



**CLEARANCE AREAS AND OBSTACLE LIMITATION
SURFACES AT AND AROUND AERODROMES**

AIR NAVIGATION ORDER

VERSION : 2.0
DATE OF IMPLEMENTATION : 15-02-2013
OFFICE OF PRIME INTEREST : AERODROME STANDARDS BRANCH.
(Directorate of Airspace and Aerodrome Regulations)

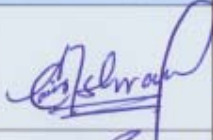



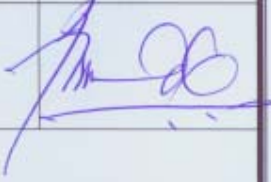
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TYPE OF DOCUMENT	AIR NAVIGATION ORDER (ANO)		
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A. AUTHORITY:

A1. This Air Navigation Order (ANO) is issued by the Director General, Civil Aviation Authority (DGCAA), in pursuance of powers vested in him under Rules 4 (3),68(1),(3) & (4) and all other enabling provisions of the Civil Aviation Rules 1994, (CARs, 94).

B. PURPOSE:

B1. The purpose of this ANO is to maintain Pakistan airspace clear from obstructions / obstacles so as to permit the intended aeroplane operations at aerodromes to be conducted safely during arrival & departure; and

B2. To prevent aerodromes becoming unusable due to growth of obstructions / obstacles around them. This is to be achieved by specifying a series of obstacle limitation surfaces (OLS) that defines the limits to which objects may project into the airspace.

C. SCOPE:

C1. The Obstacle Limitation Surfaces (OLS) specified in this ANO are applicable to CAA airports, Private owned airports and Airstrip / Heliport owned by individual / organization in Pakistan.

C2. All the OLS requirements contained in Chapter # 2, 3, 4, 5, 6 & 9 and all other enabling provisions with respect to obstacle limitations in Aerodrome Standard Manual of Pakistan (ASMP) and ICAO guidelines other than those described in Rule 68 of Civil Aviation Rules 1994 covering National Airfield Clearance Policy (NACP).

D. DESCRIPTION:

D1. Definitions: The following terms shall have the meanings assigned to them hereunder. Any other term not used herein shall have the same meaning as given in Civil Aviation Ordinance, 1960, Civil Aviation Authority Ordinance, 1982 and the Civil Aviation Rules, 1994.

D1.1 **Aerodrome Elevation:** The elevation of the highest point of the landing area.

D1.2 **Air Navigation Order(ANO):** means order issued by the Director General Civil Aviation Authority under CARs 1994.

D1.3 **Aerodrome Reference Point:** The designated geographical location of an aerodrome.

D1.4 **Approach Surface:** It is an upward and outward sloping surface of specified dimensions starting from a specified distance from runway threshold on the extended centre line of runway, permitting obstacles of varying height in the approach direction.

D1.5 **Apron:** means that part of an aerodrome to be used;

D.1.5.1 for enabling passengers to board, or disembark from aircraft;

D.1.5.2 for loading cargo on to, or unloading cargo from, aircraft; or

D.1.5.3 for refueling, parking or carrying out maintenance on aircraft;

D1.6 **Aeronautical Study:** An aeronautical study is a study of an aeronautical problem to identify possible solutions and select a solution that is acceptable without degrading safety.

D1.7 **Conical Surface:** It is an upward and outward sloping surface of specified width beyond the periphery of inner horizontal surface up to the beginning of outer horizontal surface

- D1.8 **Funnel:** an area starting from the end of prepared over-run with specified width on either sides of extended centre line, in line with the clearance line) spreading out to specified width on either side of runway axis to a specified distance.
- D1.9 **Heliport:** An aerodrome or a defined area on a structure intended to be used wholly or in part for the arrival, departure and surface movement of helicopters.
- D1.10 **Inner Approach Surface:** A rectangular portion of approach surface immediately preceding the threshold.
- D1.11 **Inner Horizontal Surface:** It is a surface of specified dimension of restricted height.
- D1.12 **Inner Transitional Surface:** A surface similar to transitional surface but closer to the runway.
- D1.13 **Instrument Runway:** One of the following types of runways intended for the operation of aircraft using instrument approach procedures.
- D.1.13.1 **Non-Precision Approach Runway:** An instrument runway served by visual aids and a non-visual aid providing at least directional guidance adequate for a straight-in approach.
- D.1.13.2 **Precision Approach Runway, Category I:** An instrument runway served by ILS and/or MLS and visual aids intended for operations with a decision height not lower than 60 m (200 ft) and either a visibility not less than 800 m or a runway visual range not less than 550 m.
- D.1.13.3 **Precision Approach Runway, Category II:** An instrument runway served by ILS and/or MLS and visual aids intended for operations with a decision height lower than 60 m (200 ft) but not lower than 30 m (100 ft) and a runway visual range not less than 350 m.
- D.1.13.4 **Precision Approach Runway, Category III:** An instrument runway served by ILS and/or MLS to and along the surface of the runway and;
- D1.13.4.1 intended for operations with a decision height lower than 30 m (100 ft), or no decision height and a runway visual range not less than 200 m.
- D1.13.4.2 intended for operations with a decision height lower than 15 m (50 ft), or no decision height and a runway visual range less than 200 m but not less than 50 m.
- D1.13.4.3 intended for operations with no decision height and no runway visual range limitations.
- D1.14 **Non-Instrument Runway:** A runway intended for the operation of aircraft using visual approach procedures.
- D1.15 **Obstacle:** All fixed (whether temporary or permanent) and mobile objects, or parts thereof, that are located on an area intended for the surface movement of aircraft or that extend above a defined surface intended to protect aircraft in flight.
- D1.16 **Obstacle Free Zone (OFZ):** The airspace above the inner approach surface, inner transitional surface, and balked landing surface and that portion of the strip bounded by these surfaces, which is not penetrated by any fixed obstacle other than low-mass and frangibly mounted one required for air navigation purposes.
- D1.17 **Outer Horizontal Surface:** It is a horizontal surface above the aerodrome elevation beyond the periphery of conical surface to a maximum limit within a radius of 15000 m (50,000 feet) from the from the aerodrome reference point.
- D1.18 **Over-Run:** Defined rectangular area at the end of runway on either side of extended centre line with a width equal to that of runway.

D1.19 **Over-Run Extension:** Defined area of the extension to the over-run area from the end of prepared over-run to a specified distance with specified width at the end.

D1.20 **Runway:** Means a defined rectangular area on an aerodrome prepared for the landing and take-off of aircraft.

D1.21 **Runway Clearance:** side clearance on either side of the runway centre line is to be maintained free of all obstructions for a full length of runway including over-run. The outer margin of the side clearance will be known as the runway clearance line.

D1.22 **Runway Strip:** A defined area including the runway and stopway, if provided, intended;

D.1.22.1 to reduce the risk of damage to aircraft running off a runway, and

D.1.22.2 to protect aircraft flying over it during take-off or landing operations.

D1.23 **Shoulder.** An area adjacent to the edge of a pavement so prepared as to provide a transition between the pavement and the adjacent surface.

D1.24 **Stopway:** A defined rectangular area on the ground at the end of take-off run available prepared as a suitable area in which an aircraft can be stopped in the case of an abandoned take off.

D1.25 **Transitional Surface:** It is an upward and outward sloping surface of specified dimensions on the sides of runway and approach surfaces.

D2. Responsibilities:

D2.1 Regulatory Function For Issuance Of NOC For Height Clearances:

D.2.1.1 Evaluate / issue NOC for vertical structures (buildings, high rise buildings, BTS/Microwave towers, antenna, wind turbines, high tension wire poles, cranes etc.) at and around aerodromes in accordance with the national regulations and ICAO guidelines.

D.2.1.2 Conduct Safety Oversight Audit (SOA) visits to monitor violations of clearance areas and obstacle limitation surfaces at and around aerodromes in accordance with the national regulations and ICAO guidelines.

D.2.1.3 Recommend the corrective actions and guidelines to the concerned Aerodrome Operators.

D.2.1.4 Awareness campaign through print media for implementation of NACP (i.e. Rule 68 of CARs 1994) at and around aerodromes, on time to time basis.

D.2.1.5 Impart Training through seminars, workshops etc for implementation of Aerodrome Standards on Clearance areas and Obstacle Limitation Surfaces (OLS) at and around aerodromes as per national regulations (i.e. Rule 68 of CARs 1994) and ICAO guidelines to all the stake holders.

D2.2 Implementation Of NACP By Service Providers:

D.2.2.1 Ensure implementation of NACP provisions contained in this ANO at the airports and surroundings thereof.

D.2.2.2 Provide proper training to the staff / officer performing duties for the implementation of NACP (i.e. Rule 68 of CARs 1994) at and around aerodromes.

D.2.2.3 Carry out surveys and inspections in order to ensure that no un-authorized construction / erection is carried out at the airport and its surroundings thereof and the criteria laid down in this ANO is not infringed.

D.2.2.4 Coordinate with local administration / Building control authority to restrict the constructions / erection of cellular antennas in the city without NOC for height clearance from DAAR, Headquarters CAA.

D.2.2.5 Environmental Control Committee shall be formulated in coordination with the local Government Department/Authority with the task to observe implementation of NACP (i.e. Rule 68 of CARs 1994) at and around aerodromes on regular basis, and if any violation is observed, necessary action is to be taken with the help of local Government Department/Authority and its report should be submitted to DAAR, HQCAA on regular basis.

D.2.2.6 That, If any deviation from this ANO is observed, the concerned Airport Manager should resolve it at their own level in coordination with local Government Department/Authority under intimation to DAAR, HQCAA.

D.2.2.7 That, under no circumstances, other than DAAR, any Project Director or General Manager or Airport Manager or his designated officer / staff is authorize to issue NOC / Waiver for height clearance to any operator / agency.

D.2.2.8 That all cases pertaining to the issuance of NOC for height clearance shall be forwarded to DIRECTOR GENERAL, Headquarters Civil Aviation Authority, Terminal-1, JIAP, Karachi, along with required documents for the assessment / evaluation for permissible height.

D2.3 **Documents Required For Issuance of NOC for height clearance:**

D.2.3.1 Name of the Project

D.2.3.2 WGS-84 Geographical coordinates in degrees, minutes, seconds and 1/100 of seconds (i.e.in 08 digits) of the proposed site where building is to be constructed, duly authenticated from Survey of Pakistan.

D.2.3.3 Height of the proposed site (i.e. elevation) from mean seal level duly authenticated by Survey of Pakistan.

D.2.3.4 Map scale 1: 500,000 of Survey of Pakistan showing the proposed site duly authenticated.

D.2.3.5 Total height of the proposed building including all types of installations on roof top above ground level.

D.2.3.6 A copy of the Site Plan of the property issued by competent authority.

D.2.3.7 Any other document required by CAA.

D2.4 Directorate of Airspace and Aerodrome Regulations (DAAR) shall issue the NOC of height clearance within 20 days after the receipt of application along with complete documents as mentioned in Para D2.2.

D2.5 DG CAA has the authority to allow / reject waiver(s) as per ANO "Exemption on Aerodrome Certification & Related activities (ANO-006-DRAS-1.0)", after the results evaluated by the aeronautical study which determined that the object would not significantly affect the safety or regularity of operations of aeroplanes.

D3. **Aeronautical Study / Safety Assessment:**

D3.1 An aeronautical study / safety assessment is conducted to assess the impact of deviations from the aerodrome standards specified in ASMP to the national regulations and the Convention on International Civil Aviation.

D3.2 An aeronautical study / safety assessment is conducted to present alternative means of ensuring the safety of aircraft operations.

D3.3 An aeronautical study / safety assessment is conducted to estimate the effectiveness of each alternative and to recommend procedures to compensate for the deviation.

D3.4 Technical analysis will provide justification for a deviation on the grounds that an equivalent level of safety can be attained by other means. It is generally applicable in situations where the cost of correcting a problem that violates a standard is excessive but where the unsafe effects of the problem can be overcome by some procedural means which offer both practical and reasonable solutions.

D4. Deviations From Aerodrome Standards:

D4.1 Related to operational regulations;

D.4.1.1 Lack of procedures

D.4.1.2 Insufficient maintenance programs

D.4.1.3 Competency issues

D4.2 Related to design regulations;

D.4.2.1 Terrain or objects penetrating the obstacle limitation surfaces

D.4.2.2 Insufficient strip and RESA (Dimensions and/or quality)

D.4.2.3 Insufficient runway/taxiway separation

D.4.2.4 Lack of, or wrongly designed visual aids

D5. Who Can Conduct Aeronautical Study:

D5.1 Technical Experts:

D.5.1.1 ICAO TCB Expert or experts detailed on his behalf.

D.5.1.2 Experts from Pakistan Civil Aviation Authority (PCAA - DAAR).

D6. Charges For Aeronautical Study Conducted by PCAA Qualified Inspectors:

D6.1 The charges of Aeronautical Study / Safety Assessment are US\$ 25000 per study, and will be paid by the applicant. 50% of the charges would be paid to the PCAA experts and remaining would be given to PCAA account No.2561-8 National Bank of Pakistan, Airport Branch, Karachi Airport (Code-003).

D7. Penalties:

D7.1 Airport Manager / Operator should impose some sort of penalty in consultation with local authorities and GM legal in order to implement NACP at and around aerodromes.

E. EVIDENCES (ACRONYMS / RECORDS / REFERENCES):

E1. ACRONYMS:

ASMP	Aerodrome Standard Manual of Pakistan
ANO	Air Navigation Order
ANS	Air Navigation Service
APS	Airport Services
APM	Airport Manager

CARs	Civil Aviation Rules
DAAR	Directorate of Airspace and Aerodrome Regulations
ICAO	International Civil Aviation Organization
NACP	National Airfield Clearance Policy
NOC	No Objection Certificate
OLS	Obstacle Limitation Surfaces
PACC	Pakistan Civil Aviation Authority
RESA	Runway End Safety Area
TCB	Technical Cooperation Bureau

E2. RECORDS:

E2.1 NIL.

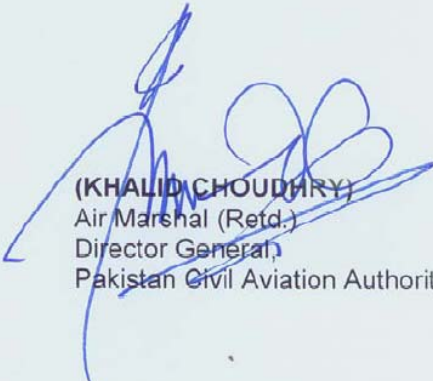
E3. REFERENCES:

E3.1 Rules 4 (3), 68 and all other enabling provisions of the Civil Aviation Rules 1994.

E3.2 Aerodrome Standard Manual of Pakistan.

IMPLEMENTATION:

This ANO shall be implemented with effect from 15th February 2013 and it cancels / supersedes ANO-004-DRAS-1.0 dated 30th November 2009.


(KHALID CHOUDHRY)
Air Marshal (Retd.)
Director General,
Pakistan Civil Aviation Authority

Dated: 07 February 2013


(MUHAMMAD ZIA KHAN)
Director Airspace & Aerodrome Regulations

Dated 07 February 2013

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