SCHEDULE 4A

[Regulation 106(5)]

The requirements for unmanned free balloons referred to in regulation 106(5) are as follows:

Classification of unmanned free balloons

1. An unmanned free balloons shall be classified as –

(a) *light:* where the unmanned free balloon carries a payload of one or more packages with a combined mass of less than 4 kilogrammes unless qualifying as a heavy balloon in accordance with paragraphs (c)(ii), (iii) and (iv);

(b) *medium:* where the unmanned free balloon which carries a payload of two or more packages with a combined mass of 4 kilogrammes or more, but less than 6 kilogrammes unless qualifying as a heavy balloon in accordance with paragraph (c)(ii), (iii) and (iv); or

(c) *heavy:* where the unmanned free balloon which carries a payload which –

(i) has a combined mass of 6 kilogrammes or more;

(ii) includes a package of 3 kilogrammes or more;

(iii) includes a package of 2 kilogrammes or more with an area density of more than 13 grams per square centimeter; or

(iv) uses a rope or other device for suspension of the payload that requires an impact force of 230 newton or more to separate the suspended payload from the balloon.

Note 1.— The area density referred to in subparagraph (c) (iii) is determined by dividing the total mass in grams of the payload package by the area in square centimeters of its smallest surface.

Note 2.— Figure 1 gives the classification of unmanned free balloon.

General operating rules

2. (1) An unmanned free balloon shall not be operated without appropriate authorization from the State from which the launch is made.

(2) An unmanned free balloon, other than a light balloon used exclusively for meteorological purposes and operated in the manner prescribed by the Authority, shall not be operated across the territory of another State without appropriate authorization from that other State concerned.

(3) The authorization referred to in paragraph (2) shall be obtained prior to the launching of the balloon if there is reasonable expectation, when planning the operation that the balloon may drift into airspace over the territory of another State. Such authorization may be obtained for a series of balloon flights or for a particular type of recurring flight, e.g. atmospheric research balloon flights.

(4) An unmanned free balloon shall be operated in accordance with conditions specified by the State of Registry and the State(s) expected to be over-flown.

(5) An unmanned free balloon shall not be operated in such a manner that impact of the balloon, or any part thereof, including its payload, with the surface of the earth, creates a hazard to persons or property not associated with the operation.

(6) A heavy unmanned free balloon shall not be operated over the high seas without prior co-ordination with the appropriate Air Traffic Services authority.

Operating limitations and equipment requirements

3. (1) A heavy unmanned free balloon shall not be operated without authorization from the appropriate Air Traffic Services authority at or through any level below 18 000 metres (60 000 feet) pressure-altitude at which -

(a) there are clouds or obscuring phenomena of more than four oktas coverage; or

(b) the horizontal visibility is less than 8 kilometres.

(2) A heavy or medium unmanned free balloon shall not be released in a manner that will cause it to fly lower than 300 metres (1 000 feet) over the congested areas of cities, towns or settlements or an open-air assembly of persons not associated with the operation.

(3) A heavy unmanned free balloon shall not be operated unless –

(a) it is equipped with at least two payload flight devices or systems, whether automatic or operated by tele-command, that operate independently of each other;

(b) for polyethylene zero-pressure balloons, at least two methods, systems, devices, or combinations thereof, that function independently of each other are employed for terminating the flight of the balloon envelope;

Note.— Super-pressure balloons do not require these devices as they quickly rise after payload discharge and burst without the need for a device or system designed to puncture the balloon envelope. In this context a super-pressure balloon is a imple non-extensible envelope capable of withstanding a differential of pressure, higher inside than out. It is inflated so that the smaller night-time pressure of the gas still fully extends the envelope. Such a super-pressure balloon will keep essentially constant level until too much gas diffuses out of it.

(c) the balloon envelope is equipped with either a radar reflective device or radar reflective material that will present an echo to surface radar operating in the 200 megahertz to 2700 megahertz frequency range, or balloon is equipped with such other devices as will permit continuous tracking by the operator beyond the range of ground-based radar.

(4) A heavy unmanned free balloon shall not be operated under the following conditions:

(a) in an area where ground-based Secondary Surveillance Radar equipment is in use, unless it is equipped with a secondary surveillance radar transponder, with pressure altitude reporting capability, which is continuously operating on an assigned code, or which can be turned on when necessary by the tracking station; or

(b) in an area where ground-based Auto Dependent Surveillance-Broadcast equipment is in use, unless it is equipped with Auto Dependent Surveillance-Broadcast transmitter, with pressure-altitude reporting capability, which is continuously operating or which can be turned on when necessary by the tracking station.

(5) An unmanned free balloon that is equipped with a trailing antenna that requires a force of more than 230 newtons to break it at any point shall not be operated unless the antenna has coloured pennants or streamers that are attached at not more than 15 metres intervals.

(6) A heavy unmanned free balloon shall not be operated below 18 000 metres (60000 feet) pressure-altitude between sunset and sunrise or such other period between sunset and sunrise, corrected to the altitude of operation as may be prescribed by the Authority, unless the balloon and its attachments and payload, whether or not they become separated during the operation, are lighted.

(7) A heavy unmanned free balloon that is equipped with a suspension device (other than a high conspicuously coloured open parachute) more than 15 metres long shall not be operated between sunrise and sunset below 18 000 metres (60 000 feet) pressure-altitude unless the suspension device is coloured in alternate bands of high conspicuity colours or has coloured pennants attached.

Termination

4. The operator of a heavy unmanned free balloon shall activate the appropriate termination devices required by clause3 (3) (a) and (b) above -

(a) when it becomes known that weather conditions are less than those prescribed for the operation;

(b) if a malfunction or any other reason makes further operation hazardous to air traffic or to persons or property on the surface; or

(c) prior to unauthorized entry into the airspace over another State's territory.

Flight notification

5. (1) Pre-flight notification –

(a) early notification of the intended flight of an unmanned free balloon in the medium or heavy category shall be made to the appropriate air traffic services unit not less than seven days before the date of the intended flight;

(b) notification of the intended flight shall include the following information as may be required by the appropriate air traffic services unit:

(i) balloon flight identification or project code name;

(ii) balloon classification and description;

(iii) Secondary Surveillance Radar code, aircraft address or Non- Directional Beacon frequency as applicable;

(iv) operator's name and telephone number;

(v) launch site;

(vi) estimated time of launch or time of commencement and completion of multiple launches;

(vii) number of balloons to be launched and the scheduled interval between launches if multiple launches;

(viii) expected direction of ascent;

(ix) cruising level(s) or pressure-altitude;

(x) the estimated elapsed time to pass 18 000 metres (60 000 feet) pressure-altitude or to reach cruising level if at or below 18 000 metres (60 000 feet), together with the estimated location;

Note.— If the operation consists of continuous launchings, the time to be included is the estimated time at which the first and the last in the series will reach the appropriate level (e.g. 122136Z–130330Z).

(xi) the estimated date and time of termination of the flight and the planned location of the impact or recovery area. In the case of balloons carrying out flights of long duration, as a result of which the date and time of termination of the flight and the location of impact cannot be forecast with accuracy, the term "long duration" shall be used.

Note.— If there is to be more than one location of impact/recovery, each location is to be listed together with the appropriate estimated time of impact. If there is to be a series of continuous impacts, the time to be included is the estimated time of the first and the last in the series (e.g. 070330Z–072300Z)

(c) any changes in the pre-launch information notified in accordance with paragraph (b) above shall be forwarded to the air traffic services unit concerned not less than 6 hours before he estimated time of launch, or the case of solar or cosmic disturbance investigations involving a critical time element, not less than 30 minutes before the estimated time of the commencement of the operation.

(2) Notification of launch -

Immediately after a medium or heavy unmanned free balloon is launched the operator shall notify the appropriate air traffic services unit of the following:

(a) balloon flight identification;

(b) launch site;

(c) actual time of launch;

(d) estimated time at which 18000 metres (60 000 feet) pressure-altitude will be passed, or the estimated time at which the cruising level will be reached if at or below 18000 metres (60000 feet) and the estimated location; and

(e) any changes to the information previously notified in accordance with paragraph (1) (b) (vii) and (viii).

(3) Notification of cancellation -

The operator shall notify the appropriate air traffic services unit immediately after it is known that the intended flight of a medium or heavy unmanned free balloon, previously notified in accordance with clause 5 (1), has been cancelled.

Position recording and reports

6. (1) The operator of a heavy unmanned free balloon operating at or below 18 000 metres (60 000 feet) pressure-altitude shall monitor the flight path of the balloon and forward reports of the balloon's position as requested by Air Traffic Services.

(2) Unless Air Traffic Services require reports as specified under subclause (1) at more frequent intervals, the operator shall record the position every 2 hours.

(3) The operator of a heavy unmanned free balloon operating above 18 000 metres (60000 feet) pressure-altitude shall monitor the flight progress of the balloon and forward reports of the balloon's position as requested by Air Traffic Services.

(4) Unless Air Traffic Services require reports as specified under subclause (3) at more frequent intervals, the operator shall record the position every 24 hours.

(5) If a position cannot be recorded in accordance with subclauses (1) and (2), (3) and (4) the operator shall immediately notify the appropriate Air Traffic Services unit.

(6) The notification under subclause (5) shall include the last recorded position.

(7) Where tracking of a balloon is re-established, the appropriate Air Traffic Services unit shall be notified immediately.

(8) One hour before the beginning of planned descent of a heavy unmanned free balloon, the operator shall forward to the appropriate Air Traffic Services unit the following information regarding the balloon:

(a) the current geographical position;

(b) the current level or pressure-altitude;

(c) the forecast time of penetration of 18000 metres (60000 feet) pressure-altitude, if applicable; and

(d) the forecast time and location of ground impact.

(9) The operator of a heavy or medium unmanned free balloon shall notify the appropriate Air Traffic Services unit when the operation is ended.

Figure 1
Classification of Unmanned Free Balloons