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ACCEPTING PENETRATIONS OF THE OBSTACLE LIMITATION SURFACES AT AUSTRALIAN AIRPORTS

Introduction

ICAO sets the standards for Obstacle Limitation Surfaces (OLS) in Chapter 4 of Annex 14, Volume 1 *Aerodrome Design and Operations*. ICAO prefaces the technical specification as follows:

Note 1.— The objectives of the specifications in this chapter are to define the airspace around aerodromes to be maintained free from obstacles so as to permit the intended aeroplane operations at the aerodromes to be conducted safely and to prevent the aerodromes from becoming unusable by the growth of obstacles around the aerodromes. This is achieved by establishing a series of obstacle limitation surfaces that define the limits to which objects may project into the airspace.

Note 2.— Objects which penetrate the obstacle limitation surfaces contained in this chapter may in certain circumstances cause an increase in the obstacle clearance altitude/height for an instrument approach procedure or any associated visual circling procedure or have other operational impact on flight procedure design...

For the control of obstacles, ICAO establishes Standards and Recommendations according to the runway type. For example, for precision approach runways:

4.2.19 New objects or extensions of existing objects shall not be permitted above an approach surface or a transitional surface except when, in the opinion of the appropriate authority, the new object or extension would be shielded by an existing immovable object.

and

4.2.20 **Recommendation.** - *New objects or extensions of existing objects should not be permitted above the conical surface and the inner horizontal surface except when, in the opinion of the appropriate authority, an object would be shielded by an existing immovable object, or after aeronautical study it is determined that the object would not adversely affect the safety or significantly affect the regularity of operations of aeroplanes.*

Australia has registered differences with ICAO, stating that “Australia does not have any legal authority outside of the aerodrome boundary”.

The ICAO OLS Task Force (OLSTF), which is reviewing the technical specifications of the OLS, expands on the relevant considerations in terms of the four key objectives of safety, accessibility, efficiency and capacity.

On its webpage *Airspace Protection at Leased Federal Airports*, the Department of Infrastructure, Regional Development and Cities (DIRDC) reinforces the impact that obstacles may have:

AusALPA Position – OLS Penetrations

Obstructions in the vicinity of an airport have the potential to create air safety hazards and to seriously limit the scope of aviation operations into and out of the airport. The effects of individual obstacles may be relatively minor, but together a number of obstacles may seriously limit runway utilisation, cause airspace congestion and reduce the effective handling capacity of the airport.

While the most critical areas of concern are the immediate approach and take-off areas, it is equally true that objects up to and beyond 20 kilometres from the airport and apparently unrelated to the runway alignment can cause problems for pilots approaching or departing an airport.

The Australian Legal Position on Protected Airspace

Airport-specific airspace is only legally protected by the Commonwealth at the 22 leased Federal airports under the *Airports Act 1996* and the associated Airports (Protection of Airspace) Regulations 1996, commonly referred to as the APARs. The ICAO Standards have not been made into Commonwealth law and there is no consistent State-based legal protection.

DIRDC regulates the airspace at the leased Federal airports by distinguishing between two airspace components:

International standards have been adopted which define two sets of invisible surfaces above the ground around an airport. The airspace above these surfaces forms the airport's protected airspace. These two surfaces are the:

- Obstacle Limitation Surface (OLS); and
- Procedures for Air Navigational Services—Aircraft Operations (PANS-OPS) surface

The OLS is generally the lowest surface and is designed to provide protection for aircraft flying into or out of the airport when the pilot is flying by sight. The PANS-OPS surface is generally above the OLS and is designed to safeguard an aircraft from collision with obstacles when the aircraft's flight may be guided solely by instruments, in conditions of poor visibility.

Permanent infringements of the PANS-OPS surfaces are prohibited by the APARs. Temporary infringements of the PANS-OPS surfaces and both Temporary and Permanent infringements of the OLS are subject to an approval process firmly weighted towards economic outcomes. Under the APARs, CASA is legally constrained to merely offering an opinion unless “CASA has advised the Secretary that carrying out the controlled activity would have an unacceptable effect on the safety of existing or future air transport operations into or out of the airport concerned.”

The Safety Argument

In the case of the OLS, it is often argued that, to the extent that the OLS caters only for visual operations, safety can be maintained by either restricting segments of the airspace from planned visual manoeuvring by aircraft, making the obstacle more obvious by lighting and/or marking or by imposing greater operational restrictions.

To be very clear, the presence of any obstacle where there are normally none will, of itself, increase risk. The obstacle-related risk has two elements: a collision risk and a performance-related risk.

The collision risk will be mitigated to an extent determined by the familiarity of the pilot with the airport and its environs, the alertness and situational awareness of the pilot(s) and the circumstances with which he or she is faced at any particular time. In the worst case, the mitigators may prove to be largely ineffective, while in the best case they are just another operational distraction.

AusALPA Position – OLS Penetrations

Performance-related risk can arise where either minimum manoeuvring heights are specified or take-off and/or landing parameters are affected. While the OLS does not specifically cater for other than normal operations, it nonetheless mitigates some of the risk associated with abnormal operations by providing an airspace volume within which a pilot faced with performance or controllability difficulties can otherwise manoeuvre with a significant level of protection while attempting to regain control over the aircraft.

Performance-related risk can also arise where performance-critical runway distances or gradients are modified to mitigate the collision risk with obstacles penetrating the take-off and/or the approach surfaces. Communications and change-management processes can be effective mitigators in that case, but in all respects the risks are transferred from the person responsible for the obstacle to the aircraft operator and flight crew.

AusALPA strongly believes that any increased risk must be fully identified and transparently justified.

The Accessibility, Efficiency and Capacity Argument

To the extent that an obstacle requires modification of available manoeuvring airspace or performance-related parameters, there will be consequences for accessibility, efficiency and capacity. While these considerations are of economic consequence, AusALPA nevertheless has a strong interest in them because, ultimately, they affect the strength and viability of the aviation industry and thus the national interest.

For example, an obstacle that penetrates a take-off or approach surface typically results in the relevant surface being raised as a safety mitigator above that obstacle, which in turn results in the distances available for take-off or landing being reduced. Alternatively, the gradient required to clear that obstacle may be increased. In either case, there are likely to be reductions in payload (people, cargo or fuel) to restore the required aircraft performance. Significantly, the economic penalty is borne by the operator and eventually the travelling public – not the person responsible for the obstacle.

In cases where a field of previously approved obstacle penetrations exist, the result may be that only certain types or directions of take-off and approach/landing can reasonably be permitted. In addition to the immediate issues already identified, the longer term consequences of those flight path restrictions are often that many kilometres are added to flight paths and significant increases in fuel burn are necessary. Similarly, such constraints affect the capacity of the airport to handle increased flights due to the increased inflexibility forced on air traffic management.

Economic Balance

While AusALPA does not generally support penetrations of the OLS for the safety reasons outlined above, AusALPA recognises that it is a matter for government, both Commonwealth and State, to balance out the economic benefit gained through the construction and operation of the penetrating obstacle against the economic detriment caused to the operation of the airport, presuming that the increased risks are satisfactorily mitigated.

Currently, AusALPA is far from convinced that the approval processes correctly identify the impacts on safety, accessibility, efficiency and capacity attributable to the OLS penetration.

Economic (as distinct from safety) assessments conducted by AusALPA are entirely focused on the “public good”: AusALPA considers that any potential economic benefit

AusALPA Position – OLS Penetrations

must be heavily skewed toward that generated by public rather than private infrastructure, particularly if there is likely to be any adverse impact on any of those four objectives of airport safeguarding.

AusALPA is even less convinced that the transfer of economic detriment from the developer to the airport, the aircraft operator and eventually the Australian public is either properly examined under the current arrangements or indeed justified, particularly when safety is compromised.

Where AusALPA Stands

AusALPA expects that the proponent of a development will make every reasonable effort to design the development without penetrating the OLS.

AusALPA expects that the proponent of a development that will penetrate the OLS will produce a credible Safety Case that identifies the increased risks, the mitigation strategies and the attribution of costs associated with the mitigation and the residual risk.

AusALPA expects that the proponent of a development that will penetrate the OLS will produce a credible Economic Cost-Benefit Analysis that identifies the consequences for operations to the airport and particularly the allocation of costs in regard to such benefits as may be gained.

AusALPA expects that the proponent of a development that will temporarily penetrate the OLS will minimise the duration of that penetration.

AusALPA expects that DIRDC, in approving temporary penetrations, will consider the likelihood of the duration of planned penetrations being extended or, in the worst case, becoming indefinite if the proponent becomes insolvent. Given that the APARs authorise the Secretary to impose any conditions the Secretary considers appropriate, AusALPA expects that appropriate financial mitigations will be established to ensure that the proponent has a strong incentive to minimise the duration of the penetration and that there are sufficient funds sequestered to remove the obstacle if the development is abandoned.

While each proposal will be considered on its merits, AusALPA asserts that penetration of the take-off, approach, baulked landing and transitional surfaces will require the most significant level of justification. It is most unlikely that AusALPA will support a proposal to penetrate those surfaces where the benefit is largely private.

AusALPA reserves the right to escalate any residual concerns about an OLS-penetrating development to whichever level of government AusALPA think appropriate and, if necessary, to the Australian public by whatever means of communication are available.

Approved on 12 July 2018 by:



Captain David Booth
President AFAP



Captain Murray Butt
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