International Civil Aviation Organization

Eighth Meeting of the Aerodromes Operations and Planning Sub-Group (AOP/SG/8)

Bangkok, Thailand, 15 to 19 July 2024

Agenda Item 9: Any other business

THE AIRPORT CHARACTERISTICS OF C919

(Presented by China)

SUMMARY

This paper presents the development of C919 aircraft and its airport characteristics. C919 aircraft is the first jet type trunk liner independently developed by China. C919 jetliner goes into commercial operation in May 28th, 2023. It has received a total of 1,061 aircraft orders from 30 customers. As of June 2024, the airport compatibility of the aircraft has been verified. This Paper intends to share key airport characteristics of C919, for helping to know airport compatibility in Asia and Pacific (APAC) Regions.

1. INTRODUCTION

1.1 C919 aircraft is the first jet type trunk liner independently developed by China in accordance with international airworthiness standards. C919 aircraft has a layout of 158 to 192 seats, and a range of 4,075 to 5,555 kilometers. On May 5th, 2017, C919 made the first test flight, and obtained Type Certificate from Civil Aviation Administration of China (CAAC) on September 29th 2022.

1.2 C919 aircraft has great competitiveness on reliability, design, comfort, economic and environment-friendly. It has passed over 1,600 ground tests, over 500 flight tests, over 2,000 flight circles and over 6,000 flight hours during flight testing, which shows excellent reliability. C919 installs Leap-1C engine which is suitable for high-temperature and plateau airports, and it also available for SAF. C919 owns advanced avionics core processing system and onboard maintenance system. It has a wider cabin with wider middle seats and aisle. C919 shows outstanding economics, it has 5% aerodynamic drag reduction with supercritical wings, integrated design winglets, 4 pieces of double-curved windshield, etc.

1.3 As of June 2024, C919 aircraft has received a total of 1,061 aircraft orders from 30 customers. The company, Commercial Aircraft Corporation of China, has delivered 6 aircrafts to China Eastern Airlines since December 9th 2022. On May 28th 2023, China Eastern Airlines has finished the C919 Maiden Commercial Flight from SHA to PEK successfully. The C919 fleet has operated a total of over 7,500 flight hours and has transported 2.9 million passengers. It has successively operated six international airports, which are Beijing Capital International Airport, Beijing Daxing International Airport, Shanghai Hongqiao International Airport, Sichuan Tianfu International Airport, Xi'an Xianyang International Airport and Hong Kong International Airport. The airport compatibility of the aircraft has been verified.

2. DISCUSSION

2.1 In addition to CAAC certification, C919 is also applying for EASA certification. We believe the C919 fleet as a strong new competitor will be reach more countries. China welcome market competition that will be conducive to reducing operation cost, increasing airlines revenue and promote the development of civil aviation. So here we strongly recommended that member states can conduct the airport capability assessment ahead. The general characteristics of C919 for airport are as follows.

2.2 To meet the requirements of different regions and routes, the C919 has two configurations currently, standard range version (STD) and extended range version (ER). The aerodrome reference code of both configurations is 4C.

2.2.1 General characteristic

The overall size of the C919 aircraft is similar to that of the mainstream narrow-body aircraft types.

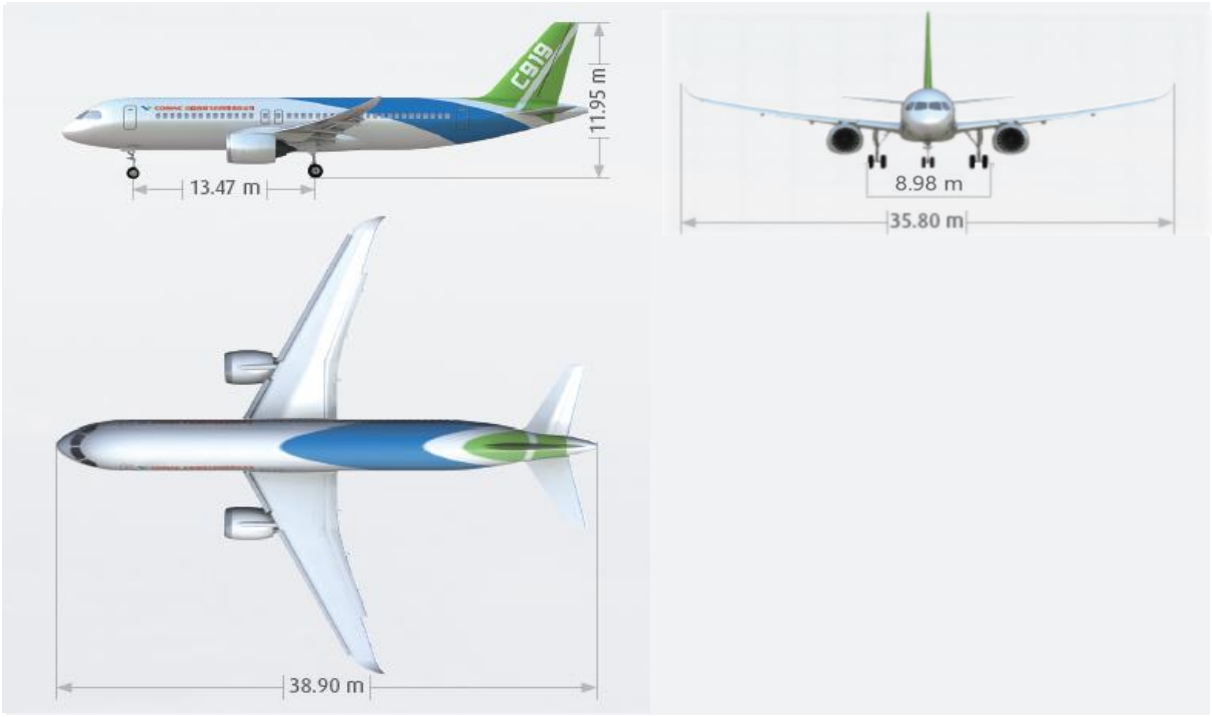

Figure 1 C919 three-sided view

Table 1 C919 General characteristic

ITEMS	C919 STD	C919 ER
Overall length	38.9 m (127.6 ft)	
Wingspan	35.8 m (117.5 ft)	
Vertical tail height	11.95 m (39.2 ft)	
Main wheel outer wheel spacing	8.98 m (29.5 ft)	
Front and main wheelbase	13.47 m (44.2 ft)	
Maximum design takeoff weight（MTOW）	75,100 kg (165,567 lb)	78,900 kg(173,944 lb)
Maximum Design Landing Weight (MLW)	67,800 kg (149,473 lb)	

ITEMS	C919 STD	C919 ER
Maximum Design Taxi Weight (MTW)	75,500 kg (166,448 lb)	79,300 kg (174,826 lb)
Standard Payload	15,010 kg (33,091 ft)	
Max Payload	18,900 kg (41,667 lb)	
Range (Standard Payload)	4139 km (2235 nm)	5576 km (3011 nm)
Usable Fuel	24,917 L (5481 G)	
Max Operating Altitude	12131 m (39800 ft)	
Take-off Field Length (MTOW, SL, ISA)	2,052 m (6,732 ft)	2,125 m (6,267 ft)
Landing Field Length (MLW, SL, ISA)	2,043 m (6,702 ft)	2,133 m (6,998 ft)
Runway width (standard)	45 m	

2.2.2 Turning Radii

The maximum effective turn angle of C919 is 70°, minimum 180° turn runway width is 30 m (including 3 m clearance each side).

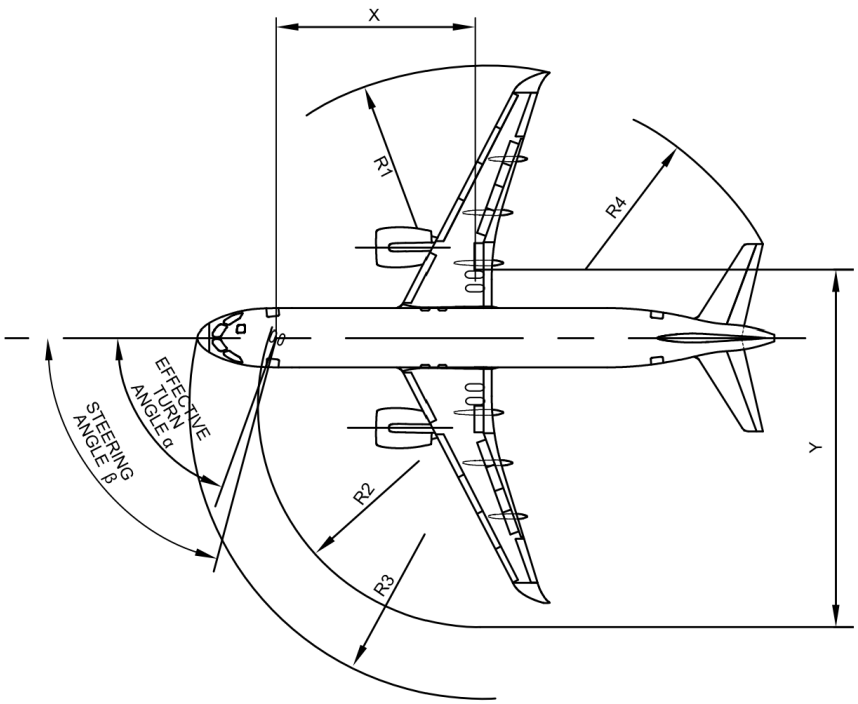

Figure 2 Minimum Turning Radii

α	β	X		Y		R1		R2		R3	
		FT	M	FT	M	FT	M	FT	M	FT	M
70°	75°	44.19	13.47	79.02	24.09	76.49	23.32	48.22	14.70	63.58	19.38

2.2.3 Visibility from Cockpit in Static Position

The visibility from cockpit in static position for C919 shows in Figure 3.

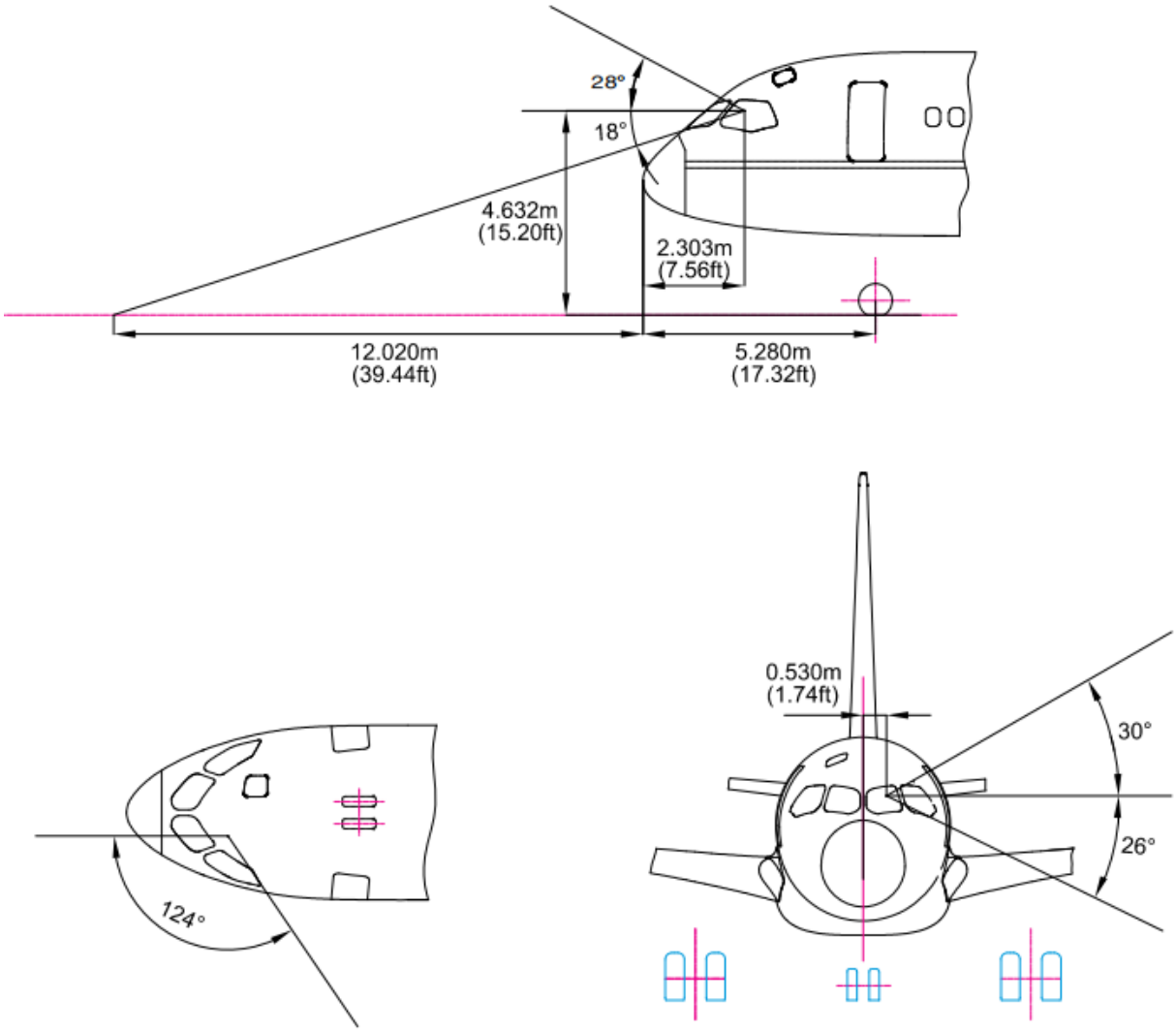

Figure 3 Visibility from Cockpit in Static Position

2.2.4 ACN and ACR

The ACRs for C919 shows in Table 2.

Table 2 C919 ACR

Type	MTW/ Minimum weight (kg)	Main Landing gear on one side bearing （%）	Main Landing gear tire pressure（ MPa）	ACR under rigid runway				ACR under flexible runway			
				High A 200	Mid B 120	Low C 80	Ultra low D 50	High A 200	Mid B 120	Low C 80	Ultra low D 50
C919 STD	75500	46.14	1.29	442	466	482	500	340	366	399	445
	45000	46.14	1.29	238	252	262	274	199	207	217	235
C919 ER	79300	45.82	1.35	471	495	511	528	361	387	423	472
	45000	45.82	1.35	240	253	263	274	200	207	216	234

2.3 Terminal Service

2.3.1 The Typical Turnaround Station (Full economy class with 168 seats) of C919 shows in figure 4. The fast turnaround time can be finished in 40 min. And the Aircraft Servicing Arrangement of C919 is shown in figure 5. It is similar to the current main narrow-body aircraft.

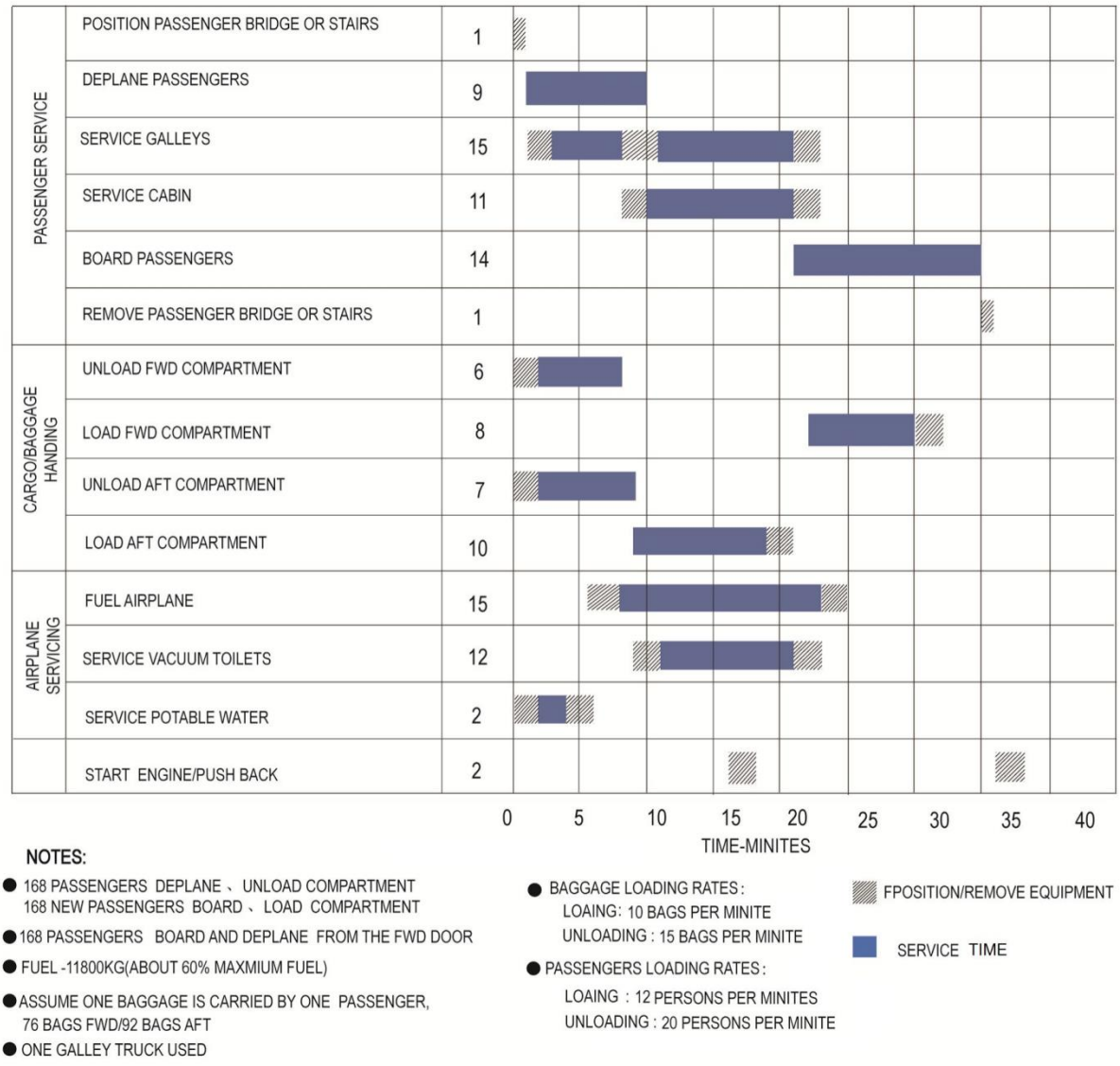

Figure 4 Visibility from Cockpit in Static Position

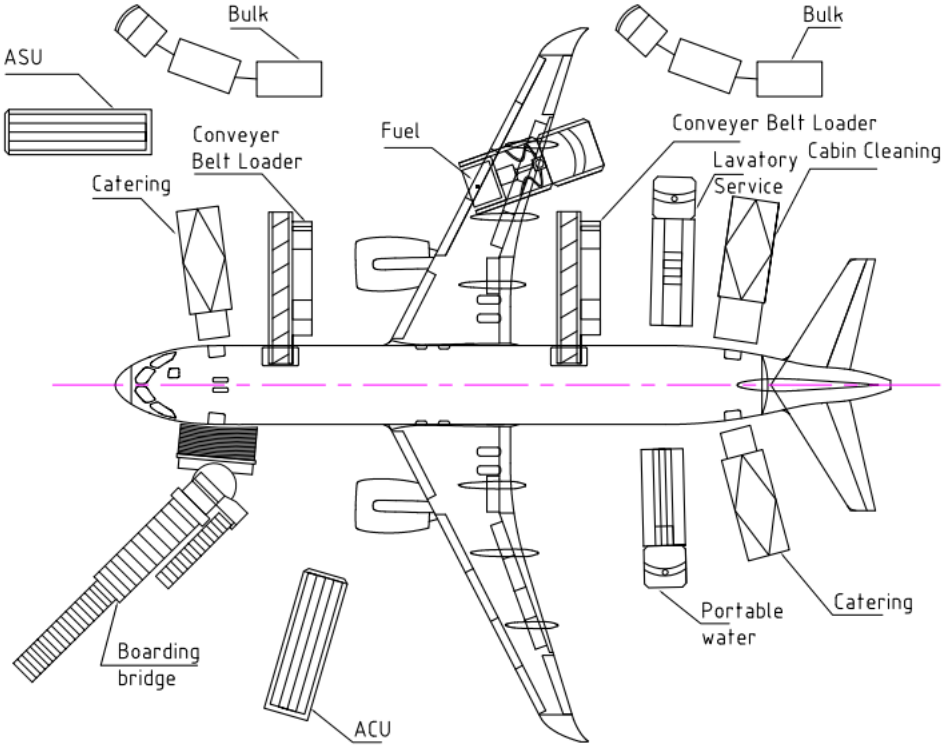

Figure 5 Aircraft Ramp Equipment Layout

2.3.2 The mooring ground anchor area of C919 which COMAC provided to customers improves the mooring compatibility in airport greatly. The Available Mooring Ground Anchor Area Diagram shows in figure 6.

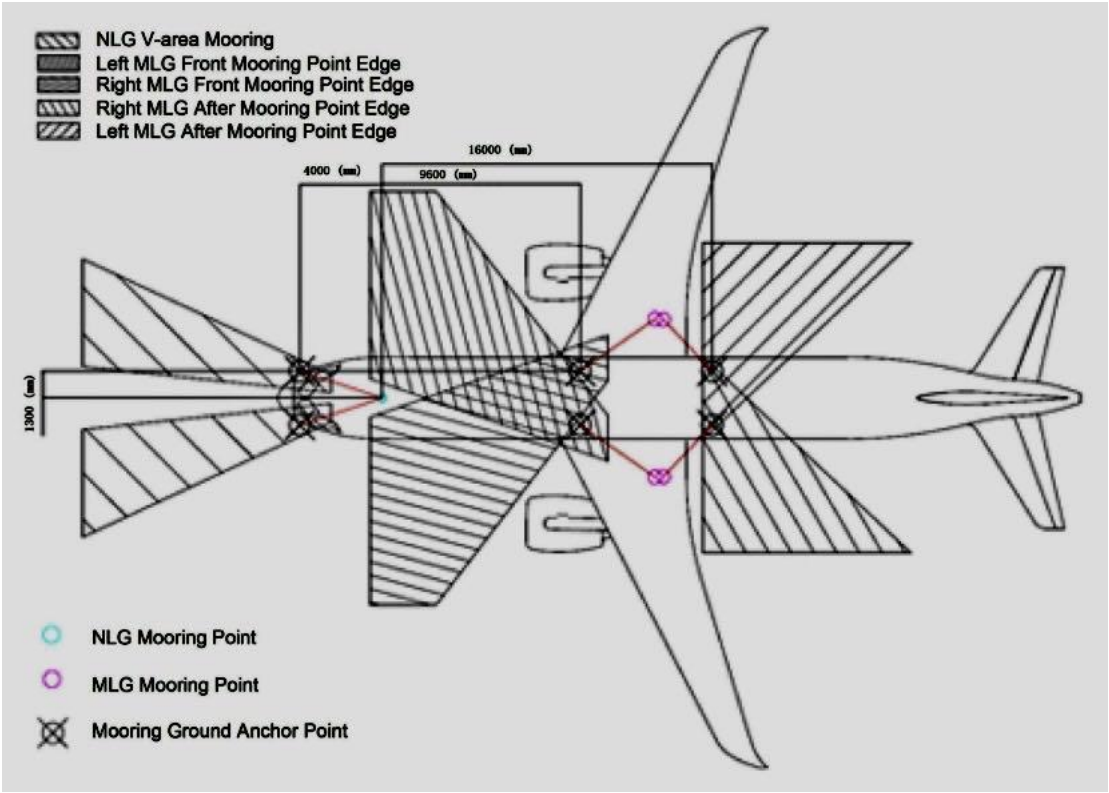

Figure 6 Mooring Position

2.4 During the operation, C919 shows good compatibility in airport. COMAC still keep taking actions to carry out design optimization. Along with the increasing of C919 fleet in more regions, it is expected that airports can take the operation requirements of C919 into consideration while constructing or reconstructing airport, including facilities and ground support equipment. COMAC will help airlines and airports to build the operation and training capacity.

2.4.1 More information and characteristics of C919 can be obtained from the manual, that is Aircraft Characteristics for Airport Planning (ACAP), which can be downloaded on COMAC website. Web link: http://english.comac.cc/Galleries/Technical/.

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

a) note the information contained in this paper and welcome member States to send the mail to airport.compatibility@comac.cc for any requirement and questions on airport compatibility of C919;

b) encourage member States to conduct the airport capability assessment ahead and provide feedback to CAAC to help C919 manufacturer to obtain information of airport and ground support equipment service environment of member States;

c) request ICAO to add C919 airport characteristic into the relevant document of ICAO, including Doc 9157; and

d) encourage Asia Pacific States to pay attention to C919 model operational requirements into the design and operation processes of airports in anticipation that Asia Pacific States will be the main service users of C919 aircraft.

—END—