SIERRA LEONE CIVIL AVIATION AUTHORITY

ADVISORY CIRCULAR

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Safety Measures Relating to Military Activities Potentially Hazardous to Civil Aircraft Operations

Director General

Sierra Leone Civil Aviation Authority

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1. GENERAL

The Sierra Leone Civil Aviation Authority's Advisory Circulars contains information about standards, practices and procedures that the Authority has found to be an Acceptable Means of Compliance (AMC) with the associated Regulations.

An AMC is not intended to be the only means of compliance with a Regulation, and consideration will be given to other methods of compliance that may be presented to the Authority

Information considered directive in nature is described in this AC in terms such as "shall" and "must", indicating the actions are mandatory. Guidance information is described in terms such as "should" and "may" indicating the actions are desirable or permissive, but not mandatory

1.1 GLOSSARY OF ABBREVIATIONS/ ACRONYMS

AFS – Aeronautical Fixed Service
AFTN – Aeronautical Fixed Telecommunication Network
AIP – Aeronautical Information Publication
AIRAC – Aeronautical Information Regulation and Control
AIS – Aeronautical Information Service
ANP- Air Navigation Plan
ATS - Air Traffic Services
FIR – Flight Information Region
HF- High Frequency
IATA- International Air Transport Association
ICAO – International Civil Aviation Organization
IFALPA – International Federation of Air Line Pilots Association
NOF- International NOTAM Office
NOTAM – Notice to air men
MHz - Megahertz
OAG – Official Airline Guide
SLCAR – Sierra Leone Civil Aviation Regulation
SPI – Special Position Ident
SSR – Secondary Surveillance Radar
VHF – Very High Frequency

1.2 DEFINITIONS

Aerodrome control tower – A unit established to provide air traffic control service to aerodrome traffic

Aeronautical fixed service (AFS) – A telecommunication service between specified fixed points provided primarily for the safety of air navigation and for the regular, efficient and economical operation of air services.

Aircraft – Any machine that can derive support in the atmosphere from the reactions of the air other than the reaction of the air against the earth's surface

Air traffic controller – personnel responsible for the safe, orderly, and expeditious flow of air traffic.

Air traffic services – A generic term meaning variously, flight information service, alerting service, air traffic advisory service, air traffic control service (area control services, approach control service or aerodrome control service).

Altitude – The vertical distance of a level, a point or an object considered as a point, measured from mean sea level (MSL)

Approach control unit – A unit established to provide air traffic control service to controlled flights arriving at, or departing from, one or more aerodromes.

Appropriate authority

a) Regarding flight over the high seas: The relevant authority of the State of Registry

b) Regarding flight other than over the high seas: The relevant authority of the State having sovereignty over the territory being overflown.

Appropriate ATS authority – The relevant authority designated by the State responsible for providing air traffic services in the airspace concerned.

Appropriate military – Any permanently established military units controlling activities that may affect flights of civil aircraft

Area control centre (ACC). A unit established to provide air traffic control service to controlled flights in control area under its jurisdiction

ATS route – A specified route designated for channeling the flow of traffic as necessary for the provision of air traffic service

Air Traffic Services unit (ATS unit) – A generic term meaning variously, air traffic control unit, flight information centre or air traffic services reporting office

Danger area – An airspace of defined dimensions within which activities dangerous to the flight of aircraft may exist at specified times.

Flight information centre – A unit established to provide flight information service and alerting services.

Flight level – A surface of constant atmospheric pressure which is related to a specific pressure datum, 1 013.2 hectopascals (hpa), and is separated from other surfaces by specific pressure intervals.

Flight plan – Specified information provided to air traffic services unit relative to an intended flight or portion of a flight of an aircraft.

Hazard – A condition or an object with the potential to cause or contribute to an aircraft incident or accident.

NOTAM – A notice distributed by means of telecommunication containing information concerning the establishment, condition or change in any aeronautical facility, service, procedure or hazard, the timely knowledge of which is essential to personnel concerned with flight operations.

Prohibited area – An airspace of defined dimensions, above the land areas or territorial waters of a State, within which the flight of aircraft is prohibited.

Restricted area – An airspace of defined dimensions, above the land areas or territorial waters of a State, within which the flight of aircraft is restricted in accordance with certain specified conditions.

2. CO-ORDINATION OF CIVIL AND MILITARY AIR TRAFFIC

The SLCAR Part 11, Chapter 2, 2.15 and 2.16 contain provisions for co-ordination between military authorities and air traffic services and co-ordination of activities potentially hazardous to civil aircraft. These provisions specify that air traffic services authorities shall establish and maintain close co-operation with military authorities responsible for activities that may affect flights of civil aircraft. The provisions also prescribe that the arrangements for activities potentially hazardous to civil aircraft shall be co-ordinated with the appropriate air traffic services authorities.

The objective of this co-ordination shall be to achieve the best arrangements which will avoid hazards to civil aircraft and minimize interference with the normal operations of such aircraft.

2.1 Co-ordination between Military authorities and Air Traffic Services

2.1.1 Air traffic services authorities shall establish and maintain close co-operation with military authorities responsible for activities that may affect flights of civil aircraft.

2.1.2 Co-ordination of activities potentially hazardous to civil aircraft shall be effected in accordance with 2.2. Arrangements shall be made to permit information relevant to the safe and expeditious conduct of flights of civil aircraft to be promptly exchanged between air traffic services units and appropriate military units.

2.1.2.1 Air traffic services units shall, either routinely or on request, in accordance with locally agreed procedures, provide appropriate military units with pertinent flight plan and other data concerning flights of civil aircraft. In order to eliminate or reduce the need for interceptions, air traffic services authorities shall designate any areas or routes where the requirements of SLCAR Part 2 concerning flight plans, two-way communications and position reporting apply to all flights to ensure that all pertinent data is available in appropriate air traffic services units specifically for the purpose of facilitating identification of civil aircraft.

2.1.2.2 Special procedures shall be established in order to ensure that:

(a) air traffic services units are notified if a military unit observes that an aircraft which is, or might be, a civil aircraft is approaching, or has entered, any area in which interception might become necessary;

(b) all possible efforts are made to confirm the identity of the aircraft and to provide it with the navigational guidance necessary to avoid the need for interception.

2.2 Co-ordination of activities potentially hazardous to civil aircraft

2.2.1 The arrangements for activities potentially hazardous to civil aircraft, whether over the territory of another State or over the high seas, shall be co-ordinated with the appropriate air traffic services authorities. The co- ordination shall be effected early enough to permit timely promulgation of information regarding the activities in accordance with the provisions of

SLCAR Part 15.

2.2.2 The objective of the co-ordination shall be to achieve the best arrangements which will avoid hazards to civil aircraft and minimize interference with the normal operations of such aircraft.

2.2.3 In determining these arrangements the following should be applied:

(a) the locations or areas, times and durations for the activities should be selected to avoid closure or realignment of established ATS routes, blocking of the most economic flight levels, or delays of scheduled aircraft operations, unless no other options exist;

(b) the size of the airspace designated for the conduct of the activities should be kept as small as possible;

(c) direct communication between the appropriate ATS authority or air traffic services unit and the organization or unit conducting the activities should be provided for use in the event that civil aircraft emergencies or other unforeseen circumstances require discontinuation of the activities.

2.2.4 The appropriate ATS authorities shall be responsible for initiating the promulgation of information regarding the activities.

2.2.5 If activities potentially hazardous to civil aircraft take place on a regular or continuing basis, special committees should be established as required to ensure that the requirements of all parties concerned are adequately coordinated.

3. CO-ORDINATION BETWEEN MILITARY AUTHORITIES AND ATS AUTHORITIES

3.1 Co-ordination between the responsible military authorities and the appropriate ATS authorities is essential to the safety of civil aircraft operations whenever activities potentially hazardous to such operations are planned and conducted by any military units. This co-ordination is necessary regardless of whether the activities take place over the territories of States, over the high seas, or over territories of undetermined sovereignty, and whether the military and ATS authorities belong to the same or different States.

3.1.1 In the event that a sudden outbreak of armed hostilities or any other factors preclude this normal co-ordination process, appropriate State and ATS authorities, civil aircraft operators and pilots-in-command of aircraft must assess the situation based on the information available and plan their actions so as not to jeopardize safety.

3.2 Examples of military activities which may pose a threat to civil aircraft and which should be co-ordinated with ATS authorities include:

(a) practice firing or testing of any weapons air-to-air, air-to-surface, surface-to-air or surface-to-surface in an area or in a manner that could affect civil air traffic;

(b) certain military aircraft operations such as air displays, training exercises, and the intentional dropping of objects or of paratroopers;

(c) launch and recovery of space vehicles; and

(d) operations in areas of conflict, or the potential for armed conflict, when such operations include a potential threat to civil air traffic.

3.2.1 ATS authorities should be alert to military operations in areas of conflict, or the potential for armed conflict, when such operations include a potential for hazardous activity, and react accordingly.

3.3 If the potentially hazardous activities are planned to take place on a regular or continuing basis, a co-ordinating group should be given the task of ensuring that the operational needs of all parties concerned are adequately co-ordinated. This group should consist of representatives of the military organization(s) concerned, the appropriate ATS authority (ies) and the operators of civil aircraft.

3.4 Co-ordination with regard to activities potentially hazardous to civil aircraft operations over the high seas should be effected even if the States whose military organization and ATS authorities are concerned find themselves temporarily in diplomatic disagreement. If direct co-ordination with the appropriate ATS authorities via aeronautical or diplomatic channels is not possible, the co-ordination should be effected with the assistance of the SLCAA to the appropriate regional office of ICAO or the ATS authorities of another State.

3.5 Co-ordination of activities potentially hazardous to civil aircraft should be effected with all air traffic services authorities responsible for providing services in the airspace concerned. The State(s) of the military organization(s) planning the potentially hazardous activities should initiate the co-ordination process. When the military organization involved is located in another State the initial co-ordination should be effected through the appropriate ATS authority or via other agreed channels. The ATS authority should be able to provide information and assistance in achieving co- ordination with all appropriate ATS authorities and ATS units and to give advice as to the impact which the planned activity is likely to have on civil aircraft operations in the area.

3.6 The first step in the normal co-ordination process is the transmission, or delivery, of a message to the appropriate ATS authority or authorities containing details of the planned activity. This message should describe the nature of the activity, the geographical area(s) affected, including its horizontal and vertical dimension(s), the proposed date(s), time(s) and duration(s) of the activity, any special safety measures to be taken if necessary, and the means and methods of co-ordination between participating military units and ATS units concerned, including use of radio communications.

3.7 This first step should be taken early enough to permit a dialogue regarding the planned activity and the detailed arrangements, bearing in mind the need to avoid hazards and to minimize interference with all airspace users.

3.8 The timing of the first step should also allow for promulgation of information regarding the activity, following the co-ordination dialogue, in sufficient time to reach flight crews well before the start of the activities. The advance notice required by the SLCAR Part 15 is at least seven days in the case of activation of established danger, restricted or prohibited areas, and in the case of activities requiring temporary airspace restrictions other than for emergency operations. However, a greater lead-time is recommended in ICAO DOC 8126 regarding the establishment and withdrawal of, and premeditated significant changes in temporary danger, restricted and prohibited areas, and navigational hazards, military exercises and mass movements of aircraft (see 4.4).

3.9 The objective of the normal co-ordination process should be to reach agreement on:

(a) the selection of location(s) or area(s), time(s) and duration(s) so as to avoid closure or realignment of established ATS routes, blocking of the most economic flight levels, or delays of scheduled aircraft operation, unless no other options exist;
(b) the smallest possible size of the airspace designated for the conduct of the activity consistent with the attainment of its goals;
(c) any special safety measures which need to be taken by the unit(s) conducting the activity, the ATS unit(s) concerned, or civil aircraft operating in the vicinity of the area;
(d) the co-ordination needed between the ATS authority or unit and the military organization or unit(s) during the conduct of the activity; and
(e) the means and method of effecting:
(i) exchanges of information regarding the start(s) and stop(s) of the activity;
(ii) exchanges of information regarding the identity of civil aircraft, when necessary;
(iii) co-ordination of special safety measures, including alerting and search and rescue services; and
(iv) co-ordination in the event that civil aircraft emergencies or other unforeseen circumstances require discontinuation of the activities or parts thereof.

3.10 In the event that agreement is not reached on satisfactory arrangements, the ATS authorities should not withhold the promulgation of the essential information to flight crews, but should take the necessary steps to ensure that the safety of civil aircraft is not jeopardized, including any necessary re-routing of aircraft to avoid the area of activity. If the arrangements are considered completely unsatisfactory from the point of view of the SLCAA, a report to that effect should be forwarded by the ATS authorities promulgating the essential information to the appropriate military authority for action. If the military organization belongs to another State, the report should be sent to the SLCAA. The SLCAA shall forward the report to the civil aviation authority of that State, and a copy sent to the appropriate regional office of ICAO.

3.11 The most suitable communication means for achieving co-ordination are those which can ensure rapid and reliable exchanges between the authorities concerned regarding the arrangements for activities potentially hazardous to civil aircraft.

3.12 The use of military liaison officers and, where appropriate, civil liaison officers would do much to smooth the process of co-ordination and to ensure necessary follow-up action. In the case of extensive military operations, invitations from the planners to civil aviation administrations to participate in planning conferences at an early stage have been found fruitful, and exchange visits by operations personnel are also useful.

4 PROMULGATION OF INFORMATION

4.1 The SLCAR Part 15 specify that a NOTAM shall be originated and issued by the State regarding the presence of hazards which affect air navigation (including obstacles, military exercises, displays, races and major parachuting events outside promulgated sites).

4.2 The responsibility for initiating action regarding the promulgation of information regarding activities potentially hazardous to civil aircraft rests with the appropriate ATS authority, following the co-ordination process described in 4.3. The information to be promulgated is forwarded to the aeronautical information service (AIS), which has the responsibility for

originating and issuing the requisite NOTAM.

4.3 As mentioned in 3.8, SLCAR Part 15 prescribed that at least seven (7) days advance notice shall be given of the activation of established danger, restricted or prohibited areas and of activities requiring temporary airspace restrictions other than for emergency operations. Notice of any subsequent cancellation of the activities or any reduction of the hours of activity or the dimensions of the airspace should be given as soon as possible, preferably at least 24 hours in advance.

4.4 As regards temporary danger, restricted and prohibited areas and navigational hazards, military exercises and mass movements of aircraft, SLCAR Part 15 recommends that the regulated system (AIRAC — aeronautical information regulation and control) should be used to promulgate information. The AIRAC system is based on a series of common effective dates at intervals of 28 days. It is aimed at the issuance of a NOTAM at least 42 days in advance of the effective date with the objective of reaching the recipients at least 28 days prior to the effective date.

4.5 As indicated in 3.10, promulgation of information regarding activities potentially hazardous to civil aircraft should not be withheld in the event that agreement cannot be reached with the originator on the details to be promulgated. Any disagreement should be the subject of separate remonstrations toward the organization planning the activities.

4.6 It is important that the exchange of NOTAM regarding potentially hazardous activities continue even in the case where the State finds itself temporarily in diplomatic disagreement with another State. It must be borne in mind that the information is required not only for the airlines of the two States but also for international operators flying routes through the airspace affected by the activities. These operators will, in all probability, have no part in the disagreement and there can be no justification for penalizing them by denying them information which is essential for the safety of their operations. In such cases, the aeronautical information services (AIS) should be treated in a similar manner as the meteorological services. Therefore preservation of their existing channels of communication should be guarded in the light of their international obligations.

4.7 In the event the State is unable, for some reason, to comply fully with the provisions of SLCAR Part 15 and the ICAO regional air navigation plan regarding promulgation and distribution of information concerning potentially hazardous activities, it will seek assistance from adjacent States or the appropriate regional office(s) of ICAO.

5. CO-ORDINATION BETWEEN MILITARY UNITS AND ATS UNITS

5.1 As indicated in 3.9 an essential part of the co-ordination between military and ATS authorities at the planning stage is to seek agreement on the co-ordination needed between the military unit(s) conducting potentially hazardous activities and the appropriate ATS unit(s), as well as on the means and methods for effecting the co-ordination.

5.2 The SLCAR Part 11 specify the need for facilities to permit communications by direct speech and, when a written record is required, by printed communications between area control centres, flight information centres, approach control offices or aerodrome control towers and appropriate military units providing a service within their respective areas of responsibility. It is

recommended, however, that the same requirement be applied also to temporarily established or mobile military units conducting potentially hazardous activities.

5.3 Ideally, the communication facilities should permit direct voice communication between the officer in charge of the conduct of the military activities and the air traffic control unit(s) responsible for the provision of air traffic services in the airspace affected. To this end, agreement should be sought on the use of military or civil land-line, microwave or satellite relayed telephone circuits or radiotelephone channels, individually or in combination. The use of ATS air-ground radiotelephone channels for such co-ordination should be avoided, except as a last resort, as it may interfere with the communications between pilots and air traffic controllers.

5.4 The need for "printed" communications between military units and ATS units depends on the nature of the potentially hazardous activity and the resultant need for exchanges of information in printed form. When the military unit(s) require(s) a constant flow of information regarding the planning and actual flight progress of civil flights in the area of activity, consideration should be given to the use of the AFTN for the purpose and, with the approval of the appropriate civil aviation authority, arranging for a special link to that network. If delays encountered on the AFTN are unacceptable, other means of secured communication should be established.

5.5 In cases where the military activity results in temporary route or altitude restrictions for civil aircraft, the controlling military unit should inform the appropriate ATS unit when the activity begins and ends, as well as when any temporary interruptions occur which would permit civil aircraft to be routed through the area of the activity. The availability of direct voice communications would also permit the ATS unit to request that the activity be discontinued completely or partly, as necessary, in the event of an accidental or emergency incursion of a civil aircraft in the area of activity.

5.6 Normally, civil aircraft should not operate in an area of hazardous military activity; however, in the event that civil aircraft are permitted to operate through, or in the immediate vicinity of, an area of potentially hazardous military activity, the safety of the civil aircraft may depend on positive identification by the military units. In such circumstances, arrangements should be made in all cases to provide the responsible military units with advance information regarding regularly or seasonally scheduled flights as well as non-scheduled commercial flights and general aviation flights through the area.

5.7 The information on planned flights should include:

(a) aircraft identification to be used in communications, i.e. flight number and aircraft registration marks
(b) aircraft type;
(c) point and estimated time of departure;
(d) route(s);
(e) flight level(s);
(f) destination and estimated time of arrival; and
(g) individual SSR code, if assigned in advance.

5.8 Any changes to the foregoing information should be forwarded as soon as they become known.

5.9 Information on the actual progress of flights should include:
(a) actual take-off time, or last reported position, time and level;
(b) next reporting point and estimated time; and
(c) SSR code.

5.10 Warnings to civil aircraft regarding hazards and the need to take evasive action should normally be co-ordinated with, and issued only by, the appropriate ATS unit unless other co-ordination procedures have been established.

5.10.1 If an extreme emergency is deemed to exist, the military unit may attempt to transmit a direct warning to the aircraft on the VHF emergency channel 121.5 MHz It must be realized, however, that not all aircraft will always have the capability to maintain a continuous listening watch on 121.5 MHz in addition to the ATS channel(s) (unless the carriage and monitoring of the emergency frequency has been made a mandatory provision for operations in the area by requiring this in a NOTAM) and that, in the case of aircraft having this capability, other communication tasks may result in interruptions of the listening watch on the emergency frequency.

5.10.2 It must also be realized that, unless the warning contains the correct call sign of the aircraft, the SSR Mode A code, or identification of the aircraft clearly and unambiguously by reference to its position, and unless standard aviation phraseology and a common international language is used, the warning may not be understood by the civil aircraft. A warning transmitted by the appropriate ATS unit on the normal ATS frequency is therefore more likely to be heard, understood and acted upon.

5.11 As indicated above, clarity in communication between military units and ATS units or, in emergencies, between military units and civil aircraft is essential to ensure proper understanding and avoid potentially disastrous results. Some examples of phraseologies which may be suitable for use in air-ground communications are given in Appendix 1. Additional phraseologies may, of course, be selected for use by agreement between particular military and ATS units to suit the circumstances associated with particular military activities.

5.12 In the event that the demand for routine or *ad hoc* co-ordination exceeds the capacity of the officer- in-charge of the conduct of the military activity and/or the duty air traffic controller or supervisor, the designation of separate liaison officers might be necessary. The use of separate liaison officers may also be desirable in other cases. In the case of large-scale activities covering a large area, the establishment of a special co-ordination cell in the area control centre concerned may be the optimum solution. Such a cell should then comprise both military and civil liaison personnel, and may be given the tasks of correlating and disseminating critical flight plan and flight progress data, including SSR transponder codes, coordinating the use of routes and flight levels, and assisting in resolving identification problems and coping with emergencies.

6. FAMILIARIZATION OF PERSONNEL WITH THE AREA OF ACTIVITY

6.1 In order that due regard will be given to the safe and efficient operation of civil aircraft, the State should ensure that military authorities responsible for planning and conducting activities

potentially hazardous to such aircraft are fully informed, and conversant with, the following in respect of the area of activity:

(a) the type(s) of civil aircraft operations;
(b) the ATS airspace organization and responsible ATS unit(s);
(c) ATS routes and their dimensions; and
(d) relevant regulations and special rules, including airspace restrictions.

6.2 During the co-ordination process described in 3 above, reference should therefore be made to the relevant ICAO regional air navigation plan(s) (ANP) and the State aeronautical information publication and related documents and charts, which contain the information mentioned in 6.1 b), c) and d) above. If necessary, a special briefing regarding the civil aviation infrastructure should be arranged with the assistance of ATS specialists.

6.3 In the event that civil aircraft are permitted to operate through an area of military activity, military staff conducting the activity should also be fully informed of, and familiar with:

(a) means and methods of identifying civil aircraft;
(b) means and method(s) of co-ordination with the ATS unit(s); and
(c) terminology and phraseologies for use in communications with ATS units or, as a last resort, with civil aircraft.

6.4 The foregoing information should be provided by the appropriate ATS unit, unless it is known that the military staff concerned has already been properly briefed.

6.5 In the event of large-scale, complex or unusual military activities, a special briefing should be arranged for civil ATS staff concerning the nature and scope of the activities, potential risks, necessary airspace reservations, and means and methods of co-ordination with participating military units. The objective of such briefings should be to make civil ATS staff familiar with all aspects which will, or may, affect the flights of civil aircraft and the air traffic services to be provided during the military activities.

7. IDENTIFICATION OF CIVIL AIRCRAFT

7.1 As indicated in 5.6, the safety of civil aircraft operations may, in certain circumstances, depend on the capability of military units to secure positive identification of civil aircraft. Special arrangements may therefore need to be made to ensure or enhance that capability.

7.2 The identification process is based on the correlation by military units of information derived from several sources which include:

(a) air traffic services units;
(b) airline flight schedules;
(c) filed flight plans and related messages;
(d) departure messages and flight progress reports;
(e) electronic emissions from aircraft, including emissions from airborne weather radar and radio altimeters, and SSR responses; and
(f) visual observations.

7.3 Advance information on regularly or seasonally scheduled civil flights can be derived from the airline flight schedules published in the ABC World Airways Guide or the Official Airline Guide (OAG), or from repetitive flight plans filed with, and stored by, the ATS units concerned.

If weekly or monthly lists of planned regular flights are prepared by the ATS units concerned for their own purpose, copies of such lists should be forwarded to the military units planning to conduct potentially hazardous activities. The lists should include the information listed in 5.7. If no lists are being prepared as a matter of routine, the specific needs of the military units in terms of data and format should be ascertained and agreement reached on the best way of meeting the needs without imposing an excessive workload on the ATS units.

7.4 The provision of filed flight plan information to military units on a routine basis may not always be necessary if weekly or monthly lists of planned regular flights are forwarded routinely. However, arrangements must be made so that information on any additional flights and significantly late departures of regular flights will be provided on an *ad hoc* basis.

7.5 In this context it should be noted that the scheduled departure time in the ABC World Airways Guide or the Official Airline Guide and in filed flight plans is the scheduled or estimated departure time from the airport terminal, the so-called "off-block" time, (i.e. start taxi time) and not the estimated take-off time.

7.6 Information on the actual progress of flights through the area of activity may be obtained by the military unit in one of the following ways, or a combination thereof:

(a) electronic means, such as re-transmission of radar pictures from the ATS unit concerned;
(b) monitoring of the appropriate civil air traffic services frequency(ies); and
(c) forwarding of departure times and position reports from the ATS unit concerned.

7.7 The methods in 7.2 (a) and (b) would ensure immediate access to the required information and would keep the routine workload on the ATS unit concerned to a minimum, while keeping the communications link between the two units free for urgent *ad hoc* exchanges. The method in 7.2 (b) will, of course, require that the military unit be provided with VHF equipment and HF equipment where appropriate and that military personnel be assigned specifically to the task of monitoring the civil ATS air-ground frequency (ies) and be familiar with standard aeronautical position reporting procedures and the names, name codes and locations of designated reporting points. The alternative in 7.2 c) can lead to unacceptable delays if it is selected as the only or primary method, and it may also require the employment of additional personnel in the ATS unit in order to be effective. In any case, it is essential that information be requested from the ATS unit concerned on an *ad hoc* basis if any doubts regarding the identity of a flight remain in spite of radar monitoring and/or monitoring of reports transmitted on the air-ground frequency (ies).

7.8 Identification of civil aircraft by primary surveillance radar alone presupposes correlation of a radar return with the identity of an aircraft whose flight plan and/or present position is known from other sources, i.e. those described in 7.3 to 7.7 above. Identification by means of secondary surveillance radar (SSR) is easier if the SSR code allotment plan for the area of activity and the SSR codes assigned to individual flights are known.

7.9 The SSR code allotment plan for a given area may be found in the aeronautical information publication (AIP) of the State or it may be obtained, on request, from the relevant ICAO regional office. The SSR code allotment plan will indicate the SSR code groups in Mode A/3 allotted to individual States for assignment to international or domestic flights, or the code groups allotted to groups of the State for assignment to international transit flights. The discrete

SSR codes assigned to individual aircraft in flight can be obtained, on request, from the responsible ATS unit(s).

7.10 An additional means of identifying a particular radar response as that of a civil aircraft is to request a given aircraft to squawk IDENT, i.e. to activate the special position identification (SPI) feature of the transponder. Such a request should be made, when required, through the responsible ATS unit, as any direct transmission from a military unit could interfere with normal air traffic control communications and could lead to confusion if the aircraft is within ATS radar coverage.

7.11 Identification of the "electronic signature" of civil aircraft will be enhanced by requiring all aircraft operating in a given area to carry serviceable SSR transponders and requiring aircraft equipped with weather radar and radio altimeters to operate these continuously during flight. However, as long as the carriage of such equipment is not mandatory world-wide, reliance by a military unit on the absence of an "electronic signature" could lead to misidentification of civil aircraft and the inherent hazards. If circumstances permit visual observations of aircraft, identification as civil aircraft is possible with reference to the nationality and registration markings under the wings and on the fuselage. The airline logo and distinctive colours on the tail plane and/or other parts of commercial aircraft are additional identification features. The use of full cockpit and cabin lights and illumination of logo lights if possible by civil aircraft should also facilitate identification.

8. WARNINGS AND NAVIGATIONAL ASSISTANCE

8.1 In the event that a military unit observes that a civil aircraft is entering, or is about to enter, a designated prohibited, restricted or danger area or any other area of activity which constitutes potential hazards, a warning to the aircraft should be issued through the responsible ATS unit. The warning should include advice on the change of heading required to leave, or circumvent, the area.

8.2 If the military unit is unable to contact the responsible ATS unit immediately and the situation is deemed to be a genuine emergency, an appropriate warning to the aircraft may be transmitted on the VHF emergency channel 121.5 MHz If the identity of the aircraft is not known, it is important that the warning include the SSR code, if observed, and describe the position of the aircraft in a form meaningful to the pilot, e.g. by reference to an ATS route and/or the direction and distance from an airport or an aeronautical radio navigation aid, an established waypoint or reporting point. Examples of phraseologies for use in such circumstances are given in Appendix A.

8.3 In the case where an unauthorized aircraft is observed visually to be flying in, or about to enter a prohibited, restricted or danger area, the following visual signal is prescribed by the SLCAR Part 2 — IS: 3.8.1 to indicate that the aircraft is to take such remedial action as is necessary:
By day and night: A series of projectiles discharged from the ground at intervals of 10 seconds, each showing, on bursting, red and green lights or stars.

8.4 The importance of coordinating with the responsible ATS unit(s), whenever possible, the issuance of any warnings and advice to civil aircraft regarding changes of flight path should be

emphasized in any briefings or instructions given by military authorities to their units, since uncoordinated warnings and associated navigational advice, when followed, may result in a potential risk of collision with other aircraft in the area.

9 AIR TRAFFIC RESTRICTIONS

9.1 As stated in 2.3, the objective of the co-ordination between the military authorities planning activities potentially hazardous to civil aircraft and the responsible ATS authorities is to reach agreement on the best arrangements which will avoid hazards to civil aircraft and minimize interference with the normal operations of civil aircraft. Ideally, this means the selection of locations outside promulgated ATS routes and controlled airspace for the conduct of the potentially hazardous activities.

9.2 If the selection of such locations is not possible due to the nature and scope of the planned activities, temporary restrictions imposed on civil air traffic should be kept to minima through close co-ordination between the military units and the ATS units, as discussed in 5.

9.3 Whenever possible, a flight level should be designated, at or above which civil aircraft may continue to operate normally without any hazard. In areas where the majority of civil aircraft would be in the en-route phase of flight, this flight level should ideally be at or below the lowest cruising levels normally used.

9.4 If the temporary closure of certain ATS routes is unavoidable, agreement should be sought by ATS authorities with the State(s) concerned on the temporary use of promulgated alternative routes bypassing the area of activity or, if no convenient promulgated alternative routes exist, on the establishment of temporary routes.

9.5 It may be necessary to make special arrangements for aircraft descending into or climbing out of, airports in the vicinity of the area of activity. If the nature of the military activity permits, approaches and departures may have to be restricted to a particular direction, otherwise temporary discontinuation of the activity should be considered to permit normal approach and departure manoeuvres.

10. SPECIAL MEASURES IN THE EVENT OF ARMED CONFLICT OR THE POTENTIAL FOR ARMED CONFLICT

10.1 In the event of armed conflict or the potential for armed conflict, the Convention on International Civil Aviation does not affect the freedom of action of any Contracting State affected, whether as belligerents or as neutrals (Article 89 of the Convention). Nevertheless, the need for close co-ordination between civil and military authorities and units is even more critical.

10.2 The responsibility for initiating the co-ordination process rests with the State and the other conflicting State. The responsibility for instituting special measures to ensure the safety of international civil aircraft operations over the territory remains with the State, even in cases where co-ordination is not initiated or completed.

10.3 Based on the information which is available, the State responsible for providing air traffic services should identify the geographical area of the conflict, assess the hazards or potential

hazards to international civil aircraft operations, and determine whether such operations in or through the area of conflict should be avoided or may be continued under specified conditions. An international NOTAM containing the necessary information, advice and safety measures to be taken should then be issued and subsequently updated in the light of developments. All those concerned with initiating and issuing of NOTAM should be aware of the provisions governing the duration of the published NOTAM. SLCAR Part 15, 5.3.1.2 states that a NOTAM given Class I distribution shall be superseded by a NOTAM given Class II distribution when the duration of the circumstances notified is likely to exceed three months or the NOTAM has remained in force for three months. A copy of the NOTAM should be forwarded to the appropriate regional office of ICAO. Examples of such NOTAM are given in Appendix B.

10.4 If the necessary information is not forthcoming from the State(s) whose military authorities are engaged in the armed conflict, the State responsible for providing air traffic services should ascertain the nature and scope of the hazards or potential hazards from other sources, such as aircraft operators, the International Air Transport Association (IATA) and the International Federation of Air Line Pilots' Associations (IFALPA), adjacent States or in some cases the relevant ICAO regional office in order to take the action outlined in 10.3 above.

10.5 The safety measures required to be taken will depend on the assessment by the State responsible for providing air traffic services of the nature and scope of the hazards, or potential hazards, to civil aircraft and the decision as to whether flight operations by civil aircraft through the area can be considered without risk.

10.6 If civil aircraft operations through the area are allowed, immediate attention should be given by the States concerned to special arrangements regarding co-ordination between military units and ATS units, briefings of personnel, identification of civil aircraft by military units, issuance of warnings and navigational advice, and air traffic restrictions, as outlined in 5 to 9 above. It is also essential that flight crews are reminded to be particularly vigilant when operating in, or transiting, the area of armed conflict.

10.7 In planning the conduct of operations through areas of armed conflict or the potential for armed conflict, operators should give due regard to the availability and serviceability of aircraft equipment needed to facilitate identification of the aircraft by military units and to permit guarding of the appropriate frequencies.

10.8 Safety measures prescribed by the State providing air traffic services may include, for example, the following requirements applicable to all aircraft operating in the area:

(a) continuous monitoring of the emergency frequency 121.5 MHz;
(b) carriage and continuous operation of SSR transponder with Mode C capability;
(c) carriage and continuous operation of weather radar;
(d) continuous display of aircraft exterior lighting and cabin lighting and illumination of logo lights if possible; and
(e) presence on the flight deck of transport aircraft of a full flight crew complement, augmented by additional personnel as required by the situation.

10.9 The assistance of the ICAO regional office(s) concerned and the ICAO Headquarters in Montreal will be available on request, in the event that a State experiences difficulties in defining an area of armed conflict or the potential for armed conflict, assessing the impact upon

civil aircraft operations, and/or developing, promulgating and implementing the requisite safety measures. Assistance may also be provided by ICAO at the request of IATA or IFALPA.

10.10 ICAO may assist in the development, co-ordination and implementation of necessary safety measures in the event that the State(s) responsible for the provision of air traffic services in an area of armed conflict cannot, for some reason, adequately discharge the responsibility referred to in 10.2 above. The specific nature and scope of such action will depend upon the particular circumstances involved. In such circumstances, ICAO will work in close co-ordination with the responsible State, with other provider and user States concerned, and with IATA and IFALPA.

APPENDIX 1 EXAMPLES OF AIR-GROUND TRANSMISSIONS ON 121.5 MHZ

1. Identification of civil aircraft

Military unit: AIRCRAFT POSITION (position*) SQUAWKING MODE A CODE (code) [ESTIMATED] ALTITUDE (level) AND GROUND SPEED (ground speed) THIS IS (call sign of military unit) PLEASE IDENTIFY YOURSELF AND STATE YOUR INTENTIONS.

Aircraft: (Call sign of military unit) THIS IS (call sign of aircraft) POSITION (position*) SCHEDULED (or CHARTER or PRIVATE) FLIGHT FROM (point of departure) TO (destination) FLIGHT LEVEL (level) [CLIMBING TO or DESCENDING TO] (level).

Military unit: (Call sign of aircraft) THIS IS (call sign of military unit) ROGER OUT.

2. Navigational warning

Military unit: (Call sign of aircraft) THIS IS (call sign of military unit) YOU ARE APPROACHING DANGER AREA (designation) (or AN AREA OF POTENTIAL HAZARDS) TURN RIGHT (or LEFT) TO HEADING (figure) TO AVOID CONFLICT.

Aircraft: (Call sign of military unit) THIS IS (call sign of aircraft) WILCO TURNING RIGHT (or LEFT) TO HEADING (figure).

Note: It is <u>emphasized</u> that advice to civil aircraft regarding changes to flight path should be co-ordinated with the responsible ATS unit(s) since unco-ordinated advice may result in a potential risk of collision with other aircraft in the area.

* Position shall be expressed as follows, in order of preference. Use of geographical co-ordinates should be limited to cases where no other more suitable references are available.

1) (distance) NM (direction) OF (navigation aid or reporting point or airport) [ON AIRWAY (designation) or ON ATS ROUTE (designation)]
   Example: 25 NM WEST OF WILLY ON AIRWAY A97

2) [(distance) NM] ABEAM (navigation aid or reporting point) Example: ABEAM NILLY ON AIRWAY R54 (distance) NM (direction) OF (name of well-known geographical location, such as town, city, island or mountain)
   Example: 4 NM SOUTH OF DAISY ISLAND

3) (latitude) NORTH or SOUTH (longitude) EAST or WEST Example: 1630 NORTH 14245 EAST.

APPENDIX 2 EXAMPLES OF NOTAM CLASS I REGARDING MILITARY ACTIVITIES POTENTIALLY HAZARDOUS TO CIVIL AIRCRAFT

1. GG BCDEYNYX CDEFYNYX
DEFGYNYX ... 091532 EJKLYNYX
A707 NOTAMN

A) EJKL FIR B) WIE C) UFN APRX DUR E) NAVAL FORCES INCLUDING AIRCRAFT CARRIERS WILL BE OPERATING IN THE AREA (describe area with reference to latitude and longitude).

IN ORDER TO FACILITATE COORDINATION AND ENSURE SAFETY, CIVIL AIRCRAFT OPERATING BELOW FL...

IN THIS AREA ARE REQUIRED TO OPERATE THEIR SSR TRANSPONDER, WEATHER RADAR AND RADIO ALTIMETER CONTINUOUSLY. CIVIL AIRCRAFT ARE ALSO REQUIRED TO MAINTAIN CONTINUOUS LISTENING WATCH ON THE EMERGENCY FREQUENCY 121.5 MHz AND TO RESPOND TO REQUESTS FOR IDENTIFICATION BY GIVING AIRCRAFT IDENTIFICATION, TYPE OF AIRCRAFT, ALTITUDE, POINTS OF DEPARTURE AND DESTINATION AND TYPE OF FLIGHT (IFR or VFR). AIRCRAFT UNABLE TO COMPLY ARE REQUESTED TO AVOID THE AREA OR TO NOTIFY EJKL ACC.

2. GG DCBAYNYX ACCOYNYX
BADCYNYX ... 171814 CBADYNYX
A747 NOTAMN
D) CBAD FIR B) WIE C) UFN APRX DUR
E) PARAMILITARY FORCES REPORTED OPERATING IN AREA (describe area with reference to latitude and longitude). CIVIL AIRCRAFT ARE REQUESTED TO MAINTAIN AT LEAST FL... WHILE TRANSITING THE AREA IN ORDER TO AVOID A POTENTIAL THREAT (describe threat).

Safety Measures Relating to Military Activities Potentially Hazardous to Civil Aircraft Operations