BALLOON FACILITY
TATA INSTITUTE OF FUNDAMENTAL RESEARCH
ECIL PO., HYDERABAD-500062 (AP), INDIA

CONVENTIONAL BALLOON SUPPORT APPLICATION

Date:

Payload Acronym: _____

Payload Name: _____

The Conventional Balloon Support Application identifies science group requirements for BF flight support and is valid for one year. Please complete a separate application in as much detail as possible for each individual balloon flight planned and return to:

Prof. D. K. Ojha
Chairperson,
TIFR Balloon Facility Committee
Tata Institute of Fundamental Research
Homi Bhabha Road, Colaba,
Mumbai-400 005
Phone: (022)22782684
Fax: (022)22804610/11
Mobile: 9867206969

OR

Shri B Suneel Kumar
Scientist-in-Charge
TIFR Balloon Facility
PB No.5, ECIL PO
Hyderabad-500 062
Telefax: (040)27123327
Mobile: 9441993535

PART I SCIENCE

DISCIPLINE *	
(a) X ray/Gamma Ray/Infra Red/Sub millimeter /Particle Astrophysics (b) Upper Atmospheric Research (c) Test Flight (d) Any other: * Tick mark or underline the standard discipline	
SCIENCE DESCRIPTION	
Please briefly describe the scientific experiment and its objectives	
Description	
Objectives	

PART II CONTACTS

PRIMARY CONTACT	
Principal Scientific Investigator Name	
Organization Name	
Mailing Address	
Telephone Number	
Fax Number	
E-Mail Address	
Project Web Site	

PART III FLIGHT PROFILE

LAUNCH SITE	ESTIMATED SITE ARRIVAL DATE	REQUESTED FLIGHT DATE

FLOAT REQUIREMENTS		
CRITERIA	**MINIMUM**	**DESIRED**
Float Altitude		
Time at Float Altitude		
Altitude Stability		
Launch Time		

OTHER THAN NORMAL FLIGHT PROFILE REQUIREMENTS			
Ascent/descent rates		Apex Valve	
Altitude variations		Other	
Payload reel down		Other	
Payload Orientation		Yes/No	(If yes give details of pointing accuracy)

PART IV MINIMUM SCIENCE SUCCESS CRITERIA

SCIENCE OBJECTIVES	DESCRIPTION	MINIMUM	DESIRED
Briefly state the minimum scientific objective that must be met to achieve a mission success			
Provide a summary of the minimum and desired performance for the experiment (detectors, pointing systems, etc.)			

BALLOON SUPPORT SYSTEMS	DESCRIPTION	MINIMUM	DESIRED
Provide full details of any pertinent balloon and/or BF support systems (telemetry, commanding, recovery, etc.) performance requirements with minimum and desired criteria.			

BALLOON SUPPORT SYSTEMS	DESCRIPTION	MINIMUM	DESIRED
Provide details on any other data source or support element separate from the balloon flight but necessary to achieve mission success (instrumented sounding balloons, instrumented aircraft, independent ground station measurements, GPS radiosonde data.			

PART V PAYLOAD/GONDOLA AND BALLOON DATA

PAYLOAD / GONDOLA						
Dimension of scientific payload (attach drawings or photos if available	L:		W:		H:	
Estimated weight of scientific payload (only experimenter-supplied equipment including experimenter-supplied batteries)						
Has BF flown this payload before? If yes, indicate where, when, and the flight number:	Yes		No:			
	Date		Flight #	Site		
Have any structural changes been made that affect your previous mechanical and/or pressure vessel certifications?	Yes		No:			
	If yes, explain:					
Are there any restrictions on the proximity of the scientific payload to other equipment, electronics, ballast, or to the balloon?						

SPECIAL BALLOON REQUIREMENTS		
X	**REQUIREMENT**	**ADDITIONAL INFORMATION**
	No radar-reflective tape	
	Attached ducts	
	Minimum poly powder lubrication	
	Other	

PART VI GROUND SUPPORT

SERVICES	
Work area and shop support requirements	
BF environmental test chamber requirements	

NETWORK AND IT REQUIREMENTS	
Number of IP addresses:	
Static IP addresses	
Dynamic IP addresses	
Operating systems being used	

PART VII EXPENDABLE SUPPORT REQUIREMENTS

BATTERIES

Normally BF supplies batteries for the science instrument as well as for BF equipment. However, only lithium battery packs and cells used by BF are available. Indicate below if you want BF to purchase batteries for your scientific payload.

YES ☐ NO ☐

Give Details of Power Supply packs required

Maximum O/P voltage required: ☐ Volts; Maximum load current: ☐ A

Total Time duration: ☐ hours; Type of connector required: D-type/Circular

Supply Switch required: Yes /No

GAS / CRYOGEN ESTIMATE

Estimate the type, purity, container size, PSI, and quantity of compressed gas, cryogens, and especially gases you expect BF will need to order to support your program.

GAS/CRYOGEN	PURITY	CONTAINER SIZE	PSI	QUANTITY

Gas/Cryogen Orders

Gas/cryogen estimates you provide on this application are used ONLY for BF forecasting and planning purposes; no gas/cryogen order for your program will be generated based on this application form.

At least two to three weeks before your projected arrival at the launch site, please submit your program's gas/cryogen order to BF.

Fax: 040-27123327 **Email:** bsuneel@tifr.res.in

BALLAST

BF normally provides steel shot as ballast.

OTHER EXPENDABLES

List any expendables and services other than those directly required by BF for its flight support.	

PART VIII SAFETY

HAZARDOUS MATERIALS LIST

The table at right lists hazards typically associated with balloon payloads. Please confirm those that are applicable to this project.

Please indicate any additional hazardous materials, systems, or equipment not falling into these categories (i.e., toxic gases, super-conducting magnets).

HAZARD TYPE	YES	WHERE USED		
		Ground	In Flight	Both
Radioactive Materials				
Lasers				
Cryogenic Materials				
Pressure Vessels				
High Voltage				
Pyrotechnics				
Magnets				
Other				

RADIOACTIVE MATERIALS

List radioactive sources to be used, along with maximum activity / wattage.

Identify materials in Ci, μCi, and/or nCi

SOURCE TYPE	ACTIVITY / WATTAGE

PART IX ELECTRONICS

BF TELECOMMAND SYSTEM

Please indicate the tele commands required:

1. Pulse commands (30m.sec. duration):
Available [32] Nos. Required [ ] Nos.

2. 10 second commands (contact current max. 1 A):
Available [6] Nos. Required [ ] Nos.

3. Latch commands (contact current max. 1 A):
Available [12] Nos. Required [ ] Nos.

4. Data commands (8 bit data) Available: 2 Nos. for user.

AIRBORNE TELEMETRY

GROUND SEGMENT: BF provides both Encoder and Transmitter. Experimenter has to provide the nature of Telemetry signal both analog and digital from the scientific instrument.

1. To use BF encoder: a) Digital bits must be in multiples of 8 bits with TTL or CMOS level.
   b) Analog signals must be conditioned to either 0 to 6 V range or +/- 4.5 V range
2. (a) If experimenter plans to use their own encoder, following details are required:

Bit Rate	Word length	Frame length	Sub-frame length	Sync pattern

(b) Experimenter to provide 16 bits digital data and 1 or 2 analog channels to BF for housekeeping data.

Describe special or unusual electronic requirements, indicate constituent signals comprising science furnished composite video, and indicate any TV video requiring BF - supplied transmitters.	

GROUND TELEMETRY

Decoded data will be given on LAN using UDP protocol and parallel data with stroke.
The complete flight data will be stored in a computer's Hard disk and a copy of the same will be handed over to the experimenter.

List any special requirements for ground station equipment, test equipment, special or unusual electronic requirements, constituent signals comprising science-furnished composite video, and TV video requiring BF-supplied transmitters.	

WAIVER OF CLAIMS
BALLOON FACILITY
TATA INSTITUTE OF FUNDAMENTAL RESEARCH

With regard to Balloon Flight Services provided by Balloon Facility, TIFR, the requiring institution identified below, agrees not to assert any claim or claims against the BF, TIFR, or their employees or agents, for loss or damage to any instrument or scientific equipment (including loss of or damage to the balloon) provided by the requiring institution and carried on a Balloon Flight provided by the BF, or consequential damages resulting from such loss or damages, except with respect to any such loss or damages resulting solely from the fault or negligence of the Balloon Facility, TIFR.

This waiver shall be in effect from _____ to _____ inclusive.

INSTITUTION:

_____
(Name of University or Organization)

_____
(Department or Section)

OFFICIAL'S NAME:

_____
(Type or print name of the Official with authority to legally bind the Institution)

OFFICIAL'S SIGNATURE:

_____
(Signature of the Official with authority to legally bind the Institution)

TITLE:

_____
(Title of above Official)

DATE:

_____
(Date of Official's Signature)

PI'S NAME:

_____
(Type or print Principal Investigator's name)

PI'S SIGNATURE:

_____
(Principal Investigator's signature)

DATE:

_____
(Date of Principal Investigator's Signature)

PART X MEMORANDUM OF UNDERSTANDING

Before flight support is approved to a user scientist, a Memorandum of Understanding (MOU) must be on the file with the BF. The MOU is an agreement negotiated between TIFR and the user scientist's organization. In general, an MOU states:

1. The conditions under which the BF will furnish balloon launching and associated services for the user scientist.

2. The responsibilities of the BF and the user's organization in connection with the launches.

User scientists planning to use BF flight support services provided by the BF will have to reimburse the entire cost of flight support comprising cost of the balloon, the hydrogen gas, the parachute & rigging, the electronic interface, air borne battery power supplies, flight recovery services, expendables and other services directly associated with flight support like wind sounding flights using Rubber Balloons and or Plastic Balloons with GPS Sonde payload and the final cost will depend upon the number of flight attempts.

PART XI AGREEMENT

I have read and agree with all requirements and conditions set forth in the Conventional Balloon Flight Support Application.

Name : _____

Organization: _____

Signature: _____

Date: _____