 170 repaired & brought back from route. Convoy was stuck in DG because of heavy blizzard.
09	28/4/94	02/5/94	08	07	One PB270 was left at route mark No. 145 due to eng problem.
10	07/5/94	10/5/94	06	06	—
11	15/5/94	20/5/94	07	06	Two PB170s left on the way due to failure of actual value transmitter in one and engine failure of the other.
12	25/5/94	30/5/94	07	04	Two veh. were loaded on sledges & brought back to Maitri. Convoy faced heavy blizzard & stayed in Sankalp for 36 hrs. Joint convoy with two Russian vehicles.

Contd...

Appendix A — Contd.

Con- voy No.	Date Out	Date Return	Mem- bers	No. of Vehs.	Remarks
13	05/6/94	05/6/94	06	03	Recovery of one PB170 after repair from barrel No. 58 (had actual valve transmitter failure)
14	08/7/94	08/7/94	09	03*	Return back to Maitri due to bad weather from barrel No. 149. *One Sno-Cat also.
15	10/7/94	10/7/94	07	03*	Defueling from Polar Bear trailer. *One Sno-Cat also.
16	18/7/94	18/7/94	07	04	Route marking convoy done till barrel No.60.
17	02/8/94	05/8/94	07	05	Convoy got stuck in blizzard for 20 hrs. Nk Shiv Darshan suffered from frostbite so convoy returned to Maitri with 3 PB270s from DG.
18	18/8/94	29/8/94	07	05	Convoy was stuck in DG because of heavy blizzard.
19	06/9/94	09/9/94	06	05	—
20	14/9/94	17/9/94	06	05	—
21	22/9/94	25/9/94	05	05	—
22	29/9/94	29/9/94	07	04	Sledge preparation on 28 Oct at Dozer point. Snow clearing of Polar Bear and sledge alignment.
23	30/9/94	30/9/94	09	04	Loading,of Polar Bear (preparation) failure due to preponderance of weight in front.
24	1/10/94	1/10/94	07	04	Loading of Polar Bear completed.
25	7/10/94	7/10/94	05	03	Fastening and scoring of Polar Bear for Convoy.
26	11/10/94	14/10/94	07	06	One PB 170 one PB270 left at shelf. One Polar Bear on sledge transported to shelf. Two PB170s ans two PB270s returned to Maitri.

Contd...

Appendix A — Contd.

Load transhipped;

- (A) Shelf to Maitri
(i) Fuel 550 KL
(ii) Container 32 Nos
(iii) Half Bin with load 16 Nos
(These half bins were used more than once to bring fuel barrels from shelf)
- (B) Maitri to shelf
(i) Container 4 Nos @
(ii) Half Bins 17 Nos*
(iii) Polar Bear on sledge 1 No
(iv) Sledge with upper platform 2 Nos.
damaged
- @ (i) 1 Container received from old team
(ii) 17 Containers sent back in ship
(iii) 12 Containers retained at Maitri
- * (i) 3 Half Bins received from old team
(ii) 2 Half Bins retained at Maitri
-



List of items retrieved from around DG station		
1.	Dimplex (UK) electric radiator	07
2.	Wash basin kitchen 02	02
3.	Disposomatic motors	02
4.	Radiator	01
5.	Geyser	01
6.	Spin drier heavy duty	01
7.	Exhaust fan 16"	05
8.	Kadaibig	14
9.	Bhagona Aluminium	02
10.	Kadai DO	03
11.	Bhagona Steel	05
12.	Bhagona small steel	03
13.	Donga steel	02
14.	Parat steel	13
15.	Hot case containers Aluminium	03
16.	Parat big Brass	01
17.	Tray Baking	14
18.	Lid Aluminium	03
19.	Mould Oven	02
20.	Containers Aluminium	
21.	Water container steel	02
22.	Pan Frying	03
23.	Tawa all sizes	11
24.	Gas stove double burner	04
25.	Do Single burner	02
26.	Meat mincer	01
27.	Rolling pins	07
28.	Chowki round	02
29.	Gasket set cooler	06
30.	2 KW,36 volt Battery Charger	01

Appendix C

CIRCUIT DIAGRAM OF CHANGEOVER SYSTEM OF POWER SUPPLY
(MAITRI)

