AAIU Report No:- 1999/010
AAIU File No:- 19970021
Published: 30/06/1999

Name of Operator:	Greg Allen
Manufacturer:	N/A
Model:	Blimp Balloon
Nationality:	Irish
Registration:	None
Serial Number:	N/A
Location:	Red Cow Hotel, Naas Road, Dublin
Date & Time (UTC):	13 May 1997; 13:45 approx.
Information Source:	Irish Aviation Authority

Synopsis

The blimp was being used as a moored advertising balloon. It became detached from its mooring and was observed drifting towards Dublin City, and in the general direction of Dublin Airport, at a height of 300/500 ft, trailing it's mooring line. The blimp was not recovered.

1. Factual Information

1.1 History of the Event

1.1.1 Background

The blimp has been in use, as an advertising balloon, for approximately six months. The normal procedure was to moor the blimp to the top of a building where the mooring would be safe from unauthorised interference. The standard procedure was to launch the blimp early in the day and to take it down at the end of each business day, before dark. The blimp was normally unattended and unsupervised while moored.

1.1.2 The Incident

On the day of the incident the blimp was launched early in the morning. The site was close to a major road intersection. A suitable building was not available, so the mooring was attached to a temporary single storey building, on a building site of a local hotel which was undergoing extension building work.

At 13:58 hrs, a security guard, at a factory located approximately one mile from the mooring site, observed the blimp drifting at an altitude of 300/500 ft., with a trailing cable. It was drifting in the general direction of Dublin City and Dublin Airport. He reported the matter to the airport police at Dublin Airport. Air Traffic Control (ATC) at Dublin Airport was alerted, but did not observe the blimp.

1.2 Injuries to Persons

No persons were involved and there were no injuries.

1.3 Damage to Aircraft

The blimp was not recovered.

1.4 Other Damage

Nil.

1.5 Personnel Information

The operator's main aerial business activity was taking aerial photographs from moored balloons, which were monitored for the entire period while they are aloft. He had notified the Irish Aviation Authority (IAA) of this activity. He had not discussed his latter activity, that of moored, unattended, advertising blimps, with the Authority.

1.6 Aircraft Information

The blimp was 15' long and 6'6" max. diameter. It had no rigid components. It was moored to the ground by a single nylon type cable, of 3 to 4 mm diameter, which was approximately 100 ft long. On the operation in question, this mooring line was attached to a 1 metre length of chain which was, in turn, secured to the temporary building by a padlock. The blimp was equipped with a safety device, which was designed to deflate the blimp at a pre-set altitude of 3,000 ft. The safety device consisted of a skin panel secured by Velcro Tape, and was designed to blow out under the influence of differential pressure, in the event of the blimp rising to approximately 3,000 ft.
No radar reflector was fitted to the blimp.

1.7 Meteorological Information

On the day in question, the area lay in a cool unstable south-westerly airstream. A trough of low pressure was slow moving over the area. Occasional showers of rain occurred throughout the day. The wind throughout the day was 230º, 10 Kts, occasionally 260º, 12-15 Kts with gusts of 22-25 Kts in showers.

The maximum wind speed recorded during the day at the Meteorological Station at nearby Casement Aerodrome was 25 Kts.

The cloud cover and height was:

1 - 3 OKTA	CB 1800-2000 ft
3 - 5 OKTA	Cu 2000-2500 ft
3 - 4 OKTA	Sc 3000-4500 ft

1.8 Aids to Navigation

Not applicable.

1.9 Communications

Not applicable.

1.10 Aerodrome Information

The site from which the blimp was launched was the scene of considerable building construction activity at the time of the incident. The site is on the SW outskirts of Dublin City. It was situated 3.2 miles East of Baldonnel Military Airfield, 5.6 miles SE of Weston General Aviation Aerodrome and 9 miles SSW of Dublin Airport, which is a major international airport.

1.11 Flight Recorders

Not applicable.

1.12 Wreckage and Impact Information

The blimp was not recovered.

When the owner inspected the mooring site after the blimp was reported missing, he found that the mooring line, the chain and padlock were missing. No remnants of these items were found at the mooring site.

1.13 Medical and Pathological Information

Not applicable.

1.14 Fire

There was no fire.

1.15 Survival Aspects

Not applicable.

1.16 Tests and Research

Not applicable.

1.17 Organisational and Management Information

1.17.1 IAA Regulations when incident occurred

The only requirements, in force at the time of the occurrence, for the operation of unmanned moored balloons, in Ireland, are given in Para 2 of Chapter ENR 5.5 of AIP Ireland, issued by the IAA. This chapter is titled:-

"Aerial Sporting & Recreational Activities
Flight of Manned Free Balloons in Shannon FIR"

Para 2 is titled:-

"Operation of Moored Balloons within the Shannon FIR"

The current version of Chapter ENR 5.5 of AIP Ireland is included in Annex A.

The blimp was of a size that required compliance with the regulations laid down in ENR 5.5.

Because the blimp was operated within 5 miles of an airfield, application was required, under ENR 5.5, to be made to the IAA, giving seven days notice of the operation. The IAA did not receive any such notification.

1.17.2 Changes to the Regulations

The IAA has issued a revision to AIP Ireland which came into effect on 13 April 1998. The revision is shown in Annex B. Para 2 of Chapter ENR 5.5, governing the operation of tethered balloons has been amended. The effect of this amendment is to require the operators of advertising blimps to seek IAA approval for the operation of such blimps anywhere within the Shannon FIR. However this commercial activity continues to the regulated under a chapter entitled:-

"Aerial Sporting & Recreational Activities
Flight of Manned Free Balloons in Shannon FIR"

1.17.3 Applicability of IAA Regulations to Military Airfields

In discussions following this incident, the IAA expressed an opinion that the regulations in AIP Ireland may not be applicable with regard to military airfields and aerodromes. In relation to this incident, this could result in the regulation, which prohibits the operation of blimps within 5 miles of an aerodrome, not being applicable with regard to military airfields.

1.18 **Additional Information**

1.18.1 Discussion has taken place between the operator and the IAA, subsequent to the incident, concerning the use of a second line from the mooring point to a plug on the balloon. The idea is that if the main mooring line parted, then the secondary line would pull the plug and deflate the balloon.

1.18.2 Since this incident, other advertising blimps have been observed moored in the same general area. On at least one occasion, such blimp was seen moored two hours after nightfall. In this case the blimp was lit by ground mounted flood lights. The height of the blimp appeared, on that occasion, to be in excess of 100 ft, above ground level (AGL). The identify of the operator of this blimp was not established.

1.18.3 An advertising blimp recently came to earth in the Isle of Man. Reports indicated that this blimp had broken free in the Dublin area. The blimp involved in that incident was not operated or supplied by the operator of the blimp which is the subject of this report.

1.18.4 These type of blimps are available for sale to persons or organisations, such as general trading companies, for the purpose of advertising their products. In general, such persons or organisations have no aviation knowledge, and would probably be unaware of any potential hazard posed by the blimp, and of the IAA regulations covering the deployment of such blimps.

1.18.5 There is no requirement for the operators of such advertising blimps to be licensed by the IAA.

1.19 **Useful or Effective Investigation Techniques**

Nil

2. **Analysis**

2.1 The absence of any remnants of the mooring line, chain and padlock indicates that human interference, rather than failure of the mooring equipment, was the cause of the blimp drifting off its mooring.

2.2 The low level nature of the mooring point, used on this occasion, would have facilitated such interference.

2.3 The drifting blimp, and the 100 ft. of cable dangling beneath it, posed a significant hazard to aerial navigation. The area in question is frequently used for low level helicopter operations by both military and civil operators.

2.4 The operator did not notify the IAA of this proposed operation, as laid down in AIP Ireland. This notification was required solely because the operation was within 5 miles of an aerodrome.

2.5 If the operation had been conducted more than 5 miles from an aerodrome, IAA notification would not have been required, as the blimp was not operated above 100 ft. above ground level.

2.6 The blimp was equipped with a deflation device as required by AIP Ireland. However, as this device would not activate until the blimp rose to 3,000 ft., it is dubious if this safety device met the requirements of ENR 5.5 Para 2.2 ***"..... a device to ensure automatic and rapid deflation of the balloon should it escape....."***. This is because the blimp would not deflate until it rose to 3,000 ft, which may take some considerable time, during which period considerable downwind drift would have occurred. Furthermore, the design of the safety device was such that it could not be considered a precise device, and it is possible that the blimp could reach an altitude considerably in excess of 3,000 ft., before the safety device would deflate the blimp.

2.7 The material used in the mooring line was relatively light, and easily cut. It is an important safety feature that such lines are made of as light a construction as possible, consistent with securing the balloon. However, this facilitates interference, and makes it easy for unauthorised persons to release the blimp. At a location such as a building site, readily available tools would render even chains and locks vulnerable to interference.

2.8 The proposal regarding a second line connected to a plug on the blimp requires re-consideration. Firstly, it must be considered that the two lines would probable tangle in each other if the blimp swung about on it's mooring. In such an event it is dubious if the second line would pull the plug if the main line parted at its base. Secondly, such second line would be equally prone to interference on the ground.

2.9 Given that the wind would have carried the blimp across an area of high population density, and that the blimp was not reported found, it is probable that the blimp was carried downwind to the sea, approximately 13 miles away, before it reached 3,000 ft., and deflated. Given the cloud cover on the day, and the fact that the blimp was not seen by the Control Tower staff at Dublin Airport, there was a high probability that the blimp was in cloud as it crossed the coast.

2.10 By plotting the estimated drift of the blimp, it can be deduced that the blimp was probably in the area of the approach path to the main runway at Dublin Airport, Runway 28, when it crossed the coast. This estimated drift track would have resulted in the blimp crossing the centre-line of Runway 28 approximately 4 miles from the threshold of the runway, at an undetermined altitude, but probably less than 3000 ft., probably in cloud. The probable drift track is shown in Annex C.

2.11 The practise of operating blimps at night gives rise to the possibility of such blimps becoming detached during darkness, and then drifting away from the illuminating flood lights. Drifting freely at night, especially with a dangling cable attached, such blimps would pose a very serious hazard to aircraft, but particularly to helicopter, such as those engage in SAR or police activities.

2.12 As the AIP requirements are currently written, if the balloon is moored at or below 100 ft, and more than 5 miles from an aerodrome, there are no requirements to:-

(a) notify the IAA;
(b) to fit a safety device;
(c) to lower the balloon at night or in conditions of poor visibility.

2.13 There is no general index of contents in AIP Ireland. At the start of Part 2 - ENROUTE (ENR) a list of the ENR Sections is given. In this list, under the heading ***"Navigation Warning"***, Section ENR 5.5 is described as "Aerial Sporting and Recreational Activities".

The heading at the start of ENR 5.5 does not mention moored balloons. The first and only reference to moored balloons is in para 2 of ENR 5.5.

2.14 The operation of advertising blimps is a commercial activity. The current regulations which classify and regulate such operations under a general heading of sporting and recreational activities, is inappropriate. Furthermore, such a classification may make it difficult for potential blimp operators to determine which regulations apply to such operations.

2.15 The absence of any licensing requirement, for the operators of such blimps, could result in the operation of such blimps, by persons with little or no knowledge of the possible safety hazard posed to other air users by such blimps. The absence of a formal licence also reduces the ability of the IAA to enforce the regulations governing these commercial aerial activities.

2.16 The applicability of civil aviation regulations to areas surrounding military airfields is unclear. It appears possible that the provisions laid down in The Irish Aviation Authority Act 1993, AIP Ireland and elsewhere, with regard to the flight safety protection of airfields, do not apply to military airfields in the State.

3. Conclusions

3.1 The blimp became detached from its mooring as a result of unauthorised interference.

3.2 The operation did not comply with the requirements laid down by the IAA in AIP Ireland, by nature of the proximity of the mooring site to aerodromes.

3.3 The safety device fitted failed to rapidly deflate the blimp and thereby it posed a serious hazard to aerial navigation for a considerable period of time.

3.4 The safety device did not meet the requirements laid down in ENR 5.5, which required that the blimp should deflate rapidly in the event of it becoming detached from its moorings.

3.5 The blimp posed a hazard not only to the aerodromes in the vicinity of it's mooring point, but also to aircraft approaching the main runway at Dublin Airport, as it probably drifted through the approach path, whilst probably in cloud.

3.6 It is difficult to visualise any mooring system that would prevent interference with an unsupervised mooring, or that would not pose a hazard itself by nature of very robust, tamper proof, construction.

3.7 It is possible that operators of such moored balloons are not aware of the requirements laid down by the IAA.

3.8 The lack of indexing and the incomplete labelling of the Sections in AIP Ireland would made if difficult for anybody, with only a casual knowledge of AIP Ireland, to find the regulations pertaining to moored balloons.

3.9 The requirement in AIP Ireland, regarding moored balloons, are insufficient in some respects, including:-

(a) lack of prohibition on the operation of moored balloons at night or conditions of poor visibility ;

(b) no performance specification for the automatic deflating safety device;

(c) no requirements to notify the IAA or to fit a safety device when the balloon is operated at or below 100 ft and more than 5 miles from an aerodrome;

(d) lack of supervision requirements of the balloon while it is moored.

(e) The absence of any licensing system of commercial blimp operators.

3.10 The possible lack of adequate legislative protection for the safe conduct of aviation activities at military airfields in the State is a matter of grave concern.

4 Safety Recommendations

4.1 The IAA should review the requirements for the operation of moored balloons and blimps, specifically regarding:-

(a) operating requirements more than 5 miles from an aerodrome and below 100 ft;

(b) the automatic safety deflation device requirement and the performance specification of such devices;

(c) operation at night or in conditions of poor visibility;

(d) unsupervised operations.
(SR 25 of 1999)

4.2 The IAA should consider some form of control of blimp operators, such as a licensing system. **(SR 26 of 1999)**

4.3 The IAA should review the indexing system in AIP Ireland. In particular, the commercial activity of advertising blimps should not be listed and regulated under sporting activities. **(SR27 of 1999)**

4.4 The IAA should bring the current requirements, and any revision of these requirements, to the attention of blimp operators and potential operators. **(SR 65 of 1999)** *(This safety recommendation was originally mis-numbered as SR28 of 1999)*

4.5 The IAA and the Department of Defence should liaise to determine the applicability of IAA regulations with regard to the protection of military airfields, and take whatever action is necessary to ensure that the safe conduct of flying activities at military airfields is adequately protected. **(SR 66 of 1999)** *(This safety recommendation was originally mis-numbered as SR29 of 1999)*

ANNEX A

AIP IRELAND
ENR 5 - 19

ENR 5.5

AERIAL SPORTING & RECREATIONAL ACTIVITIES
FLIGHT OF MANNED FREE BALLOONS IN SHANNON FIR

1. Navigation of manned free balloons in the Shannon FIR shall be subject to the following conditions;

1.1 Flights shall not be planned to be operated in Controlled Airspace (Control Areas or Control Zones).

1.2 Flights shall be made only in accordance with the Visual Flight Rules and by day.

1.3 Flights shall not be made if the operating characteristics of the balloon and the actual and forecast wind indicate that there is any risk of entry into controlled airspace.

1.4 Flights shall be made only in accordance with permission and any conditions attached thereto.

1.4.1 Permission should be sought, in writing, from:

Operating Standards Department
The Irish Aviation Authority
Aviation House
Hawkins St
Dublin 2

1.4.2 For flights within the State, application for permission shall be made at least seven days before the intended flight.

1.4.3 For flights entering or leaving the State, application for permission shall be made at least fourteen days before the intended flight and shall be accompanied by a copy of a letter of authorisation from the State of departure or the State of intended landing, as appropriate.

1.4.4 Applications for permission shall include the following information:

(a) type of flight e.g. VFR (Local or International)
(b) identification of balloon (Registration mark)
(c) place of ascent (co-ordinates)
(d) date and intended time (UTC) of ascent
(e) type, diameter, shape and colour of balloon
(f) estimated elapsed time of flight
(g) altitude (maximum en route)
(h) rate of ascent (normal and maximum)
(i) estimated track (magnetic)
(j) place of intended landing
(k) type, make, effective range and available frequencies of radio air/ground communication equipment
(L) details of radio and other navigation equipment
(m) endurance (hours)
(n) emergency and survival equipment
(o) name of pilot in command
(p) number of persons on board
(q) name, address and telephone number of operator.

1.4.5 For flights leaving the State an ATC Flight Plan, repeating the information detailed in **1.4.4** shall be filed with the appropriate ATC unit at least 24 hours before the estimated time of departure.

1.4.6 Permission for a series of flights may be given subject to arrangements acceptable to the Authority.

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ENR 55 (Continued)

1.5 Notification to ATC

1.5.1 Intention to operate a flight, or a series of flights in the State within a single day, shall be notified by telephone to the appropriate ATC unit at least one hour before the intended time of departure.

1.5. In the case of flights leaving the State, the time of departure shall be notified to the appropriate ATC unit as soon as possible after take-off.

1.5.3 Completion of the flight or series of flights within a single day shall be notified to the appropriate ATC unit.

2. OPERATION OF MOORED BALLOONS WITHIN THE SHANNON FIR

2.1 This section is applicable to any balloon that is moored to the surface of the earth or an object thereon and that exceeds 6 feet in any linear dimension or a gas capacity of more than 115 cubic feet.

2.2 Where it is proposed to operate such balloons within 5 miles of an aerodrome or anywhere at a height of over 100 feet above local ground level application should be made to:-
Aeronautical Operations Division, The Irish Aviation Authority, Aviation House, Hawkins St. Dublin 2.

The application should be made at least seven days before the proposed operation and should include the following details:-

a. The names and addresses of the owners and operators

b. The size of the balloon

c. The location of the operation

d. The height above the surface of the earth at which the balloon is to be operated

e. The date, time and duration of the proposed operation

f. Confirmation that the moored balloon will be equipped with a device to ensure automatic and rapid deflation of the balloon should it escape from its moorings.

3. FLIGHT OF UNMANNED FREE BALLOONS WITHIN THE SHANNON FIR

Flight of unmanned free balloons in the Shannon FIR shall be subject to the following conditions:-

3.1 Unmanned free balloons exceeding two metres in any linear dimension at any stage of their flight shall not be flown within the Shannon Flight Information Region except with the prior permission of the appropriate authority.

3.2 Permission should be sought from Aeronautical Operations Division, The Irish Aviation Authority, Aviation House, Hawkins St., Dublin 2.

3.3 The foregoing conditions do not apply to unmanned balloons used by Meteorological Services for the purposes of upper air observations.

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ANNEX B

ENR 5.5

AERIAL SPORTING & RECREATIONAL ACTIVITIES FLIGHT OF MANNED FREE BALLOONS IN SHANNON FIR

1. Navigation of manned free balloons in the Shannon FIR shall be subject to the following conditions:-

1.1 Flights shall not be planned to be operated in Controlled Airspace (Control Areas or Control Zones).

1.2 Flights shall be made only in accordance with the Visual Flight Rules and by day.

1.3 Flights shall not be made it the operating characteristics of the balloon and the actual and forecast wind indicate that there is any risk to entry into controlled airspace.

1.4 Flights shall be made only in accordance with permission and any conditions attached thereto.

1.4.1 Permission should be sought, in writing from:-

Operating Standards Department
The Irish Aviation Authority
Aviation House
Hawkins St. Dublin 2

1.4.2 For flights within the State, application for permission shall be made at least seven days before the intended flight.

1 4.3 For flights entering or leaving the State, application for permission shall be made at least fourteen days before the intended flight and shall be accompanied by a copy of a letter of authorization from the State of departure or the State of intended landing, as appropriate.

1.14 Applications for permission shall include the following information:-

(a) type of flight e.g. VFR (Local or International)

(b) identification of balloon (Registration mark)

(c) place of ascent (co-ordinates)

(d) date and intended time (UTC) of ascent

(e) type, diameter, shape and colour of balloon

(f) estimated elapsed time of flight

(g) altitude (maximum en route)

(h) rate of ascent (normal and maximum)

(i) estimated track (magnetic)

(j) place of intended landing

(k) type, make, effective range and available frequencies of radio air/ground communication equipment

(l) details of radio and other navigation equipment

(m) endurance (hours)

(n) emergency and survival equipment

(o) name of pilot in command

(p) number of persons on board

(q) name, address and telephone number of operator

1.4 5 For flights leaving the State an ATC Flight Plan, repeating the information detailed in **1.4.4** shall be filed with the appropriate ATC unit at least 21 hours before the estimated time of departure.

1.4.6 Permission for a series of flights may be given subject to arrangements acceptable to the Authority.

ENR 5.5 (Continued)

1.5 Notification to ATC

1.5.1 Intention to operate a flight, or a series of flights in the State within a single day, shall be notified by telephone to the appropriate ATC unit at least one hour before the intended time of departure.

1.5.2 In the case of flights leaving the State, the time of departure shall be notified to the appropriate ATC unit as soon as possible after take-off.

1.5.3 Completion of the flight or series of flights within a single day shall be notified to the appropriate ATC unit.

2. OPERATION OF TETHERED BALLOONS WITHIN THE SHANNON FIR

2.1 This section is applicable to any balloon that is tethered to the surface of the earth or an object thereon and that exceeds 6 feet in any linear dimension or a gas capacity of more than 115 cubic feet.

2.2 All applications to operate such balloons must be made to the Operating Standards Department of the Irish Aviation Authority on the appropriate application form. Forms can be obtained from the Irish Aviation Authority at Aviation House, Hawkins St, Dublin 2. 01-6031540 Tel., 01 6774460 Fax.

2.3 All completed application forms must be forwarded to the IAA not less than fourteen days prior to the proposed operation.

3. FLIGHT OF UNMANNED FREE BALLOONS WITHIN THE SHANNON FIR

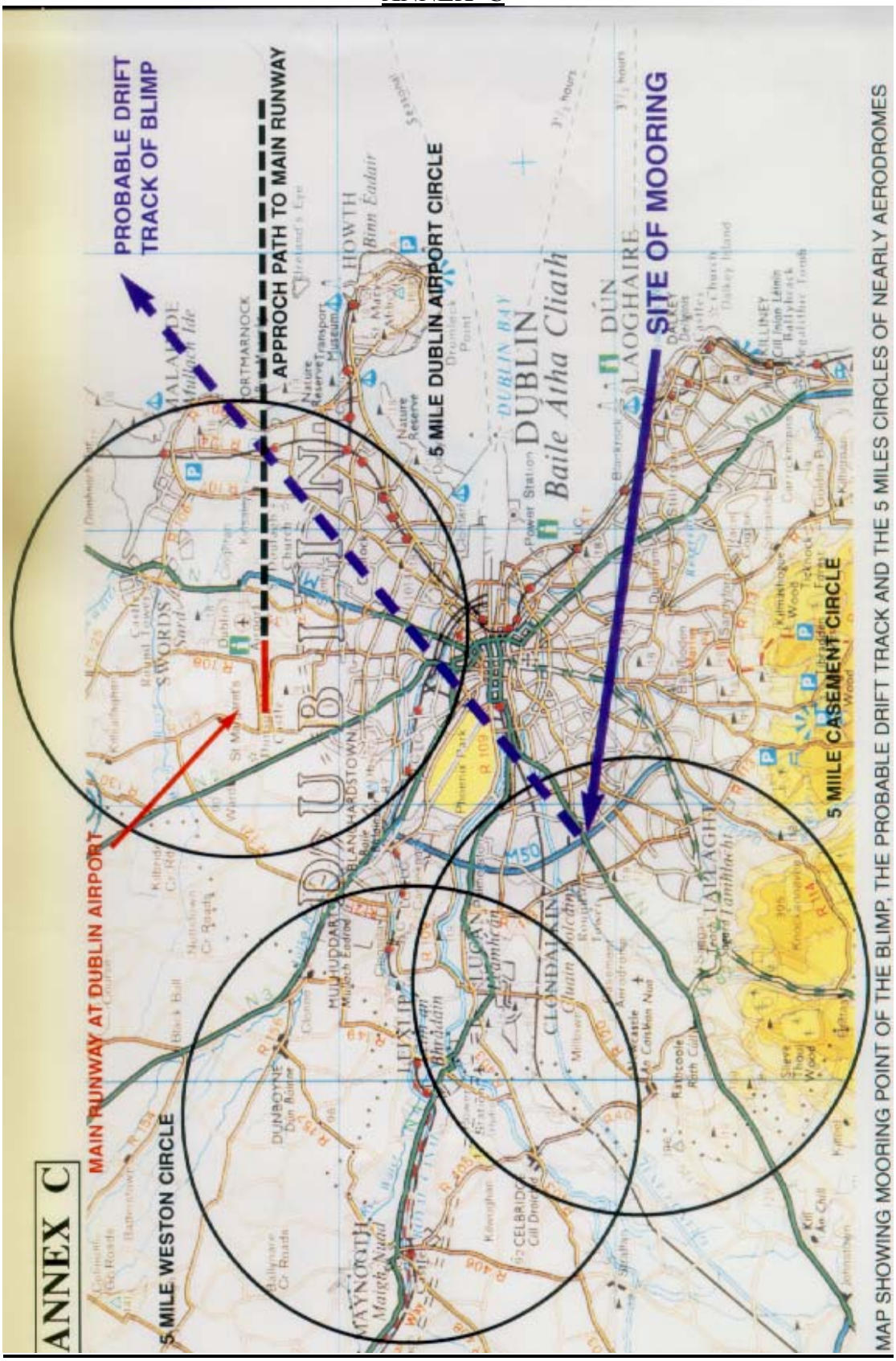
Flight of unmanned free balloons in the Shannon FIR shall be subject to the following conditions:

3.1 Unmanned free balloons exceeding two metres in any linear dimension at any stage of their flight shall not be flown within the Shannon Flight Information Region except with the prior permission of the appropriate authority.

3.2 Permission should be sought from the Operating Standards Department. The Irish Aviation Authority, Aviation House, Hawkins St. Dublin 2.

3.3 The foregoing conditions do not apply to unmanned balloons used by Meteorological Services for the purposes of upper air observations.

ANNEX C


ANNEX C
MAIN RUNWAY AT DUBLIN AIRPORT
5 MILE WESTON CIRCLE
PROBABLE DRIFT TRACK OF BLIMP
APPROCH PATH TO MAIN RUNWAY
5 MILE DUBLIN AIRPORT CIRCLE
SITE OF MOORING
5 MILE CASEMENT CIRCLE
DUBLIN
Baile Átha Cliath
DUBLIN BAY
SWORDS
HOWTH
DÚN LAOGHAIRE
RATHCOOLE
TALLAGHT
CLONDALKIN
LUCAN
LEIXLIP
CELBRIDGE
KILLINEY
MAP SHOWING MOORING POINT OF THE BLIMP, THE PROBABLE DRIFT TRACK AND THE 5 MILES CIRCLES OF NEARLY AERODROMES