TELEGRAPHIC ADDRESS
AFTN: ZBBBYOYX
COMM: CIVIL AIR BEIJING
FAX: 8610 68348230

PEOPLE'S REPUBLIC OF CHINA
CIVIL AVIATION ADMINISTRATION OF CHINA
AERONAUTICAL INFORMATION SERVICE
P. O. BOX 2272, BEIJING

AIP CHINA
AIC
Nr.11/19
NOV. 1, 2019

在广州白云机场和深圳宝安机场实施航空器尾流重新分类（RECAT-CN）管制实验运行

ATC Practical Operation of the Implementation of Wake Turbulence Recategorization (RECAT-CN) Separation Standard at Guangzhou Baiyun International Airport and Shenzhen Bao'an International Airport

1. 简介

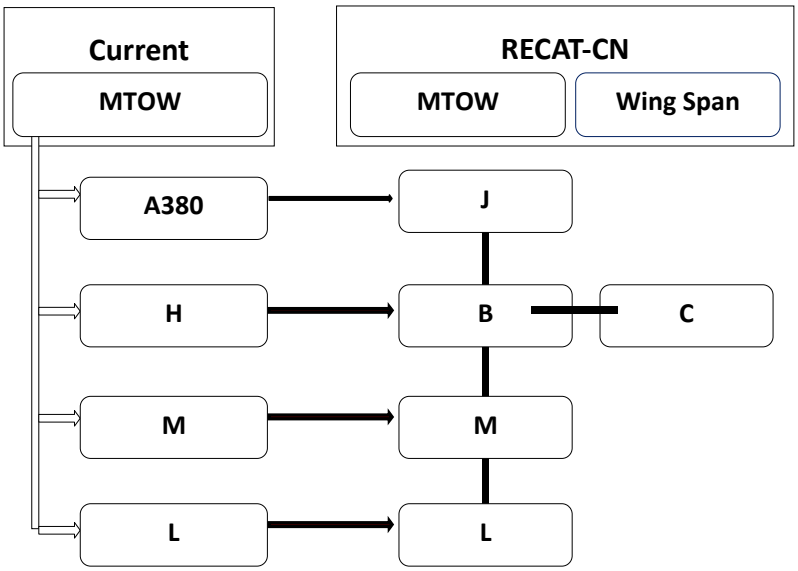
1.1 参考国际民航组织航空器尾流重新分类（Re-categorization，RECAT）工作建议，根据《中国民航航空系统组块升级（ASBU）发展与实施策略》，中国民航局拟定了航空器尾流重新分类（RECAT-CN）标准，并决定在广州白云机场、深圳宝安机场以及与上述机场所在的进近（终端）管制区开展 RECAT-CN 管制实验运行。

1.2 根据中国繁忙机场的交通流特点，RECAT-CN 将航空器尾流等级分为五类，其中根据飞机最大起飞重量和翼展大小将现有重型机（H）重新分为重型机（B）和一般重型机（C）两类，其他与 ICAO 现行标准保持一致。仿真实验数据表明，RECAT-CN 预期效果与美国的 RECAT-I 和欧洲的 RECAT-EU 基本一致。

1. Introduction

1.1 Referring to ICAO's recommendations of the Wake Turbulence Recategorization (RECAT) Separation Standard, and in accordance with the document of Development and Implementation Strategy of China Civil Aviation System Block Upgrading (ASBU), the Civil Aviation Administration of China has drawn up the standards of aircraft wake turbulence Recategorization (RECAT-CN), and has decided to carry out ATC practical operation of RECAT-CN both at Guangzhou Baiyun International Airport (ZGGG) and Shenzhen Bao'an International Airport (ZGSZ) and in the terminal control areas related to the above airports.

1.2 Based on the air traffic flow characteristics of China's typical busy airports, RECAT-CN places aircraft into five categories. The existing Heavy aircraft (H) is divided into two categories based on Maximum Takeoff Weight (MTOW) and wing span: Heavy aircraft (B) and Lower Heavy aircraft (C), and the others are consistent with the current ICAO standards. The simulation results show that the expected effect of RECAT-CN is basically the same as that of RECAT-I in the United States and RECAT-EU in Europe.



1.3 与 ICAO Doc 4444 的尾流分类和间隔标准相比，由于 RECAT-CN 对重型机进行了细分（RECAT-CN 分类方法见 3.），因此可在一定程度上缩减尾流间隔，提高机场和进近（终端）管制区运行效率。例如：在 ICAO Doc 4444 中，B767 和 B747 均属于重型机，两机跟随进近时所需最小尾流间隔为 7.4km；而在 RECAT-CN 中，B767 属于 C 类航空器，B747 属于 B 类航空器，B747 跟随 B767 五边进近时不需要考虑尾流间隔。（RECAT-CN 具体间隔标准见 4.）。

1.3 Compared with ICAO Doc 4444's wake turbulence categories (WTC) and separation minima, RECAT-CN can reduce the wake turbulence separation minima to a certain extent and improve the operation efficiency of airport and terminal control areas because of the subdivision of Heavy aircraft (RECAT-CN wake turbulence categories are contained in section 3.). e.g. in ICAO Doc 4444, both B767 and B747 are Category Heavy aircraft, when one of these aircraft approaches following the other, the wake separation minimum required is 7.4km; in RECAT-CN, B767 is Category C aircraft, while B747 is Category B aircraft, if a B747 approaches following a B767, it's not necessary to consider the influence of wake turbulence (RECAT-CN wake turbulence separation radar minima are contained in section 4.).

2. 实施时间与范围

2.1 RECAT-CN 管制实验运行从 2019 年 12 月 5 日零时（UTC）起全天候实施，期限为 1 年。

2.2 RECAT-CN 管制实验运行的范围包括：广州白云机场、深圳宝安机场以及与上述机场所在的进近（终端）管制区。

2.3 实验运行分两阶段，第一阶段为测试阶段，安排中国南方航空公司、海南航空公司、深圳

2. Time and Area of Implementation

2.1 The RECAT-CN ATC practical operation will be carried out all-weather since 0:00 on December 5, 2019 (UTC), with a period of one year.

2.2 The area of RECAT-CN ATC practical operation includes Guangzhou Baiyun International Airport, Shenzhen Bao' an International Airport and the Approach（Terminal） control areas related to the above airports.

2.3 There are two stages of the practical operation. The first stage is the practical stage in which America

航空公司，美国联邦快递、联合包裹速递服务公司参与。第二阶段为推广阶段（具体实施时间将以航行通告形式告知），将尾流重新分类方法和间隔标准应用于广州、深圳机场运行的所有适用航空器。

FedEx , United Parcel Express, China Southern Airlines, Hainan Airlines, and Shenzhen Airlines are involved. The second stage is the promotion stage (the specific implementation time will be notified by NOTAM) in which RECAT-CN will be applied to all the aircraft at Guangzhou airport and Shenzhen airport and in the terminal control areas related to the above airports.

3. RECAT-CN 机型分类标准

3.1 尾流间隔标准根据机型种类而定，在RECAT-CN中航空器机型种类按航空器最大允许起飞全重和翼展分为五类。

3.2 超级重型机：最大允许起飞全重等于或大于136000kg，翼展等于或大于75m的航空器，尾流类型标识符为J;

3.3 重型机：最大允许起飞全重等于或大于136000kg，翼展等于或大于54m、小于75m的航空器，尾流类型标识符为B;

3.4 一般重型机：最大允许起飞全重等于或大于136000kg，翼展小于54m的航空器，尾流类型标识符为C;

3.5 中型机：最大允许起飞全重大于7000kg，小于136000kg的航空器，尾流类型标识符为M。其中B757飞机（包含B757-200、B757-300等）属于中型机;

3.6 轻型机：最大允许起飞全重等于或小于7000kg的航空器，尾流类型标识符为L。分类标准如下表所示:

3. RECAT-CN Wake Turbulence Categories of Aircraft

3.1 The Wake turbulence minima depend on the categories of aircraft. For RECAT-CN, aircraft are divided into five categories based on maximum take-off weight and wingspan.

3.2 Super Aircraft: Aircraft capable of MTOW of 136000kg or more and a wingspan of 75m or more. This category is identified as J;

3.3 Heavy Aircraft: Aircraft capable of MTOW of 136000kg or more and a wingspan greater than 54m and less than 75m. This category is identified as B;

3.4 Lower Heavy Aircraft: Aircraft capable of MTOW of 136000kg or more and a wingspan less than 54m. This category is identified as C;

3.5 Medium Aircraft: Aircraft capable of MTOW greater than 7000kg but less than 136000kg. This category is identified as M. B757 (including B757-200, B757-300, etc.) is classified into this category;

3.6 Light Aircraft: Aircraft capable of MTOW of 7000kg or less. This category is identified as L. RECAT-CN categories are illustrated in the following table:

类别/ Category	最大起飞重量/ MTOW(kg)	翼展/ Wingspan(m)
J	⩾136000	⩾75
B	⩾36000	54-75
C	⩾136000	⩽54
M	7000~136000	
L	⩽7000	

3.7 依据机型分类标准，部分典型的重型航空器分类情况如下表所示:

3.7 In accordance with the RECAT-CN Categories, some typical heavy aircraft categorizations are shown in the table below:

序号 / No.	机型代码/ Aircraft Type	RECAT -CN	序号 / No.	机型代码/ Aircraft Type	RECAT -CN	序号 / No.	机型代码/ Aircraft Type	RECAT -CN
1	A388	J	26	B773	B	51	C135	C
2	A225	J	27	B778	B	52	C141	C
3	SLCN	J	28	B779	B	53	C17	C
4	A124	B	29	B77L	B	54	DC10	C
5	A332	B	30	B77W	B	55	DC85	C
6	A333	B	31	B788	B	56	DC86	C
7	A337	B	32	B789	B	57	DC87	C
8	A338	B	33	B78X	B	58	E3CF	C
9	A339	B	34	BLCF	B	59	E3TF	C
10	A342	B	35	C5	B	60	E6	C
11	A343	B	36	C5M	B	61	E767	C
12	A345	B	37	IL96	B	62	IL62	C
13	A346	B	38	T160	B	63	IL76	C
14	A359	B	39	A306	C	64	IL86	C
15	A35K	B	40	A30B	C	65	K35E	C
16	AN22	B	41	A310	C	66	K35R	C
17	B52	B	42	A3ST	C	67	KC2	C
18	B741	B	43	A400	C	68	KE3	C
19	B742	B	44	A50	C	69	L101	C
20	B743	B	45	B1	C	70	MD11	C
21	B744	B	46	B2	C	71	MYA4	C
22	B748	B	47	B703	C	72	R135	C
23	B74R	B	48	B762	C	73	T144	C
24	B74S	B	49	B763	C	74	TU95	C
25	B772	B	50	B764	C	75	VMT	C

4. RECAT-CN 雷达尾流间隔标准

4.1 前机为超级重型航空器（J），后机为重型

4. RECAT-CN Wake Turbulence Radar Separation Minima

4.1 Following a Category J aircraft is a Category B

航空器（B）时，不小于 9.3km;
4.2 前机为超级重型航空器（J），后机为一般重型航空器（C）时，不小于 11.1km;
4.3 前机为超级重型航空器（J），后机为中型航空器（M）时，不小于 13.0km;
4.4 前机为超级重型航空器（J），后机为轻型航空器（L）时，不小于 14.8km;
4.5 前机为重型航空器（B），后机为重型航空器（B）时，不小于 5.6km;
4.6 前机为重型航空器（B），后机为一般重型航空器（C）时，不小于 7.4km;
4.7 前机为重型航空器（B），后机为中型航空器（M）时，不小于 9.3km;
4.8 前机为重型航空器（B），后机为轻型航空器（L）时，不小于 13.0km;
4.9 前机为一般重型航空器（C），后机为中型航空器（M）时，不小于 6.5km;
4.10 前机为一般重型航空器（C），后机为轻型航空器（L）时，不小于 11.1km;
4.11 前机为中型航空器（M），后机为轻型航空器（L）时，不小于 9.3km。
具体间隔标准如下表所示（km）:

aircraft, the separation is no less than 9.3km;
4.2 Following a Category J aircraft is a Category C aircraft, the separation is no less than 11.1km;
4.3 Following a Category J aircraft is a Category M aircraft, the separation is no less than 13.0km;
4.4 Following a Category J aircraft is a Category L aircraft, the separation is no less than 14.8km;
4.5 Following a Category B aircraft is a Category B aircraft, the separation is no less than 5.6km;
4.6 Following a Category B aircraft is a Category C aircraft, the separation is no less than 7.4km;
4.7 Following a Category B aircraft is a Category M aircraft, the separation is no less than 9.3km;
4.8 Following a Category B aircraft is a Category L aircraft, the separation is no less than 13.0km;
4.9 Following a Category C aircraft is a Category M aircraft, the separation is no less than 6.5km;
4.10 Following a Category C aircraft is a Category L aircraft, the separation is no less than 11.1km;
4.11 Following a Category M aircraft is a Category L aircraft, the separation is no less than 9.3km;
The table below details the wake turbulence separation minima (km):

		后机/ Follower				
		J	B	C	M	L
前机/ Leader	J		9.3	11.1	13.0	14.8
	B		5.6	7.4	9.3	13.0
	C				6.5	11.1
	M					9.3
	L					

5. 实施要求

5.1 航空器运营人或其代理人在提交飞行计划时，机型代号要满足 ICAO DOC 8643 的要求，做到唯一性和正确性。在领航计划报中，机型类别不需要改变，即 RECAT-CN 标准里的 B、C 类航空器，在飞行计划报中仍然使用 H。

5.2 管制实验运行期间，空中交通服务电报中的尾流类型字符暂时保持不变，即 J、H、M、L。

5. Implement Requirements

5.1 When airlines submit flight plan, the aircraft WTC indicator should meets the requirements of ICAO DOC 8643, so as to achieve uniqueness and correctness. When filed flight plan message, there is no change for WTC indicators, e.g., in flight plan, “H” is still used to indicate Category B and C aircraft in RECAT-CN operation.

5.2 During the ATC practical operation, the WTC indicators in ATS telegrams remain unchanged, i.e. J, H, M and L.

5.3 在起飞、进近和着陆过程中，航空器驾驶员应加强空地协同配合，注意目视观察，严格遵守跑道占用限制及进场航空器速度限制，以减少航空器中止进近或复飞的可能性。当无法执行上述要求或 RECAT-CN 实验运行标准时，航空器驾驶员应尽早通知管制员，以便管制员采取必要的措施。

5.3 During the flight phases of takeoff, approach and landing, pilots should strengthen air-ground coordination, pay attention to focus more on relative traffic with visual observation, and strictly abide by runway occupancy time restrictions and aircraft speed restrictions, thus to reduce the possibility of terminating approach or go-around. When the above restrictions or RECAT-CN cannot be met and accepted, the pilots shall notify the controller as soon as possible so that the controller can take the necessary measures.

5.4 航空器驾驶员应充分认识到尾流对航空器的负面影响，当尾随更高尾流等级航空器时，航空器驾驶员应特别注意前机尾流影响，尤其是在静风及近地情况下。航空器驾驶员与空中交通管制单位进行陆空通话联系时，J 类航空器驾驶员应当在其航班号后增加“Super”内容；B 类或 C 类航空器驾驶员应当在其航班号后增加“重型（Heavy）”内容。

5.4 The wake turbulence of an aircraft deserves the respect of all pilots. Care should always be taken when following a substantially heavier aircraft, especially in conditions of close to the ground or light winds. When pilots communicate with ATC units, pilots of Category J aircraft should add “Super” after their call sign; pilots of Category B or C should add “Heavy” after their call sign.

5.5 本通报中所述尾流间隔标准在可接受的安全水平下，可以降低遭遇尾流的可能性和严重性，但不能完全避免遭遇尾流。

5.5 It must be emphasized that the separation minima stated in this circular cannot entirely remove the possibility of a wake turbulence encounter. The objectives of the minima are to reduce the probability of encountering wake turbulence to an acceptably low level and to minimize the magnitude of the upset when an encounter occurs.