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Working near airports

When working with a crane, aerial lift or other tall equipment near an airport - whether Heathrow or a small aerodrome - strict rules apply that involve notifications and maximum working heights. Shaun McAleer is responsible for administering permits at Manchester airport and has a good deal of experience in this area. Here he outlines the main check points.

Background.

It is fairly obvious to anyone dealing with aerodrome safeguarding and administering crane permits at any airport that many crane operators and contractors are unaware of their obligations when operating tall construction equipment in the vicinity of an aerodrome.

This is the case for a wide spectrum of operators, developers and contractors, ranging from those who are well informed and very proactive in their approach to operating cranes near the airport, through to those who are blissfully unaware that their crane operation could be presenting a hazard to aircraft. And that they could be breaking the law and CAA regulations by working without the aerodrome's operators' approval.

The complexities of operating tall equipment near and airport is an important topic which needs to be understood by crane operators and contractors who need to know what is required before they start work.

It is also necessary to understand the issues that need to be considered by the aerodrome operator upon receiving a request for a crane operation, and why in some cases permission to operate can take a little longer to be granted, or in certain circumstances be refused.

Requirements and Procedures.

It is usually a developer or contractor's 'appointed person' who communicates with the airport, but it is ultimately the crane operator who must understand and comply with the conditions of operation when working in the vicinity of an aerodrome.

The term 'aerodrome' means any airport, airfield or heliport where aircraft and helicopters land and takeoff. The unauthorised operation of cranes and other tall lifting equipment in their vicinity can present a serious hazard to aircraft either as a physical obstruction or by interfering with navigational aids such as radar and Instrument Landing Systems.

The Airport Operators Association & General Aviation Awareness Council has produced an advice note covering this subject. The note states:

'The Appointed Person should consult the aerodrome/airfield manager for permission to work if a crane is to be used within six kilometres of the airfield and its height exceeds either 10 metres or that of the surrounding structures or trees'.

It should also be noted that special consideration should also be given to the operation of taller lifting equipment such as tower cranes, located further than six kilometres from the aerodrome boundary. It is possible that the intended operation could affect safe aircraft operations and/or affect navigational equipment, especially if the crane is located directly underneath runway approach or departure paths. Even when not located under the flight path, long booms or high towers may still present a hazard for low flying light aircraft such as general aviation traffic, helicopters and police operations.

All UK aerodromes provide details of their appropriate contacts. In most cases, the contractor's 'appointed person' will communicate with the aerodrome operator. At Manchester airport for example contact should be made with the Airfield Operations Department. However as a crane operator, if you are uncertain about the possible affects on aircraft safety or whether all required permits are in place for the job, it is always recommended to check with the contractor and, if you have any doubts communicate directly with the aerodrome operator yourself.

Information required

Before any operation of tall equipment, the aerodrome operator must make a Safeguarding Assessment to ensure the intended operation will not affect aerodrome or aircraft safety. The aerodrome operator will require the following information:

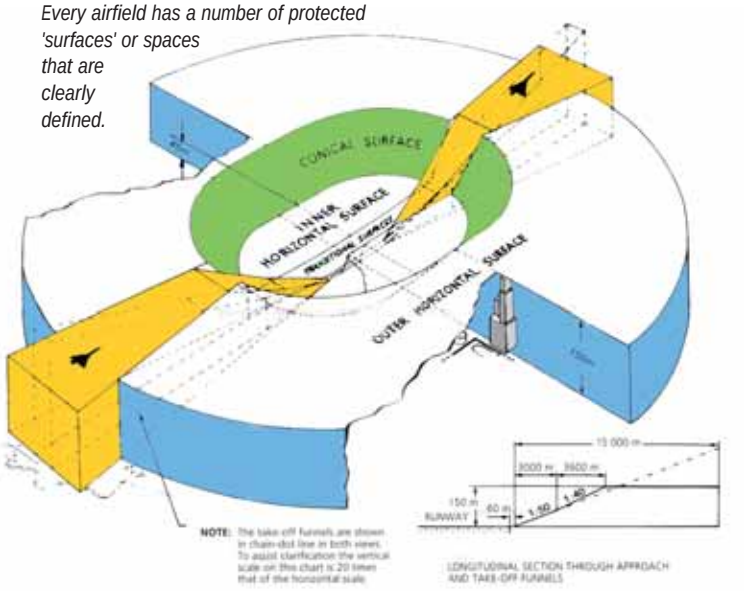
- ***Exact location of the crane or lift -*** An OS grid reference to at least six figures (eastings and northings).
- ***Maximum operating height of the crane -*** The height should be provided in metres AOD (Above Ordnance Datum); or AGL (Above Ground Level), plus the level of the ground in AOD. Heights shown on Ordnance Survey Maps are 'Above Mean Sea Level'.
- ***The type of crane or lift such as tower, mobile etc.***
- ***The radius of the boom or jib.***
- ***The intended dates and times of operation.***
- ***The applicant's name and contact details.***
- ***The purpose of the operation.***

Aerodrome Safeguarding Process.

Once the information has been provided, the aerodrome operator will perform an Aerodrome Safeguarding Assessment to assess the intended operation against the Aerodrome's Obstacle Limitation Surfaces. It is these surfaces that will govern the maximum permitted operating height of a crane and any restrictions which may need to be observed to ensure aircraft safety. If penetrations of one or more surfaces by a boom is likely there will be a need to either reduce the maximum operating height of the crane or to work under limitations or special operating procedures.

Strict rules apply when putting up a tall boom within 6km of an airfield

Every airfield has a number of protected 'surfaces' or spaces that are clearly defined.



The Obstacle Limitation Surfaces are areas of airspace with defined limits designed to ensure an aircraft's flight path is free of obstructions. The exact arrangement and height of surfaces differs at each aerodrome, depending on local ground elevations, the number of runways or type of operations, however all aerodromes will have the following surfaces to safeguarde aircraft operations:

- ***TOCS (Take-Off Climb Surface)***

A sloping path climbing away from the runway, designed to protect departing aircraft from conflict with obstacles. A TOCS is established for each runway direction intended for use by departing aircraft.

- ***APPS (Approach Surface)***

A sloping flight path descending towards the runway, designed to protect arriving aircraft from conflict with obstacles. An APPS is established for each runway intended for use by arriving aircraft.

- ***Inner Horizontal Surface (IHS)***

A space to protect aircraft from obstacles during visual manoeuvres in the vicinity of the Aerodrome. The IHS is a horizontal plane located 45 metres above the elevation of the lowest runway threshold and can reach up to four kilometres away from an aerodrome.

- ***Transitional Surface (TS)***

A steeply sloping space which, at it's outer limits, meets the Inner Horizontal Surface. A Transitional Surface is established for every runway intended for use by landing aircraft

- ***Outer Horizontal Surface (OHS)***

A space to protect aircraft from obstacles during instrument approach procedures. The OHS is a horizontal plane starting at the outer edge of the Conical Surface (105 metres above the IHS) and can extend up to 15km from an aerodrome.

- ***Conical Surface (CS)***

A surface to protect aircraft from obstacles during visual manoeuvres. The CS is a sloping surface linking the IHS and OHS.

The diagram on page 44 demonstrates the typical arrangement of obstacle limitation surfaces at an aerodrome with a single runway.

Permission.

Once a safeguarding assessment has been made it will be determined whether the lifting operation can proceed and whether restrictions need to be applied.

Any of the following conditions may be imposed to ensure aircraft safety.

- *The fitting of RED obstacle lighting (200 or 2000 candela) to lifting equipment*
- *Restrictions on operating times*
- *Crane operations dependant on runway(s) in use*
- *Restrictions of crane operating height*
- *Restrictions during poor visibility (fog or cloud)*

In some cases it may be necessary for the aerodrome operator to make contact with the CAA for approval, and as such the crane operator or contractor would be required to co-operate in developing a safety case. It is important for both the contractor and crane operator to understand that in such instances it may take longer for operating approval to be granted by the aerodrome and project planning should be altered accordingly.

In most circumstances an aerodrome will operate a permit system. At Manchester airport, once the details of the crane operation and any required restrictions have been established the contractor and crane operator will be asked to complete a Crane Permit Form. This is then registered on a database and a final hard copy of the authorised permit sent out to the contractor/crane operator which should remain with the crane for the duration of its operation.

When putting very high booms into the air there might be restrictions as far as 15km from an airfield.