

INDIAN ANTARCTIC ACTIVITIES

*EXCHANGE OF INFORMATION UNDER
ANTARCTIC TREATY ARTICLES III (1)^a and VII (5)*

2007-2008

Submitted by

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Antarctic Treaty Information Exchange

Particulars for the Indian Antarctic Programme (IAP)

This information is provided in accordance with India's obligations under Article III (1)a and Article VII (5) of the Antarctic Treaty to provide advance information on Indian activities in Antarctica, as well as obligations within the Protocol on Environmental Protection to the Antarctic Treaty and its Annexes to Exchange information.

ANTARCTIC TREATY
EXCHANGE OF INFORMATION UNDER ARTICLES III (I) a and VII (5)
INDIAN ACTIVITIES

1. PRE SEASON REPORT 2007-2008

1.1 OPERATIONAL INFORMATION

1.1.1 NATIONAL EXPEDITIONS

The XXVII Indian Scientific Expedition to Maitri and Larsemann Hills, using two expedition vessels is proposed to be launched by end of December 2007 from Goa, India, under the overall coordination and supervision of the National Centre for Antarctic & Ocean Research (NCAOR), Goa. The summer component of 27th Indian Antarctic Expedition (IAE) and winter component of 26th IAE expedition is expected to return to India by March/April 2008. Indian Antarctic Expedition shall also be utilizing DROMLAN Air link for sending some part of the expedition team. The expedition proposes few scientific activities at Larsemann Hills region (the proposed site for Indian new research base which will be mainly carried out from expedition vessel. For emergency purposes only few temporary shelters (Igloos) which have been erected shall be utilized.

Different components of expedition team for Maitri and Larsemann expedition will be moved to Antarctica as per schedule mentioned in Annexure-1.

All indigenous expedition cargo including the scientific equipment will be carried by the expedition vessel from Goa. Similar procedure will be adopted for back-loaded cargo after de-chartering the expedition vessel at Goa on completion of the expedition.

A. Stations

DAKSHIN GANGOTRI	70° 05' S 12° 00' E	1983 – Transit Camp only
MAITRI	70° 45' 52" S 11° 44' 03" E	1989 – Summer & Winter activities
Proposed site of Indian New Research Base	69° 24' 28.8" S 76° 11' 14.7" E	some scientific observations since 2003

Dakshin Gangotri:

India established first permanent station “Dakshin Gangotri” (70°05'37”S Latitude, 12°00'00” Longitude) on ice-shelf on Princess Astrid coast. This station is now non operational due to complete burial and place is used only as a transit camp.

Maitri:

In the year 1988-89 India built its second indigenous station Maitri at Schirmacher oasis, which is well equipped and facilitated to accommodate scientists, round the year and allow them to conduct their scientific experiments. Maitri can accommodate around 25

people during winter and around 45 additional scientists to accommodate in summer huts built in front of the Maitri, during summer. It is built to keep the environment impact minimum.

Wintering

The numbers of scientists / Logistics personnel have been provisionally recommended for inclusion as winter (at Maitri) members in the XXVII IAE, mentioned in *Annexure 1*. For medical support two doctors shall be available

The scientific/Logistics programmes proposed during winter period are described in *Annexure - 2*

Summer

The numbers of scientists / Logistics personnel have been provisionally recommended for inclusion as summer (at Larsemann and Maitri) members in the XXVII IAE, mentioned in *Annrxure-1*. For medical support two doctors shall be available

The scientific programmes proposed during summer period are described in *Annexure - 2*

Refuges

- (i) Small portable cabin (2 men) – Humboldt mountains (70° 35’ S & 11° 30” E)
- (ii) Three small portable cabins (2 men each) – Petermann Range of Wohlthat mountains (71° 24’ S & 12° 57’ E)
- (iii) Three temporary Shelters at Larsemann Hills only for emergency purposes.

B. Vessel

1. MV EMERALD SEA (chartered from M/S East land Finance Company, 80, Broad Street, Mourovia, Liberia (Direct owners) owners managers are “Elmira Shipping and Trading, Athens, Greece. This ship shall be used for science deployment as well as re-supply.

Gross tonnage GRT/NRT: 18,627/7,669

2. Ivan Pepanin (Chartering is not finalized, under process)

Voyage Plan – Emerald Sea

Departure	Goa (Murmgao Port)	End of December, 2007
Arrival	Antarctica (Larsemann Hills)	3 rd Week Of January, 2008
Departure	Antarctica (Larsemann Hills)	3 rd Week Of March, 2008
Arrival	Goa (Murmgao Port)	First Week Of April 2008

C. Aircrafts

MV EMERALD SEA will carry two numbers (1+4) which will be operated during summer 2007-2008 for providing logistic support. The chartering of helicopter is under process.

D. Research Rockets:

None

E. Military equipment

None

1.1.2 Non-governmental Expeditions

A. Ship-based Operations

None

B. Land-based Operations

None

1.2 Visits to Protected Areas

None

Annexure-1

XXVII INDIAN SCIENTIFIC EXPEDITION TO ANTARCTICA
LIST OF MEMBERS TRAVELLING BY FIRST FLIGHT
D1 (IL76) 2nd November, 2007

Sl. No.	Name of the Member	Organisation
<u>SUMMER TEAM</u>		
1.	Shri. M.J. D'souza	GSI
2.	Shri. S.K. Roy	GSI
3.	Kassbohrer Engineer	M/s. Kassbohrer
<u>WINTER TEAM</u>		
4.	Ex. Sub (Tech 'B' Veh), Shaik Abdul Gaffar	NCAOR
5.	Hony. Sub. Maj. (Tech 'B' Veh), K.K. Ganapathy	NCAOR
6.	Hony. Nb/Sub. (Elect MV), Krishnamoorthy K.	NCAOR
7.	Ex. Hav. (VM MV), Rajender Singh	NCAOR

LIST OF MEMBERS TRAVELLING BY SECOND FLIGHT
TAC-1(IL76) – 7th NOVEMBER, 2007

Sl. No.	Name of the Member	Organisation
<u>WINTER TEAM</u>		
1	Ex-Sub. (Tech 'C' Veh), P.S. Jamwal	NCAOR
2	Veh/Mech, Parmatma Chowbey	BRO

Sl. No.	Name of the Member	Organisation
3	Veh/Mech, Nomination awaited	BRO
4	Veh/Mech, Nomination awaited	BRO

**XXVII INDIAN SCIENTIFIC EXPEDITION TO ANTARCTICA
LIST OF MEMBERS TRAVELLING BY THIRD FLIGHT
D2 (IL76) 14th November, 2007**

Sl. No.	Name of the Member	Organisation
<u>SUMMER TEAM</u>		
1.	Shri. Narendra Kumar	NGRI
2.	Shri. Kamal Kant Singh	SASE
3.	Dr. S.K. Khandelwal	AIIMS
4.		NCAOR
5.	Shri. S.S. Valdiya	SAC
6.	Shri. D.V. Kulkarni	SAC
7.		MoES OBSERVER
8.	Mason, Ramesh Ram	WINDMILL/BRO
9.	Mason, Subhash Chandara Yadav	WINDMILL/BRO
10.	Ct/Ck. Narain Singh	ITBP
<u>WINTER TEAM</u>		
11.	Shri. M. Venkatrayadua	NGRI
12.	Shri. R.P. Shukla	SASE
13.	Nb. Sub. (Elect) Nandel Sarjit Singh	NCAOR
14.	Nb. Sub. (Elect) R. Raghunathan	NCAOR
15.	Hav. (EE. Mech) K.M. Venugopalan	NCAOR
16.	Dr. Y. Johnson Casper	NCAOR

**XXVII INDIAN SCIENTIFIC EXPEDITION TO ANTARCTICA
LIST OF MEMBERS TRAVELLING BY SHIP – IVAN PAPANIN
(MAITRI)**

Sr. No.	Name of the Member	Organisation
SUMMER TEAM		
1	Shri. A.K. Swain	GSI
2	Dr. S. K. Bera	BSIP
3	Shri. Kamal Mohan Pant	SOI
4	Shri. Sanjay Dhote	SOI
5	Shri. Anil Kumar Barmaiya	SOI
6	Shri. Anand Kumar Singh	IIG
7	Shri. Bhupesh Sharma	SIIR
8	Dr. Sunil K. Singh	BU
9	Shri. Pramod Kumar	BU
10	Shri. Rudra P. Singh	AU
11	Shri. Sudipta Sasmal	CSP
12	Dr. R.S. Dabas	NPL
13	Shri. V. Ramesh J. Kumar	ECIL
14	Shri. Ranesh Vijay Kimar	ECIL
WINTER TEAM		
16	Shri. Arun Chaturvedi	GSI
17	Shri. Pritimaya Patro	IIG
18	Shri. Purushottam Bhawre	NPL
19	Shri. K.C. Bhindwar	IMD
20	Shri. S.P. Sharma	IMD
21	Carp. Riomy Hemram	BRO
22	Wldr. Debarata Pal	BRO
23	Shri. Hemant Kumar Gaur	DEAL
24	Shri. Ramesh Kothiyal	DEAL
25	Nomination awaited of Medical Doctor	NCAOR
26	Ct/Ck. Surjeet Singh	ITBP

**XXVII INDIAN SCIENTIFIC EXPEDITION TO ANTARCTICA
LIST OF MEMBERS TRAVELLING BY SHIP – MV EMERALD SEA
(LARSEMANN HILLS)**

Sr. No.	Name of the Member	Organisation
1	Shri. A.K. Nath	GSI
2	Shri. A. Mandal	GSI
3	Dr. A. Bhattacharyya	BSIP
4	Shri. A.K. Bahukandi	SOI
5	Shri. Sandeep Kaushal	SOI
6	Shri. Sanjay Kumar	SOI
7	Shri. Ajay Dhar	IIG
8	Shri. Shailendra K. Sonawane	NPRC
9	Shri. Narendra Pal	SIIR
10	Dr. Anil Kumar	ZSI
11	Shri. Jai Prakash Chaubey	SPL
12	Shri. Soumya Biswas	Shanti Niketan
13	Lt. Cdr. Y.V. Ramakrishna	NHO
14	LSSR-I, Abhay Barve	NHO
15	Dr. S. Pednekar	NCAOR
16	Dr. N. Anilkumar	NCAOR
17	Shri. Shramik M. Patil	NCAOR
18	Dr. A. Mazumder	NCAOR
19	Shri. Rohit Srivastava	PRL
29	Shri. Aravind Singh	PRL
30	Nomination Awaited	BRO
31	Nomination Awaited	BRO
32	Nomination Awaited	BRO
33	Nomination Awaited	BRO
34	Nomination Awaited	BRO
35	Nomination Awaited	NIOT
36	Nomination Awaited	NIOT
37	Doctor nomination awaited	NCAOR
38	Shri. Trilok Kumar Saini	DEAL
39	Ct/Ck. Jagbir Singh	ITBP

Annexure -2

Scientific Projects	Institute/Organization	Duration	Location
1. Geological mapping between 2 ⁰ to 3 ⁰ east longitudes in Gjelsvikfjella with Norwegian station Troll (S. Lat. 72 ⁰ 0' 7" & E. Long. 2 ⁰ 32' 2") as a base.	Geological Survey of India	Summer	Maitri
2. Study of major Pan-African shear zone in Wohlthat and Orvin Mountains to evaluate the kinematics involved and significance of shear zones in the implied collisional tectonics that brought about amalgamation of Gondwanaland.	Geological Survey of India	Summer	Maitri and Larsemann Hills
3. Detailed study of Schirmacher mylonites to determine formation time and stress, strain, temperature involved in their formation as an implication to exhumation history.	Geological Survey of India	Summer	Maitri
4. Correlation of the crustal evolutionary history of Larsemann Hills area, East Antarctica and Eastern Ghats, India.	Geological Survey of India	Summer	Larsemann Hills
5. Delineation of Land-Ice-Sea (LIS) interface (Hinge-line), around Schirmacher Oasis, central Dronning Maud Land (CDML), East Antarctica.	Geological Survey of India	Summer	Maitri
6. Long-term Glaciological Monitoring in CDML, East Antarctica.	Geological Survey of India	Winter	Maitri
7. Glaciological Profiling of Eight Major Lakes of Schirmacher Oasis, East Antarctica	Geological Survey of India	Winter	Maitri
8. Studies on Seismotectonics and Geodynamical Processes between Antarctica and Southern Indian Peninsula:	National Geophysical Research Institute	Winter	Maitri

Annexure -2

Scientific Projects	Institute/Organization	Duration	Location
Continuous GPS monitoring between India and Antarctica.			
9. Studies on Seismotectonics and Geodynamical Processes between Antarctica and Southern Indian Peninsula: Continuous Operation of Permanent Seismological Observatory at Maitri–Antarctica.	National Geophysical Research Institute	Winter	Maitri
10. Hydrographic Survey in the XXVII Indian Antarctica Expedition.	National Hydrographic Office	Summer	Maitri
11. Palaeoclimatic conditions in later Quaternary lakes, East Antarctica: A multi-disciplinary study using limnological, sedimentological, palynological, geochemical, mineral magnetic and chronological parameters.	Birbal Shani Institute of Palaeobotany	Summer	Maitri and Larsemann Hills
12. Sub-bottom Profiling and bathymetric survey of Antarctic Lake for Paleoclimatic Reconstruction.	National Centre for Antarctic and Ocean research	Summer	Maitri
13. Large Scale Topographical Mapping in Schirmacher Oasis and Larsemann Hills Regions and Geophysical Studies for Neo-tectonics and Monitoring of Inter-plate Movement in the Antarctic Region.	Geodetic & Research Branch Survey of India	Summer	Maitri and Larsemann Hills
14. Exploration of Macrobenthic Fauna on the Continental Shelf of Larsemann Hill.	Zoological Survey of India	Summer	Larsemann Hills
15. Exploration of microbial diversity from Larsemann Hills region of Antarctica with special emphasis on biotechnological potential.	Nicholas Piramal Research Center	Summer	Larsemann Hills
16. Impact of Anthropogenic activity on the Flora and Fauna.	Department of Limnology, Barkatullah University	Summer	Maitri

Annexure -2

Scientific Projects	Institute/Organization	Duration	Location
17. Studies on the influence of Ultraviolet-B Radiation on Survivorship and pigment concentration of flora over Schirmacher Oasis east Antarctica.	Department of Environmental Sciences, Dr.R.M.L. Avadh University	Summer	Maitri
18. Land Based Anthropogenic Impact of Coarse Particles on Antarctic Shelf.	National Centre for Antarctic and Ocean Research	Summer	Maitri
19. Observation of Meteorological Parameter and Ozone Observation.	India Meteorological Department	Winter	Maitri
20. Monitoring of Geomagnetic variations and Atmospheric measurements like water vapor content and meteorological parameters.	Indian Institute of Geomagnetism	Summer	Larsemann Hills
21. Study of Geomagnetic Storm and substorm through ground magnetic observations, operation of PPM, use of Air-Earth current measurements, GPS measurements, Glacier movement and tropospheric studies and Antarctic climate.	Indian Institute of Geomagnetism	Winter	Maitri
22. Study of VLF phenomena through Direction Finding Techniques at Antarctica.	Department of Physics, Barkatullah University	Summer	Maitri
23. Installation of VLF antenna for the study of global tectonic plate movements and Earthquake precursory studies.	Centre for Space Physics	Summer	Maitri
24. Investigation of magnetospheric-ionospheric coupling between high and low latitude related to space weather events during IPY.	National Physical Laboratory	Winter	Maitri
25. Inter-comparison of snow and blue ice sensitivities to climate change/impact in Antarctica.	Snow and Avalanche Study Establishment Research and Development Centre	Winter	Maitri

Annexure -2

Scientific Projects	Institute/Organization	Duration	Location
26. Long Term Monitoring of Snow-Ice, Glaciers in different Antarctic Basin and Atmospheric Studies using satellite Images.	Snow and Avalanche Study Establishment Research and Development Centre	Summer	Maitri
27. Temporal and Spatial variations of Energy Fluxes of different snow and ice media in Antarctica using Satellite Remote sensing RRTS.	Snow and Avalanche Study Establishment Research and Development Centre	Summer	Maitri
28. Radiation Characteristics of Different Snow and Ice Media in Antarctic.	K. B Centre of Atmospheric and Ocean Studies University of Allahabad	Summer	Maitri
29. Seasonal and interannual variation of hydrodynamics between Africa and Antarctica, as a part of the studies on the hydrodynamics of Indian Ocean Sector of Southern Ocean.	National Centre for Antarctic & Ocean Research	Summer	Larsemann Hills
30. Longitudinal Assessment of Psychological Health, Morbidity, Adaptation and Cognitive functioning during winter over in Antarctica. <i>Sudhir K. Khandelwal</i>	All India Institute of Medical sciences	Summer	Maitri
31. Communication support and Experimentation for XXVII Indian Antarctic Expedition. <i>M.K.Dhaka</i>	Defense electronics and Application Laboratory	Winter Summer	Maitri Larsemann Hills
32. Assessment of Microbial Biodiversity of Antarctic Soil for Future. Soumya Biswas	Dept. of Botany, Siksha-Bhavana Visva-Bharati Santiniketan	Summer	Larsemann Hills
33. Long term environmental assessment of waste materials emanating over east Antarctica and long term eco-system and edaphic study over east Antarctica	Shriram institute of Industrial Research	Summer	Larsemann Hills