

Hump

Air 驼峰空运

Transport

Masterminded by the State Council Information Office of the People's Republic of China

中华人民共和国国务院新闻办公室 策划

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The Burma Road experienced frequently the bombardment by the Japanese aircraft and the natural disasters such as earthquake and mud-rock flow, thus the normal transportation became unlikely.
“滇缅公路”经常受到日军飞机轰炸以及地震、泥石流等天灾人祸，影响正常运输。

On December 7 1941, the Japanese navy launched a sneak raid on Pearl Harbor, the US navy base in Pacific. Japan declared war on the United States and Britain and the Pacific War broke out. On December 9, the United States responded to fight back and the Chinese government declared war on Japan as well. On December 11, the United States declared war on Germany and Italy. By then, both the range and scale of the Second World War were expanded. The Pacific War changed the layout of the war rapidly. On the one hand, the Chinese armed forces fought against the Japanese invaders resolutely and on the other hand, the countries in the international ally against fascists intensified the battles against Japanese troops in Asia. Thereby, the US government as well as the British government began to show its concerns on the situations of battlefields in China.

In March 1941, the Senate and the House passed the "Lend—Lease Act" put forward by President Roosevelt. The United States provided loans or rent out weapons, ammunitions, war materials and other materials to allied countries waging wars on fascist countries. On April 29, President Roosevelt informed Chiang Kaishek in a telegram that the United States was determined to "break through the blockade of the Japanese troops and try to find out a new passageway through which aircraft and munitions can be transported to China." The severe situation in China affected not only the War of Resistance Against Japan in China and the Pacific War, but also affected the united front of the world against fascists and the interests of the United States. It became a prior issue for the heads of China and US to open up a new passageway to China to transport the badly needed war materials. Song Ziwen, the foreign minister of the Chinese National Government suggested in his letter to President Roosevelt that an air route from India to China be opened up. Upon the emergent request of the Chinese government, President Roosevelt proclaimed "the passageway to China must be opened up regardless any difficulties."

It must be admitted that the China National Aviation Corporation had farsightedness in opening up the air route from India to China. Early at the beginning of 1941, Wu Shi, a pilot of American citizenship from the China National Aviation Corporation (founded formally on August 1, 1930 and enjoyed by the US side with nearly half of the share) made a survey flight along the borders of China and Burma with a DC-3 transporter. Wu Shi took off at Lashio Airport in Burma, flew along the upper reaches of Ayeyarwady River to the north of Putao, then continuously flew to the east and entered into China and landed at Baishiyi Airport in Chongqing after flying through Lijiang, Dali, Xichang and Xufu (Yibin). The most areas along the route of the flight were never flown over by people before and what's worse, the map used at the time was inaccurate at all. The crewmembers found out the heights of the mountain peaks along the route with altimeter and plotted their

1941年12月7日，日本海军偷袭美国在太平洋的海军基地——珍珠港，日本对美国、英国宣战，太平洋战争爆发。12月9日，美国对日应战，中国政府亦对日宣战。12月11日，美国对德国、意大利宣战。至此，第二次世界大战的范围和规模进一步扩大。太平洋战争迅速改变了战争格局，一方面中国武装力量坚决地抗击日本侵略者，另一方面国际反法西斯同盟各国在亚洲战场上加强了对日作战。因此，中国战场受到美、英政府的重视。

1941年3月，美国参、众两院通过了罗斯福总统提出的《租借法案》。美国向同法西斯国家作战的同盟国提供借贷或出租武器、弹药、战略原料和其他物资。4月29日，罗斯福总统电告蒋介石，表示美国一定要“打破日军的封锁，重新找到一条把飞机和军火送到中国的有效途径”。中国的形势十分严峻，不仅对中国抗日战争及太平洋战争产生影响，对世界反法西斯统一战线及美国的利益也产生了影响。开辟通往中国的新的渠道，运送急需的作战物资，这是当时中、美两国首脑优先要解决的问题。国民政府外交部长宋子文在给美国总统罗斯福的信中建议开辟一条从印度到中国的空中航线。经过中国政府的紧急要求，5月，美国总统罗斯福宣布“不计任何困难，必须开通到中国的路线”。

对于开通从印度到中国的空中航线，应该说中国航空公司是非常有远见的。早在1941年初，中国航空公司（中国航空公司于1930年8月1日正式成立，美方有近一半的股份）美籍驾驶员吴士驾驶DC-3运输机，在中、缅边境作勘察飞行。吴士驾驶DC-3运输机从缅甸腊戍机场起飞，沿伊洛瓦底江上游至葡萄以北，然后向东进入中国国境后，经丽江、大理、西昌、叙府（宜宾）到达重庆，在白市驿机场降落。这次飞行航线的大部分地区是前人从未飞过的，当时使用的地图很不准确。吴士机组人员用高度表测定了航线沿途山峰的高度，并在航图上标出其准确位置和仪表飞行的最低安全高度。在这次勘察飞行的基础上，开通了印度汀江——中国昆明的航线。1941年11月，中国航空公司美籍驾驶员夏普驾驶DC-3运输机，在汀江——昆明的航线作首航货运。中国航空公司开通了从印度汀江——中国昆明的航线，为后来的抗战物资“驼峰空运”奠定了基础。

accurate positions and the minimum safety altitude of instrument flight on the navigation chart. The route from Dinjan, India to Kunming, China was then opened up on the basis of this survey flight. In November 1941, Xia Pu, a pilot of American citizenship from the China National Aviation Corporation made the first flight of freight transport on the route from Dinjan to Kunming with a DC-3 transporter. The opening-up of the air route from Dinjan, India to Kunming, China by the China National Aviation Corporation laid a foundation for the later "Hump Air Transport" of the materials used in Chinese war against Japanese invasion.

The American Army Ferry Command once planned an air-transport route of 6,449km long along the borders of India and China from the end of 1941 to the beginning of 1942. However, this route was not opened up after a primary survey for the reasons that the route range was too long and the transportation capacity was limited. Later, the Americans planned another passageway to Kunming, China from Sadiya, India via Myitkyina, Burma. The materials were airlifted from Sadiya to Myitkyina first and then were transported through road to Kunming. In early 1942, Song Ziwen, representative of the Chinese Government met President Roosevelt and suggested the air route from Sadiya, India to Kunming, China. With the occupation of Burma by the Japanese forces, there was however no other selection but the air route from Sadiya to Kunming.

In order to avoid the collision of aircraft with the ground objects during flying, it was regulated that the enroute safety height should be 400m higher than the highest elevation within 25 kilometers on both sides of the route at plain areas and 600m higher than the highest elevation within 25 kilometers on both sides of the route in lofty mountains.

The air route from India to China could be divided into one at the north and another at the south. The north route: Dinjan—Putao—Yunlong—Yunnanyi—Kunming. The route range was 820 kilometers and the minimum safety altitude in the route was 4,572m. Sometimes, the route was changed somewhat due to weather conditions by starting the flight from Dinjan and ending at Kunming via Putao and Lijiang instead. The minimum safety altitude of this route then became 6,096m. The south route: Dinjan—Xinbeiyang—Myitkyina—Baoshan—Chuxiong—Kunming. The route range was 885 kilometers and the minimum safety altitude in the route was 4,267m. The south route was no longer in use after the occupation of Myitkyina, Burma by the Japanese troops on May 5, 1942. In order to reduce the density of aircraft flying on the route, the Americans opened up some other routes from India to China and extended the route to Kunming further to Chengdu and Chongqing.

The aviation personnel of China and US opened up the air route from Dinjan to Kunming cooperatively. This route started from the Assam State, India at west and extended eastwards

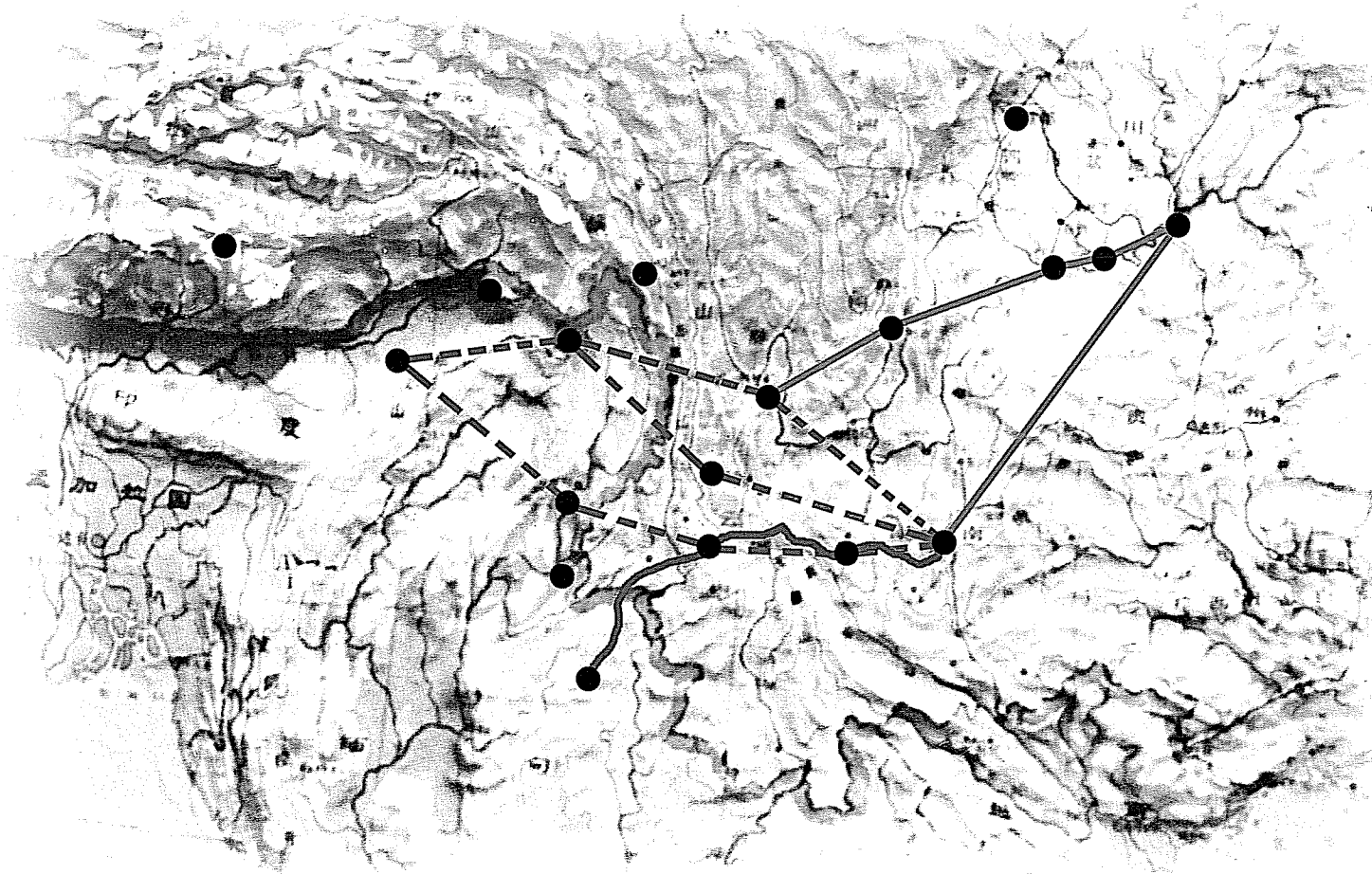
1941年底至1942年初,美国陆军航空队空运部队也曾在中、印边境设计安排一条6449千米长的空运航线。经初步勘察认为,这条航线距离太长,运输力量有限,未被采用。后来,美方又计划从印度的萨地亚经缅甸的密支那,到中国昆明。先将物资从印度的萨地亚空运到缅甸的密支那,然后改由公路运送至中国昆明。1942年初,中国政府代表宋子文会见美国总统罗斯福,提出从印度的萨地亚—中国昆明航线方案。后因日军占领缅甸,可供选择的就只有从印度的萨地亚到中国昆明的航线了。

为了保证飞机在飞行过程中不至与地面障碍物相撞,一般航线飞行时的安全高度:在平原地带应高出航线两侧各25千米以内最高标高400米;山岳地带应高出航线两侧各25千米以内最高标高600米。

从印度到中国的基本航线分为北线和南线。北线:汀江—葡萄—云龙—云南驿—昆明。航线距离820千米,航线最低安全高度4572米。有时因天气原因,从汀江经葡萄、丽江到昆明,航线最低安全高度6096米。南线:汀江—新背洋—密支那—保山—楚雄—昆明。航线距离885千米,航线最低安全高度4267米。1942年5月5日,日军占领缅甸的密支那,南线停止使用。为了减少航线上飞机密度,美军又开辟了从印度到中国的其它航线,并将至昆明的航线延伸到成都、重庆等地。



Symbol of China National Aviation Corporation.
中国航空公司的标志



- ① The Himalayas 喜马拉雅山脉
- ② Hengduan mountains 横断山脉
- ③ Dinjan 汀江
- ④ Myitkyina 密支那
- ⑤ Baoshan 保山
- ⑥ Chuxiong 楚雄
- ⑦ Kunming 昆明
- ⑧ Yunlong 云龙
- ⑨ Putao 葡萄
- ⑩ Sadiya 萨地亚
- ⑪ Lijiang 丽江
- ⑫ Xichang 西昌
- ⑬ Yibin 宜宾
- ⑭ Luzhou 泸州
- ⑮ Chongqing 重庆
- ⑯ Chengdu 成都
- ⑰ Bhamo 八莫
- ⑱ Lashio 腊戍

- The Hump Route 驼峰航线
- ~~~~~ Burma Road (959.4 kilometers long) 滇缅公路(长959.4千米)
- ▮ Schematic diagram of "Hump Route" "驼峰航线"示意图



A C-53 transporter of the China National Aviation Corporation flying along the Dinjan—Kunming Route.
中国航空公司的1架C-53运输机,在印度汀江—中国昆明的航线飞行。

ADVANCED EDITION ASSAM-BENGAL-CHINA AIR ROUTES

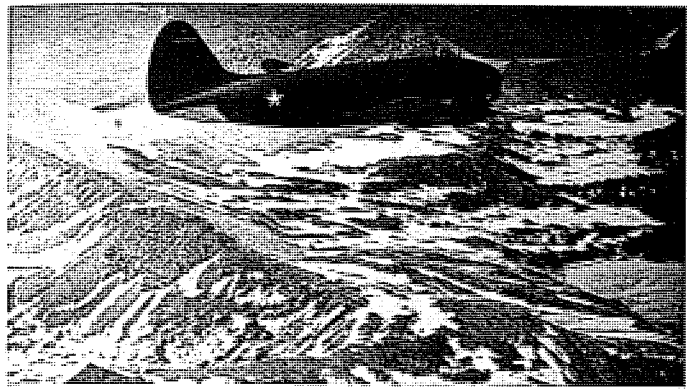
TO	ML	BEAR	MIN INSTANTLY	ROUTE	FROM	TO	ML	BEAR	MIN INSTANTLY	ROUTE	FROM	TO	ML	BEAR	MIN INSTANTLY	ROUTE
Indaingale	201	103°	10,000	N	Katha	Tamu	131	270°	7,000	O	Sadiya	Fl Hertz	116	109°	16,000	A
Ferry	195	84°	3,000	N	Kunming	Chih Hu Lake	57	189°	10,000	O	Sadiya	Tingkwak Sakan	140	152°	8,000	A
Katha	59	263°	5,000	O	Kunming	Lidang	54	91°	10,000	E	Sadiya	Tempur	200	246°	8,000	A
Moras	26	214°	500	E	Kunming	Yangkal	38	28°	9,000	M	Sabaw	Mangshih	126	118°	9,500	F
Chih Hu Lake	125	217°	10,000	O	Kunming	Kunming	24	09°	9,000	F	Shamsbernagar	Agarala	56	232°	2,000	N
Weining	94	17°	10,000	M	Kunming	Barrack-pore	150	240°	1,000	O	Shamsbernagar	Kurmitola	107	249°	1,000	O
Yangkal	45	253°	10,000	C	Lashio	Stamao	299	94°	9,000	N	Shingbiyang	Chaba	88	308°	10,000	C
Chanyi	125	37°	10,000	C	Lidang	Fl Hertz	178	280°	20,000	A	Shingbiyang	Dinjan	85	315°	10,000	C
Kunming	57	09°	10,000	N	Lidang	Hickang	147	61°	19,000	A	Shingbiyang	Jorhat	94	307°	10,000	C
Loping	121	64°	10,000	N	Loping	Chih Hu Lake	121	244°	10,000	O	Shingbiyang	Mohamari	129	271°	11,000	C
Lidang	85	48°	10,000	N	Loping	Weining	135	357°	10,000	M	Shingbiyang	Sookerating	73	377°	10,000	C
Mengsa	195	261°	12,500	O	Loping	Yangkal	84	293°	10,000	C	Sookerating	Sadiya	23	19°	1,000	E
Yangkal	92	20°	10,000	N	Lashio	Hickang	155	230	16,000	A-M	Srenao	Chih Hu Lake	142	47°	10,000	N
Indaingale	200	95°	10,000	N	Lashio	Hickang	45	356°	3,200	M	Tamu	Shamsbernagar	151	276°	9,000	O
Sadiya	34	50°	1,000	E	Lidang	Chih Hu Lake	85	228°	10,000	O	Tengchwan	Yunlung	46	261°	19,000	K
Indaingale	188	86°	11,000	N	Lidang	Loping	47	93°	10,000	E	Tempur	Camilla	58	118°	2,000	N
Lidang	178	100°	20,000	A	Lidang	Yangkal	43	314°	10,000	C	Tempur	Misamari	14	301°	8,000	A
Sadiya	116	289°	16,000	A	Lashio	Ipla	53	263°	3,000	K	Tempur	Sadiya	170	115°	13,200	E
Tingkwak Sakan	179	100°	11,000	E	Mangshih	Kunyang	270	86°	12,500	F	Tempur	Pashan	77	94°	10,500	E
Ipla	156	67°	20,000	A	Manipal Road	Sabaw	197	103°	13,000	F	Weining	Kunming	94	197°	10,000	M
Lidang	147	241°	19,000	A	Mengsa	Bhamo	154	285°	10,000	O	Weining	Chanyi	134	08°	10,000	M
Lashio	155	40°	16,000	A	Misamari	Manipal Road	99	255°	5,000	A	Weining	Ipla	124	214°	10,000	M
Ipla	122	161°	4,000	M	Misamari	Rupul	14	121°	2,000	A	Weining	Peishih	227	35°	11,000	R
Lashio	65	176°	3,200	A	Misamari	Tempur	15	197°	500	E	Yangkal	Chanyi	45	73°	10,000	M
Peishih	165	113°	6,500	R	Mohamari	Moras	25	197°	500	E	Yangkal	Chih Hu Lake	92	200°	10,000	M
Lashio	221	95°	9,000	N	Moras	Tingkwak Sakan	138	123°	10,000	E	Yangkal	Kunming	38	218°	10,000	M
Hickang	154	267°	20,000	A	Myitthina	Sabaw	36	255°	5,000	F	Yangkal	Weining	124	34°	10,000	M
Lashio	43	325°	3,200	M	Paoshan	Tempur	150	91°	12,000	E	Yangkal	Shingbiyang	157	90°	11,000	C
Lashio	53	83°	3,000	A	Paoshan	Yunyang	102	75°	11,000	E	Yangkal	Yunyang	205	286°	15,000	C
Tengchwan	343	235°	19,000	K	Peishih	Hulachang	165	293°	6,500	R	Yunyang	Ipla	337	46°	16,000	L
Weining	134	188°	10,000	M	Peishih	Weining	227	215°	11,000	R	Yunyang	Myitthina	210	269°	14,000	F
Golghat	17	226°	600	E	Rupul	Golghat	255	84°	5,000	E	Yunyang	Yunlung	92	290°	14,500	C
Tempur	88	269°	1,000	C	Rupul	Misamari	175	75°	5,000	A	Yunyang	Yunlung	92	290°	14,500	C

NOTICE

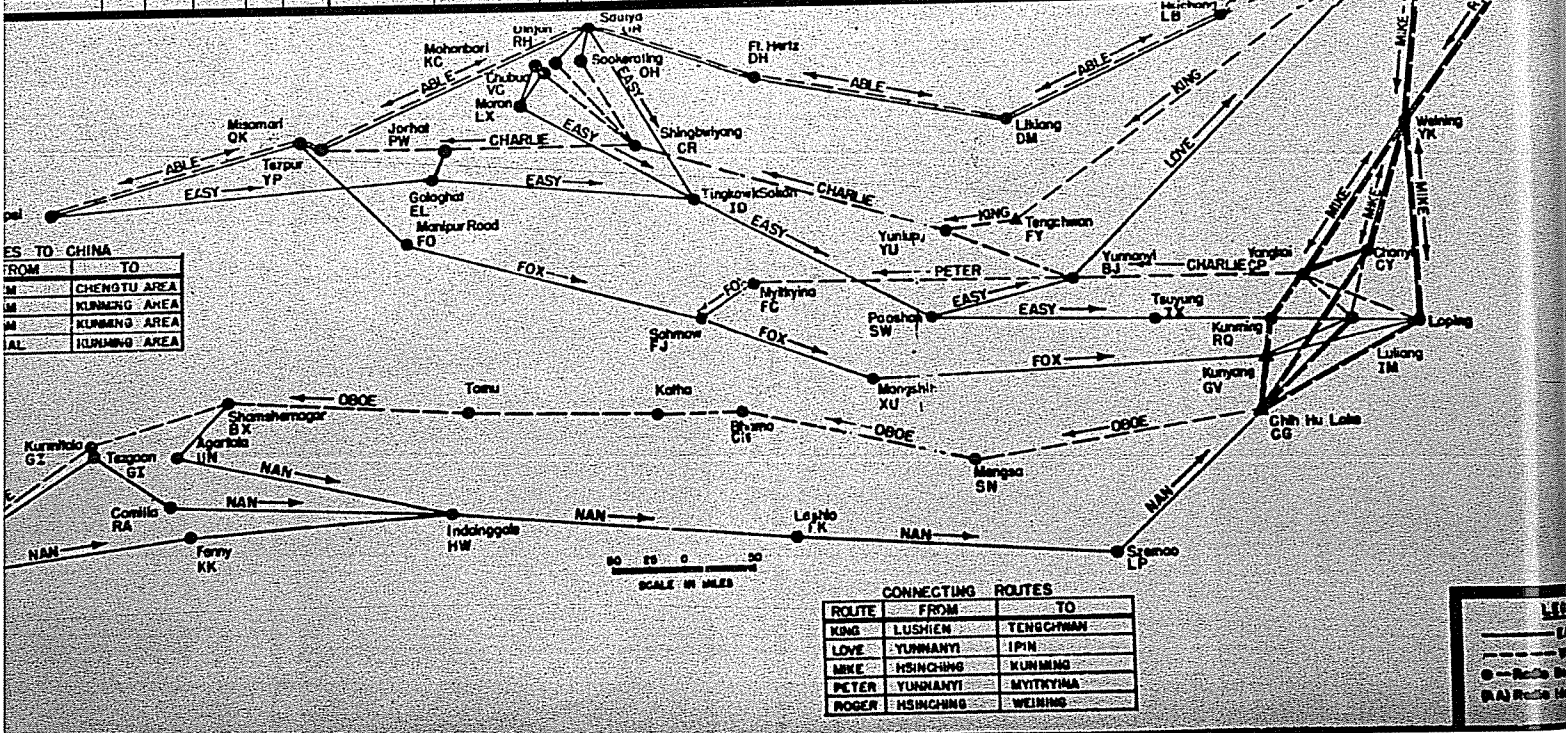
AIR TRAFFIC CONTROL has the authority to clear aircraft on any route or combination of routes. Pilots are charged with the responsibility of complying with route and altitude instructions implicitly.

ROUTES TO INDIA

ROUTE	FROM	TO
ABLE	CHENGDU AREA	ASSAM
CHARLE	KUNMING AREA	ASSAM
OBOE	KUNMING AREA	BENGAL



A C-46A transporter of the American Army Ferry Command flying along the "Hump Route".
一架在“驼峰航线”飞行的美国陆军空运队的C-46A运输机



CONNECTING ROUTES

ROUTE	FROM	TO
KUNG	LUSHIEN	TENGCHWAN
LOVE	YUNNANYI	IPIA
MINE	HSINCHANG	KUNMING
PETER	YUNNANYI	MYITTHINA
ROGER	HSINCHANG	WEINING

through the Himalayas, Gaoligong Mountain, Salween River, Nujiang to Yunnan Plateau and Sichuan surrounded with mountains. Due to the limitation of the aircraft performance of the time, the aircraft was impossible to fly above the 7,000m-high peak and could only fly through the indentations in between mountain peaks. The aircraft had to fly over the Himalayas and Hengduan mountains along the route. The high mountains and steep valleys stretching in an unbroken chain and rising and falling in the distance looked very like humps of camels. The route was thus named after it the "Hump Route". And the flight along this route was then called the "Hump Flight". The air transport activities carried out on this route were called the "Hump Air Transport".

中、美两国航空人员开辟了从印度汀江到中国昆明的航线。这条航线西起印度的阿萨姆邦，向东横跨喜马拉雅山、高黎贡山、萨尔温江、怒江直至中国云南高原和群山环绕的四川。当时因受飞机性能的限制，飞机不可能在超过7000米高度的山峰上飞行，只能在山峰之间低凹处穿行。这条航线因飞越高耸云端的喜马拉雅山脉和横断山脉，绵亘起伏的高山陡谷很像骆驼的“背峰”，故称为“驼峰航线”。在这条航线上飞行，则称为“驼峰飞行”。在这条航线执行空中运输任务活动，则称为“驼峰空运”。

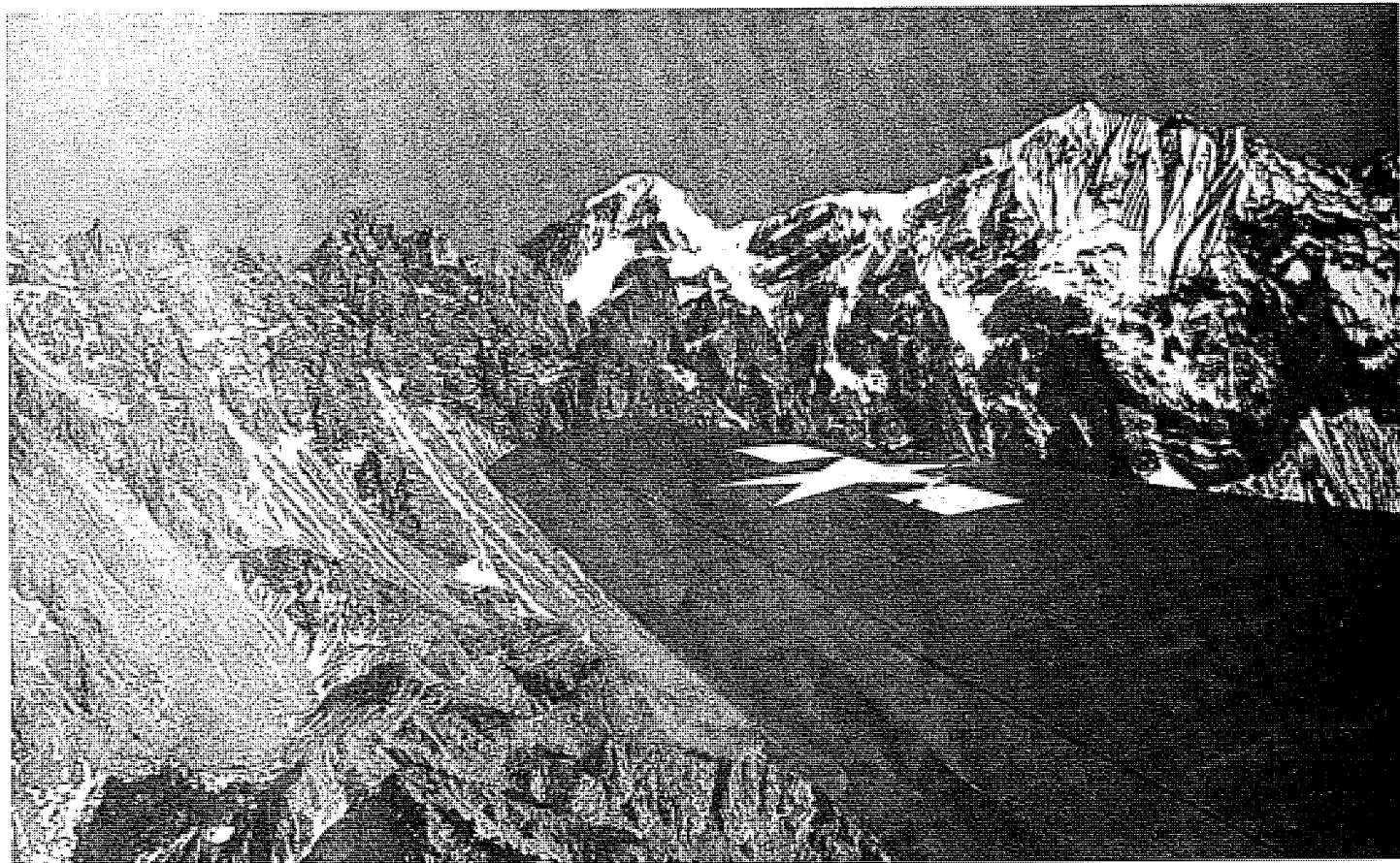
After the opening up of the Dinjan—Kunming Route, the Chinese Government by taking into consideration that the Japanese ground forces were close to the route and there was a possibility that the Japanese forces would attack on India to cut off the air passageway in between India and China after seizing Calcutta harbor prepared to transit when necessary the air passageway to the outside world westwards to Karachi. Therefore, it once instructed the Aviation Committee to survey another air route together with the China National Aviation Corporation.

印度汀江——中国昆明的航线开通后，中国政府考虑到日军地面部队接近这条航线，同时日军还可能进攻印度夺取加尔各答海港，从而切断印、空中通道，因此准备在必要时将对空中通道西移至卡拉奇，曾布置航空委员会与中国航空公司另行勘察一条航线。

On July 18, 1942, headed by Mao Bangchu, the General Commander and Luo Ji, the Chief of Staff of the Aviation Committee, Chen Wenkuan, pilot, Pan Guoding, copilot and Hua Zhu, radio operator from the China National Aviation Corporation performed a trial flight with a C-53 transporter of the Aviation Committee. They took off at Chongqing and landed at Deli, India after flying through Chengdu, Lanzhou, Suzhou (Jiuquan), Dihua (Urumqi), Yili (Yining), Shache (Kuche) and Peshawar. According to their plan, the route would be extended to Calcutta harbor when necessary as an alternate route. The Karakorum Mountains had to be flown over in the range from Shache to Peshawar. When the test aircraft flew into

1942年7月18日，由航空委员会总指挥毛帮初、参谋长罗机领队，中国航空公司的正驾驶员陈文宽、副驾驶潘国定和空中报务员华祝等，驾驶航空委员会的C-53运输机，从中国重庆起飞经成都、兰州、肃州（酒泉）、迪化（乌鲁木齐）、伊犁（伊宁）、莎车（库车）、白沙瓦，在印度德里降落，计划必要时将航线延长至印度卡拉奇港口，作为备用航线。航程中从莎车到白沙瓦段要飞越喀拉昆仑山，当试航机飞进明达盖山口后，此时飞机高度为4000~5000米，见到前面有云挡住了去路，山谷狭窄，不够飞机转弯半径，这时由陈文宽驾驶，潘国定积极配合，迅速放下起落架和15°襟翼，压45°坡度，利用飞机减速，缩小转弯半径，很快飞出了山口，保持能见飞行后，爬升到6000米，在后面的山谷中，或在云层上面、或在云层之间飞行，可以看到前面的山峰，顺利地越过喀拉昆仑山，随后看到地面的河流，飞越白沙瓦到达印度德里。7月22日，C-53运输机沿航线返回，8月1日抵达重庆。历时近半月，往返飞行6600千米，第一

Assam State, India—Bengal—China Air Route.
从印度阿萨姆邦——孟加拉——中国的航线

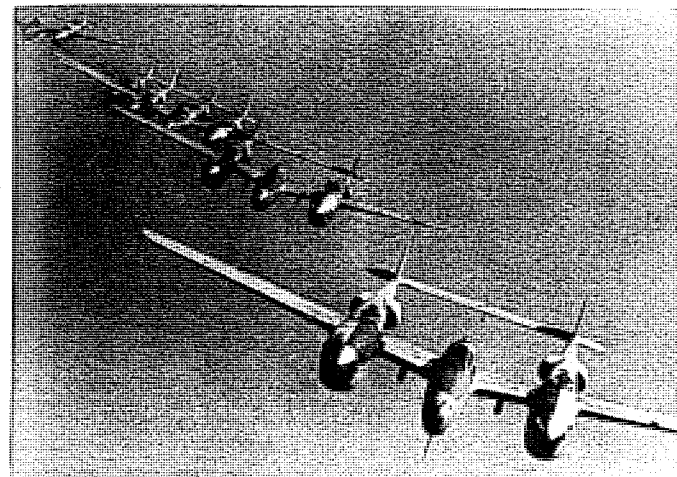


The "Hump Route" was one of the air transport routes of high flight altitude and with bad weather conditions and the most hardships and dangers in both the aviation history and military history of the world.

“驼峰航线”是航空史和军事史上飞行高度高、气候条件恶劣、最为艰险的空中运输航线。

the Mingdagai Valley, the flight altitude was 4,000—5,000m, and clouds were in front of the flight and the valleys were so narrow that they were less than the turning radius of the aircraft. Chen Wenkuan with the cooperation of Pan Guoding then deployed the landing gears and 150 flaps and flew the aircraft with 450 angle of bank. They reduced the turning radius of the aircraft with the help of the de-acceleration of the aircraft and flew out of the mountain pass in a short period of time. They climbed to the altitude of 6000m after the visual flight was resumed and in the later flight through valleys, they sometimes flew over clouds and sometimes through clouds. They could see the mountain peaks ahead and successively flew over the Karakorum Mountains. They finally arrived at Deli, India after flowing over Peshawar. On July 22, the C-53 transporter flew back to China along the same route and arrived at Chongqing on August 1. The first flight over the Himalayas took nearly half of a month, covering the range of 6600km in a round voyage. The trial flight was indeed very successful. In fact, about three weeks before, a US B-24 bomber took off at Karachi and flew northwards, planning to fly to Xinjiang, China after being over the Karakorum Mountains. However, they failed and had to fly homewards due to the clouds impeding the flight in the

次完成飞越喜马拉雅山脉的飞行。这次试航非常成功，三周前美军 1 架 B-24 轰炸机从卡拉奇向北飞行，准备飞越喀拉昆仑山到中国新疆，因山口有云阻挡而返航。由于这条航线比“驼峰航线”的距离多出十余倍，加之沿途荒凉，天气恶劣，地形复杂，导航、气象保障设施缺乏，当时日军企图攻占印度英帕尔地区，进而夺取加尔各答的计划被挫败等原因，这条航线一直是“备而未用”。



Newly-equipped P-38 fighters of American Army 14th Air Force flying from India to base in China on "Hump route".

美国陆军第十四航空队新装备的 P-38 战斗机，从印度经过“驼峰航线”飞往中国基地。

mountain pass. This route acted as an alternate route and never gave its play, because it was dozen times longer than the range of the "Hump Route", it was bleak and desolate on the way, the weather was vile and the terrain complicated and further the navigation and weather support facilities were insufficient. There was still another reason, that was the frustration of the plan of the Japanese troops attempting to attack at Imphal, India and seize Calcutta.

With the support of the National Government, the China National Aviation Corporation signed contracts with the logistic command of the American army stationing in the war zone of China, India and Burma in the light of the "Lend—Lease Act" to lease and buy in favorite prices aircraft, materials and fuel. They carried out together the American Army 10th Air Force (later called American Army Transport Command, India—China Wing (ATC ICW) the task of transporting by air the war materials from Dinjan in Assam State of India to Kunming in Yunnan of China. In addition, the China National Aviation Corporation opened up another two air routes over the "Hump", i.e. the route from Dinjan to Xufu (Yibin) and the route from Dinjan to Luzhou. These two air routes were opened up mainly for the purpose of minimizing the difficulties in ground transportation of the war materials and saving time. No flight was carried out on the two routes soon after the end of the Second World War. The US forces opened up a special route from India to China for B-29 long-distance bomber, B-24 heavy Bomber, B-25 bomber, P-38 fighter and P-51 fighter.



B-29 long-distance bombers of 20th Bomber Team of American Army Air Force flying from India to advanced base in China on "Hump Route".

美国陆军航空队第 20 轰炸机联队的 B-29 远程轰炸机，从印度经过“驼峰航线”飞往中国前进基地。