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# Airports Authority of India

## DEPARTMENT OF AERODROME SAFEGUARDING

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**Dated: 10<sup>th</sup> October 2019**

### AERODROME SAFEGUARDING CIRCULAR (ADSAC) 3 OF 2019

#### SUBJECT: STANDARD OPERATING PROCEDURE FOR OPERATING TELESCOPIC/TOWER CRANES IN THE VICINITY OF AERODROME/ AIRFIELD

#### 1. Introduction

- 1.1. The effective utilization of an aerodrome may be considerably influenced by natural features and manmade obstructions inside and outside its boundary. The natural features and manmade obstructions may result in limitations on the distances available for take-off and landing and on the range of meteorological conditions in which take-off and landing can be undertaken. For these reasons certain areas of the local airspace must be regarded as integral part of the aerodrome environment. A sufficient degree of freedom from obstacles in these areas is as important to the safe and efficient use of the aerodrome as are the more obvious physical requirement of the runways and their associated stripes.
- 1.2. The significance of any existing or proposed object within the aerodrome boundary or in the vicinity of the aerodrome is assessed by the use of three separate sets of criteria defining airspace requirements.
  - i) The first criterion comprises of the Obstacle Limitation Surfaces (OLS) particular to a runway. The broad purpose of these surfaces is to define the volume of airspace that should ideally be kept free from obstacles in order to minimize the dangers presented by obstacles to an aircraft, either during an entirely visual approach or during the visual segment of an instrument approach.
  - ii) The second set of criteria comprises the surfaces described in the PANS-OPS Doc 8168 Volume II – construction of Visual and Instrument Flight Procedures. The PANS-OPS surfaces are intended for use by procedure designers for the construction of instrument flight procedures and for specifying minimum safe altitudes/heights for each segment of the procedure. The procedure and/or



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minimum heights may vary with aeroplane speed, the navigational aid being used, and in some cases the equipage of the user aircraft.

iii) The third criterion involves safeguarding the service volumes of CNS facilities viz., navigational aids and surveillance equipment e.g. VOR, LLZ, ADS-B, SMR, MLAT, Glide Path, Radars etc. from manmade obstacles as per provisions contained in Annex 10 and other related ICAO Docs.

1.3. In compliance with provisions of GSR-751 (E), Permissible Top Elevation (PTE) for a site or structure is calculated based on OLS, CNS and PANS-OPS criteria using the coordinates provided by an applicant and “No Objection Certificate” (NOC) is issued by the Designated Officer (DO) of AAI. It is mentioned in the terms and condition of every NOC letter that “No radio/TV Antenna, lighting arresters, staircase, Mumtee, overhead water tank and attachment of fixtures of any kind shall project above the Permissible Top Elevation, as indicated in NOC. In spite of that cranes or other tall construction equipment, tend to be taller than the building under construction and create a risk to flight safety. A crane can be erected at an extremely short notice and can be a potential hazard for aircraft operations at an aerodrome. It is therefore important that a developer or operator of crane or tall construction equipment understands the hazard of using them close to an Aerodrome.

## 2. Purpose & Objective

2.1 The unauthorized operation of cranes and other tall construction equipment in the vicinity of an aerodrome could present a serious hazard to aircraft/helicopter operations either as a physical obstruction or by interfering with navigation / communication equipment and instrument flight procedures. If the pilots are unaware of such equipment when flying it could result in collision between an aircraft and such equipment.

2.2 In order to have a common procedure for use of cranes or other tall construction equipment in the vicinity of aerodrome, it has been decided by the Competent Authority to frame a Standard Operating Procedure (SOP) on the subject for processing the applications of Developers/ Builders for issuance of clearance by the concerned airport.

2.3 The purpose of this SOP is to standardize the procedure for use of cranes and tall construction equipment in the vicinity of an aerodrome for safeguarding the airspace in and around the Aerodromes.



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2.4 The objective of this SOP is to regulate operations of cranes and tall construction equipment in the vicinity of an aerodrome by establishing a standard operating procedure (SOP) to be followed by Airport Operators, AAI and crane operators/ construction companies for the restricted operation of crane/tall construction equipment in airport vicinity for ensuring flight safety

2.5 Operators who wish to use crane/tall construction equipment for construction of building/structure above the NOC height must comply with the SOP that govern the operation of cranes and other equipment in the vicinity of an aerodrome.

### **3. Scope / Applicability**

3.1 This SOP is applicable to those AAI personnel who are responsible for processing and issuance of NOC for height clearance.

3.2 This SOP is applicable to all the personnel of Joint Venture Airports, Licensed State Government and Private Airports for which AAI issues NOC for height clearance.

3.3 This SOP is also applicable to all crane operator/construction company who wishes to operate crane above the NOC height in the vicinity of the aerodrome.

### **4. Cancellation**

4.1 Nil

### **5. Effective date**

5.1 This ADSAC will be effective from the date of its issue.

### **6. Procedure**

#### **6.1 Responsibility of Construction Company/Crane Operator**

6.1.1 In case a crane/tall construction equipment is required to be erected in the vicinity of an aerodrome above the Permissible Top Elevation (PTE) approved in the NOC issued by AAI, the developer should make an application to this effect to the airport operator at least 45 days before the crane/tall construction equipment is anticipated to be on site.



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This will allow adequate time to the airport operator and ANS provider (AAI) to assess the impact of the crane/tall construction equipment on airport operations.

6.1.2 While making an application to the airport operator, following details shall be submitted by the developer to the airport operator:

- a) Application addressed to the respective airport operator.
- b) Copy of AAI NOC issued for the building/plot.
- c) WGS-84 Co-ordinates of the exact location of the center of the crane if it is likely to go beyond the plot coordinates submitted for NOC application
- d) Maximum operating height of the crane above mean sea level (Boom, Cab or Cantilever, whichever is the highest).
- e) Type of crane/equipment (Tower Crane, Mobile Crane etc.) at NOCAS.
- f) Radius of operation of the boom of a fixed crane/ the area of operation of mobile crane along with the co-ordinates of the extremity of the extended boom in all four directions if it is likely to go beyond the plot coordinates submitted by applicant while applying for NOC for height clearance.
- g) The intended dates and times of operation of the crane /tall construction equipment.
- h) Name and contact number of the Project Manager/Site In-charge.
- i) Contact details of the of the crane /tall construction equipment operator when operating.
- j) In case of an aircraft emergency, time required to lower the height of the crane.
- k) An undertaking that the applicant shall ensure that all relevant regulatory permissions shall be obtained and safety measures shall be implemented by him prior to raising and operating the cranes/ tall construction equipment.

**6.2 Responsibility of Airport Operator (Airport Director of AAI airports, CEO/Office-In-Charge in case of Joint Venture/Private/State Govt. airports)**

6.2.1 Once the details as listed in point no. 6.1.2 above are received by the airport operator, the site will be physically verified by the representatives of the airport operator to verify authenticity of the data submitted by the applicant.

6.2.2 Request for Crane Height permission will be processed by the Airport Operator (AO)



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- a) If the Requested Top Elevation(RTE) is below the Permissible Top Elevation (PTE) by AGA/CNS/ PANS-Ops for the plot for which the NOC has been issued through NOCAS, Airport Operator will generate new height sheet of the NOCAS ID and if the RTE of the crane is below PTE as indicated in the calculation sheet, Airport Operator may issue the approval for the max. period as specified in Para 5.4.3.
- b) In case the site lies in the Approach and Transition surfaces and the RTE is above the OLS surface, the permission for crane height above the AGA surfaces shall be denied.
- c) If RTE is above AGA surfaces and/or CNS calculations and lies beyond Approach and Transitional Surfaces, Airport operator will prepare the papers including the latest NOCAS calculation sheets to check that:
  - (i) RTE is above PTE of AGA and/or
  - (ii) RTE is above PTE of CNS and
  - (iii) RTE is below PTE of PANS-Ops surfaces

The airport operator will discuss the case in offline NOC committee meeting and after deliberations, the RTE or restricted height of crane may be permitted.

- 6.2.3 In case, the RTE of the crane is above the PTE of PANS-Ops, the airport operator shall deny the request of the builder/ developer citing the reasons thereof to ensure safe aircraft operations.

### **6.3 Responsibility of the concerned DoAS unit of AAI**

- 6.3.1 Applications received for sites/buildings which are situated in approach surface will not be processed in case the crane/tall construction equipment is likely to penetrate the Approach surface. In such cases, the property developer/construction company will have to carry out construction without using the crane to ensure that any construction equipment does not violate the NOC height.
- 6.3.2 The AAI DoAS unit while assessing the case presented by the airport operator, shall ensure that PANS-OPS criteria is not violated as that would result in changes to the instrument approach procedures of the runways.
- 6.3.3 Normally cranes/tall construction equipment are narrow structures and not likely to interfere with operation of CNS facilities and therefore will not be assessed for CNS criteria except when located within:



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- (i) ~~02~~ 03 km of ILS LLZ antenna in front course/~~clearance~~ sector of +/- ~~10~~ 35 Degrees and 02 Kms of Glide path antenna in front course sector of +/- 8 Degrees; and
- (ii) 01 km radius of DVOR antenna.

Then the case is required to be forwarded to CHQ CNS-OM Dte. for simulation study analysis.

6.3.4 Based on the assessment made by the Airport Operator in coordination with the concerned DoAS unit, it will decide whether to grant permission/reject application for erection of the crane/tall equipment.

6.3.5 If the application is rejected, a reply letter will be sent to the developer informing him about the same giving appropriate reason for rejection.

#### 6.4 Conditions for grant of Permission

6.4.1 If the permission is granted, the same will set out appropriate restrictions as listed below:

- a) Restrictions on crane operating times.
- b) Restrictions on crane operating height and radius.
- c) Restrictions during poor visibility (whether caused by fog or low cloud).
- d) Dependency on the runway(s) in use.
- e) Initiation of NOTAM, if so required.
- f) The type of crane to be used, whether capable of being lowered if required.
- g) Fitting of obstacle lights as specified by the aerodrome operator, normally steady red lights of low intensity or medium intensity depending on the height of the crane.
- h) Obstacle lighting should be located on the highest point of the crane/ equipment and should be visible from all directions. For a tower crane, lighting should be provided on top of the tower and at the end of the boom and should be illuminated at all times.

6.4.2 The permission will clearly specify that it is only from aviation point of view, limited to operations of crane/ tall construction equipment in vicinity of the specified airport.

6.4.3 The permission issued for operations of crane/ tall construction equipment in vicinity of the specified airport shall be issued by the Airport Operator indicating the validity



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period along with restrictions if any. Two extensions not exceeding 6 months beyond this period may be granted by the Airport Operator.

- a) If the Requested Top Elevation(RTE) is below the Permissible Top Elevation (PTE) by AGA/CNS/ PANS-Ops crane operation may be permitted for one year which may further be extended twice for 6 months each without fresh assessment.
- b) If the Requested Top Elevation(RTE) is above the Permissible Top Elevation (PTE) by AGA/CNS but below PANS-Ops crane operation may be permitted for 6 months which may further be extended twice for 3 months each without fresh assessment.

6.5 In the interest of aviation safety, Airport Operator may be constrained to withdraw this permission without any prior notice and sharing the reasons/justification thereof. CNS signal propagation degradation reported by Pilots/ATC Units or FIU of AAI will be considered a valid reason for withdrawal of permission by Airport Operator.

6.6 An undertaking on the company letter head shall be obtained from the property developer /construction company that it will be comply with the above conditions.

**6.7 Conditions to be Adhered by the Operate of the Crane/Tall Equipment**

6.7.1 The developers who have been issued with permission to erect and operate the crane/tall equipment are also required to adhere to the following conditions:

- a) A copy of permission letter must remain with the crane operator for the duration of its operation and must be produced whenever requested by the Aerodrome operator.
- b) Any failure in obstacle lighting should be corrected immediately and in any event within 24 hours. Failure of obstacle lighting should be notified to the Airport Operator.
- c) When the design of crane allows, it should normally be lowered when not in use or when requested by the airport operator. Where it cannot be lowered, it may be necessary for the boom to be parked in a specified direction when not in use.
- d) The applicant shall remove the crane/ tall equipment at the expiry of the validity of permission and notify the same to airport operator.



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**7. Change of Plan/Location of the crane/Tall Equipment**

7.1.1 In case of change of plan/location of the crane/tall equipment, the property developer /construction company shall apply afresh for permission. In such cases fresh assessment will be carried out by the airport operator in coordination with the concerned DoAS unit of AAI to decide whether the permission can be granted for the revised location.

8. Validity: This ADSAC will remain valid till it is amended or withdrawn or incorporated in the Aerodrome Safeguarding manual.

9. Document Control and feedback: This ADSAC has been issued by the office of ED (ATM-DoAS) with the approval of Directorate of Operations and consultation with the Directorate of Communication, AAI. Any feedback, suggestion or the error in this document may be brought into the notice of GM (Aerodrome Safeguarding) at AAI CHQ at [gmnoc@aai.aero](mailto:gmnoc@aai.aero).

**(J.P. Alex)**

**Executive Director (ATM-DoAS)**

Enclosures:

1. Annexure 1 – Application form for permission to operate Crane in the vicinity of Airport.
2. Annexure 2 – Permission from Airport Operator to operate Crane in the vicinity of Airport.

Distribution:

1. All REDs/All APDs of AAI.
2. Chief Executive Officers of all Joint Venture Airports.
3. In-Charge of all licensed Private and State Govt. Airports including RCS Airports.



**Annexure - 1**

**(On Applicant/Company's Letterhead)**  
**Application for Permission to Operate Crane in the vicinity of Airport**

1. Name of the Applicant:
2. Address:
3. AAI NOC details: Attach a copy of NOC obtained
  - a. NOCID:
  - b. Date of Issuance:
  - c. Valid Upto:
4. WGS-84 Coordinates of the exact location of the centre of the crane:
5. Maximum Operating Height of the Crane above mean sea level:
6. Type of Crane:
7. Radius of operation of the boom and coordinates at the periphery of the circle (At least 4 coordinates); if the crane and its boom extends beyond the plot coordinates furnished to AAI (NOCAS portal) for issuance of NOC:
8. Intended dates and times of operation
9. Name and Contact details of Project Manager/ Site In-charge:
10. Name and Contact details of Crane Operator:
11. Time required to Lower the height of the crane, in case of emergency:
12. Any other relevant information:

**Undertaking (On company letter head)**

All the information provided is correct in all respect to the best of my knowledge. I understand that if at any stage, any information or part thereof is found to be incorrect, my application/ permission may be rejected.

Signature:  
Date:  
Name:  
Address:



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**Annexure - 2**

(On Airport Operator's letterhead)

Date: dd-mmm-yyyy  
Validity: dd-mmm-yyyy

To  
M/s XYZ Enterprises  
Andheri(East)  
Mumbai-220001  
Maharashtra

**Permission to Operate Crane in the vicinity of CSMI Airport**

Reference is made to your application dated \_\_\_\_\_, Airports Authority of India hereby grant **M/s XYZ Enterprises, Mumbai** permission to operate a **single crane** for construction of their building at \_\_\_\_\_ (NOCAS ID \_\_\_\_\_).  
NOC for height has already been issued for your NOCAS ID \_\_\_\_\_ for \_\_\_\_\_ m  
AMSLL vide letter no. \_\_\_\_\_ dated \_\_\_\_\_.

The specific details/ conditions of the crane operations and concerned construction site are as follows:

Name of the applicant		
Site Address		
NOCAS ID		
Type of Crane		
WGS 84 Coordinates of centre of the Crane and along the periphery of boom operations circle		
Maximum Operating Height permitted	AGL	AMSL
Radius of operation of the Boom		
Hours of Operation		

Applicant has been granted permission for operating Cranes in the Vicinity of the aerodromes subject to following terms and conditions:

1. Obstacle lighting should be located on the highest point of the crane/ equipment and should be visible from all directions. For a tower crane, lighting should be provided on top of the tower and at the end of the boom and should be illuminated at all times.
2. Fitting of obstacle lights as specified by the aerodrome operator, normally steady red lights of low intensity or medium intensity depending on the height of the crane
3. The height of the crane shall be lowered up to the height of the building granted in NOC whenever requested by the Airport Operator within the time limit declared in the application form.
4. This permission letter is only from aviation point of view, limited to operations of crane/ tall construction equipment and in vicinity of the specified airport only.

(Authorized Signatory of concerned Airport Operator)