Best Practices on the Temporary Parking of Overflow Aircraft

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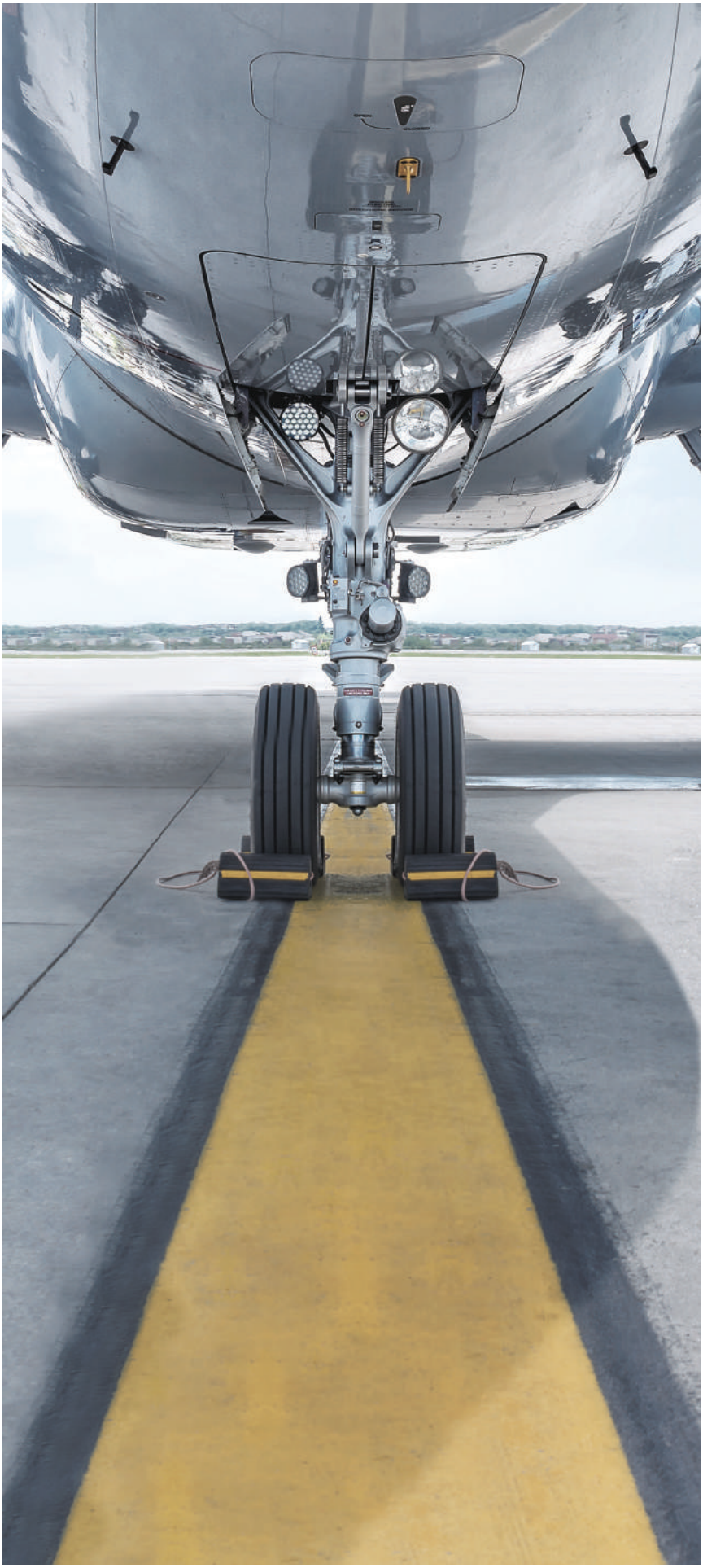

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Background

The COVID-19 pandemic led to a brutal and unprecedented decline in air traffic that has grounded a large part of the worldwide fleet of airliners. According to ACI World, over 75% of commercial airports around the world have some arrangements for the parking of overflow aircraft. This storage should be organized and coordinated with the stakeholders to ensure safety, preserve assets and facilitate easy recovery. This paper provides a summary of recommendations, best practices and useful resources on temporary parking of overflow aircraft.

Establishing a Plan and Procedure Collaboratively

It is a good practice to establish a parking plan and a procedure for the temporary parking of overflow aircraft. It should be prepared collaboratively by a workgroup or committee made of representatives of the stakeholders potentially involved with such situations, such as airport operator, ARFF, ATCT, FAA TechOps, aircraft operators, ground handling service providers, fixed base operators, MRO, etc. The plan should be scalable i.e. adaptable to different numbers and types of aircraft to pave the way for a timely and adequate response next time the airport faces overflow aircraft. This effort shall consider and balance the needs of the stakeholders, explore the short-, medium- and long-term parking options, and document the rationales behind the choices made. The plan and procedure should be regularly updated based on lessons learned and the evolution of the airfield conditions.

The plan should ideally be drawn using CAD applications. This will facilitate the discussion with the stakeholder, enhance the identification of potential geometric and safety issues, and provide the teams in the field with an accurate depiction of the parking plan. This plan should feature aids to position each aircraft. This can be the location of the nose and main gears. This assistance should be consistent with the means available in the field. For instance, if GPS receivers or other surveying tools are not available to the crews, visual aids (e.g. number or ID number of slabs) are recommended to supplement georeferencing. Temporary markings can be provided as well.

Figure 1 "T markings" for overflow A320 family aircraft parking on Taxiway CHARLIE at Paris-CDG (2014)

Understanding the Needs of the Stakeholders

A remote parking plan should address the needs of the different stakeholders. Aircraft operators have several needs and constraints that are specific to their aircraft storage strategy and should be discussed with them. A parked aircraft is not just a dead weight that can be left for days without attention. It is a living piece of aviation engineering that is subject to strict airworthiness criteria. Systems and engines shall be turned on regularly, otherwise a longer process will be required to return the aircraft to commercial operations.

Aircraft hardware and software systems need care and attention. Manufacturers establish extensive procedures in the Aircraft Maintenance Manuals to preserve their airworthiness during short- and long-term parking. Procedures exist for servicing and protecting the aircraft parked for different periods of time. Consequently, maintenance teams should have access to the aircraft – as far as practicable without an escort. Some service roads might be restricted to specific airfield driver's license or might be closed by gates. Some roads might not have the adequate bearing strength for supporting all the vehicles used for servicing aircraft. For the same purpose of providing access, aircraft might be offset instead of centered on the taxiway to leave a side corridor for low-clearance vehicles.

Safety Always Comes First

Most importantly, the parking plan and procedure must put safety first. Performing a safety risk assessment is a must. Hereafter are some of the safety aspects to keep in mind when preparing these documents.

The Air Traffic Control Tower (ATCT) must be able to continue operations safely. Closing part of the airfield for storing aircraft means that a new taxiway layout is being created. This new, temporary layout must able to accommodate the throughput and address the usual safety concerns including but not limited to runway incursions, NAVAIDS integrity and pilot deviations Also, the line of sight from the tower to the active parts of the movement area must not be obstructed. Pilots need to be made aware of the runways and taxiways closed for parking aircraft. Straightforward Notices to Airmen (NOTAMs) shall be issued for raising situational awareness. In return, pilots shall report any issues such as the deviation or inaccuracy of the ILS signals. Adequate markings and signage should be provided as needed.

Even if aircraft are parked on aviation pavement that regularly accommodates aircraft, the positioning of the aircraft for long-term parking might be atypical and violate safety protections. For instance, the tail of an aircraft parked diagonally on a taxiway might infringe runway protection surfaces or disturb the ILS signal while they are perfectly fine when the aircraft is aligned on the centerline. The various safety areas and surfaces preventing safety issues and that protect flight operations (e.g. ROFA, RSA, RPZ, OLS, OFZ, visual aids, etc.) shall be verified before parking aircraft. This is the reason why the FAA request submittal of a FAA 7460 form if there is any potential impact on these surfaces in order to confirm potential issues. If temporary engine run-up spots are provided, jet blast shall be carefully considered as well.

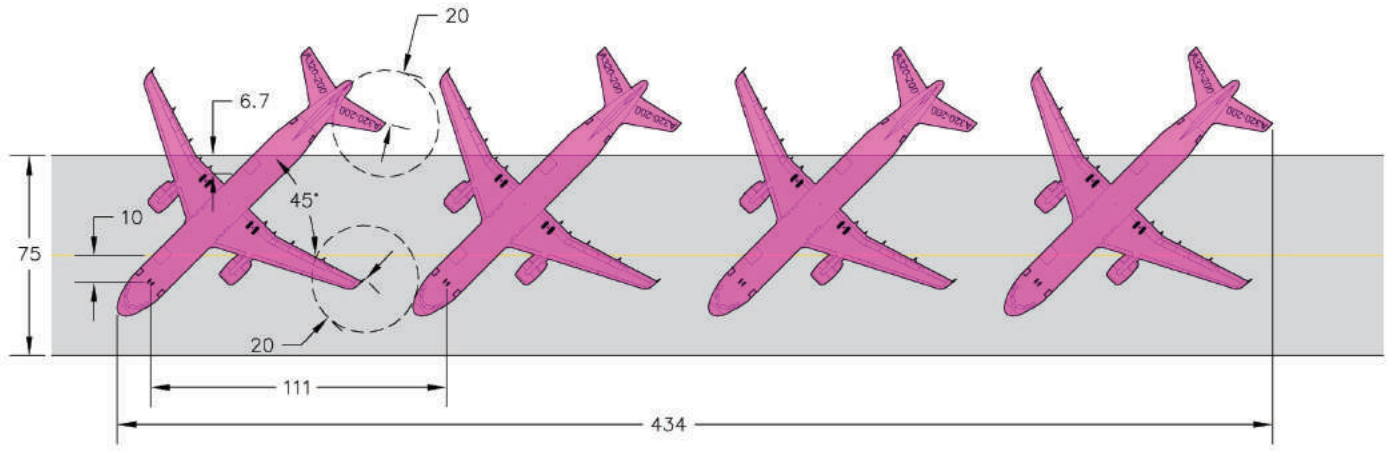

Figure 2 Example of a layout for A320-200 providing 20-foot min. separation distances between aircraft on a 75-foot-wide taxiway

Note: Particular attention should be given to the specific models of aircraft to be parked. For instance, on this proposed example, the A320neo will require a wider spacing between aircraft because of its wingspan. The A321 is longer than the A320 and so should be more angled and/or centered on the taxiway centerline in addition of a wider spacing in order to provide the same minimum distances (1) between aircraft and (2) between the wheels and the taxiway edge.

Identify and Prioritize Temporary Parking Options

Options include contact and remote gates, remote overnight parking and aircraft de-icing pads, and active taxiways that could be closed to traffic. The plan should prioritize the different options identified. When activated, it should have a start and end date. A parking situation lasting several months should be reviewed regularly. Existing gates should be utilized first. Once gates are exhausted, other options might be considered e.g. the densification of parking on ramps and aprons and then taxiways.

For the taxiways selected for aircraft storage, different sections that will be closed sequentially can be defined. Taxiway lighting should be turned off on the closed sections and the portion of taxiways leading to these sections (e.g. curves from active taxiway). The parking areas should be closed with barricades and red lights as an airfield construction zone would be.

Runways should be avoided as far as practicable. The FAA took a clear position on this matter in its recent Part 139 CertAlert on temporary aircraft parking. This is justified by data records of aircraft performing final approaches over temporarily closed runways – some of them with massive obstacles or equipment on the runway that should have alerted pilots – or even taxiways occupied by aircraft. However, permanently closed and decommissioned runways can be considered.

Figure 3 Temporary parking of overflow aircraft on Taxiways CHARLIE and BRAVO at Paris-CDG (2014)

Pavement and Structural Considerations

The pavement type and bearing strength should be taken into consideration as well. Flexible pavements (asphalt concrete) shall be avoided as far as practicable. Unlike slabs, flexible pavement is sensitive to the prolongated and concentrated static loads of aircraft main gear. In such cases, especially under hot weather conditions, this stress might deform the pavement. Moreover, asphalt concrete can absorb organic compounds (e.g. oil, fuel, solvents) that could spill during aircraft maintenance operations. This can quickly soften the surface course and lead to serious degradations.

Similarly, the parking plan should avoid positioning the main gear of aircraft on bridges and other structures. The plan should consider the pavement condition as well. The long-term parking of aircraft on pavements already in poor conditions will accelerate their deterioration. Also, while aircraft operations are temporarily low, it is a good opportunity to conduct pavement maintenance.

Further Reading

In the United States, the Federal Aviation Administration (FAA) has issued National Part 139 CertAlert No. 20-02 to certified airport operators on the Temporary Parking of Overflow Aircraft. This CertAlert provides recommendations to airports when parking overflow aircraft. The Safety Alert for Operators (SAFO) 20005 to pilots and flight operators discusses the potential effects of parking overflow aircraft in excess of airport capacity. While the FAA CertAlert has been used by non-U.S. airports (e.g. Australia), other countries have issued their own guidance such as France with a "Flash Info" on the Storage of Aeroplanes.

The upcoming ACRP toolbox on enhancing the management of adverse conditions being developed by WSP USA will feature a reference sheet on the temporary parking of overflow aircraft. Finally, the Infrastructure Workgroup of The French-Speaking Airports (UAF&FA) will be preparing an extensive guidebook on the same matter later this year.

Figure 4 Bridge friendly parking of overflow widebody aircraft (CDG, 2014)

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