

## A Study on Minimum Cabin Crew Requirements for Korean Low Cost Air Carriers

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## I . Introduction

We are living in an era that space development and utilization is closely monitored.<sup>1)</sup> And air transport has become the principal means of transporting passengers over long distances.<sup>2)</sup> The focus has been more on flight crew members shading the presence of cabin crew members who are usually named stewards/stewardesses, flight attendants or more recently cabin crew, and they are perceived by general public as service personnel in the airplane cabin dedicated to the comfort of passengers aboard. As a matter of fact, their primary role is for the safety of occupants including the safe and rapid evacuation in emergency situations. They are aviation safety professionals equipped with cabin safety expertise for diverse emergency situations in-flight.

In order to ensure the air passengers' safety, countless efforts have been brought in incident and accident prevention such as "safety management" implementation as proactive approaches to eliminate safety risks in advance.<sup>3)</sup> Also incident and accident investigations are carried out in a systemic and scientific manner whenever they occur for the prevention of similar kind of events in the future.

In spite of these safety activities, aircraft accidents do break out, and at that moment, passengers' survivability comes to depend on the competence of cabin crew members' safety performance. This aspect requires cabin crew members(herein after referred to as cabin crew) to be ready all the time responding any emergency cases, to be in mentally and physically good and fit conditions for clear situational awareness and most appropriate decision makings.

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1) Takai, S., Military Uses of Outer Space and the Right of Self-defense, The Korean Journal of Air and Space Law, Special Edition, 2010, p.106.

2) Lee, K.B, A Study on the Liability of the Carrier by Air under Montreal Convention and National Legislations, The Korean Journal of Air and Space Law, Special Edition, 2010, p.184.

3) Yoo, K.I., A Study on Legal and Institutional Improvement Measures for the Effective Implementation of SMS: Focusing on Aircraft Accident Investigation, The Korean Journal of Air and Space Law, Vol 32, No.2, 2017, p.102.

In case of full service air carriers, they are not bound by the minimum number of cabin crew for carrying out various kinds of in-flight passenger services, and so forth while only the minimum cabin crew are on board for low cost air carriers. This can easily be an issue when any of cabin crew on board falls sick or incapacitated, cabin safety cannot be ensured, merely hoping for the best that no irregular incidents will be encountered. This states that the bases and grounds set forth for the establishment of the number of minimum cabin crew should be reviewed and a new safety measure should be developed, reflecting the characteristics of cabin crew job on board in terms of service, safety, first aid and security aspects.

Addressing the above, this paper studies into the legal grounds prescribed in pertinent international Standards and Recommended Practices like Annex 6 to the Convention on International Civil Aviation along with the Best Practices described in ICAO Doc 10072, Manual on the Establishment of Minimum Cabin Crew Requirements. Korea Aviation Safety Act and Flight Safety Regulations have been also reviewed.

As a result, it is proposed that more than one cabin crew should be added on the international flights in order for cabin crew to perform safety roles without threats posed by such as insufficient cabin crew complement, ensuring the safety of passengers and crew. Thereby, it is expected that this will eventually contribute to the improvement of aviation safety nationally and worldwide.

## II. Cabin Crew' Roles on Board

### 1. Safety Professional Role

In accordance with Korea Aviation Act, Article 2, Number 17, the definition of cabin crew is a person who boards an aircraft and performs duties for the safety of passengers, such as emergency aircraft evacuation.<sup>4)</sup> Annex 6 to the Convention

on International Civil Aviation, states that the definition of cabin crew is a crew member who performs, in the interest of safety of passengers, duties assigned by the operator or the pilot-in-command of the aircraft, but who shall not act as a flight crew member.<sup>5)</sup> This well means that the primary role of cabin crew on board is to act as safety professional. Traditionally, the role of cabin crew members focused on the evacuation of an aircraft in the event of an accident. However, cabin crew members also play an important proactive role in managing safety, which can contribute to the prevention of incidents and accidents. Training is necessary to prepare cabin crew members to conduct their safety related duties and responsibilities during normal day-to-day flights and essential to enable them to recognize and act on any abnormal or emergency situation.<sup>6)</sup>

When a person is to be employed by an air carrier as a cabin crew, initially he/she should be met with the minimum qualifications recommended by ICAO as the following or qualification standards determined by corresponding air carrier usually above the ICAO recommendations:

- a) a minimum age requirement (at least 18 years old);
- b) high school diploma or an equivalent diploma (10 years of schooling or more);
- c) the ability to read, speak, write and understand a designated common language to ensure appropriate communication with both crew members and passengers;
- d) the ability to retrieve safety and emergency equipment and open and close overhead bins on the aircraft, from a standing position;
- e) the ability and strength to operate equipment/systems, as applicable to the operator's procedures during normal, abnormal and emergency situations and to the aircraft type(s) to which the cabin crew member will be assigned duties;

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4) Korea Aviation Act, 12. 26, 2017.

5) ICAO, Annex 6 to the Convention on International Civil Aviation, Part I—International Commercial Air Transport-Aeroplane, 10/11/2016, p.1-2.

6) ICAO Doc.10002, Cabin Crew Safety Training Manual, 2014, p.8.

- f) clear of a criminal record/pass a security background check; and
- g) meet any other requirements, as defined by the State of the operator or the operator itself (e.g. pass a swim test, undergo a medical assessment).<sup>7)</sup>

With the qualification as above, they should be trained for the safety personnel roles to be performed in the cabin as below, though not limited to:

1. Routine safety duties;
2. In-flight fire;
3. Turbulence;
4. Cabin decompression;
5. Emergency landing;
6. Emergency ditching;
7. Crew resource management;
8. Cabin security;
9. First aid.<sup>8)</sup>

On January 15, 2009, about 15:27 eastern standard time, US Airways flight 1549, an Airbus A320-214 experienced an almost complete loss of thrust in both engines after encountering a flock of birds and was subsequently ditched on the Hudson River about 8.5 miles from LaGuardia Airport (LGA), New York City, New York. The flight was en route to Charlotte Douglas International Airport, Charlotte, North Carolina, and had departed LGA about 2 minutes before the in-flight event occurred. The 150 passengers, including a lap-held child, and 5 crew members evacuated the airplane via the forward and over wing exits. One cabin crew and four passengers were seriously injured, and the airplane was substantially damaged. Contributing to the survivability of the accident was the decision-making of the cabin crew members and their crew resource management during the accident sequence.<sup>9)</sup>

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7) Ibid, p.11.

8) Korea Flight Safety Regulations for Aeroplanes, 11.18, 2016, p.88

## 2. Security Professional Role

Korea Aviation Security Act, Article 23 (Obligations of Passengers to Cooperate) states that no passenger on board shall engage in any of the following acts to ensure the safe flight of an airplane and travel of passengers:

1. Making a noise, such as abusive languages, loud singing;
2. Smoking (excluding smoking in a smoking zone);
3. Doing harm to other persons after drinking alcohol or taking drugs;
4. Causing sexual humiliation to others;
5. Using electronic equipment, in violation of Article 73 of the Aviation Safety Act;
6. Attempting to enter the cockpit without the captain's consent;
7. Obstructing the duties of the captain, etc. by fraudulent means or by force.<sup>10)</sup>

In case any passenger violates the prescription as the above and the below described, in accordance with Article 22(Authority of Captain, etc.), cabin crew may take measures necessary to discourage any person who intends to conduct any of the following acts from doing such act:

1. Causing damage to the security of an airplane;
2. Causing harm to life or damage to property;
3. Disturbing order in an airplane, or violating regulations on the airplane.<sup>11)</sup>

An “unruly” passenger was removed from a Southwest Airlines flight travelling

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9) NISB, Loss of Thrust in Both Engines After Encountering a Flock of Birds and Subsequent Ditching on the Hudson River, US Airways Flight 1549, Airbus A320-214, N106US, Weehawken, New Jersey, January 15, 2009, p. xv

10) Korea Aviation Safety Act, Article 23, March 29, 2016

11) Korean Aviation Safety Act, Article 22, April 5, 2013.

from Chicago to Houston after yelling a racial slur at a cabin crew. Witnesses say the woman grew upset after the cabin crew asked her to put up her tray table before takeoff. A passenger refused to comply with the cabin crew's instructions after boarding and before the flight departed Chicago. The passenger became unruly and verbally abusive toward the cabin crew. A video recorded by another passenger on the plane shows the woman, shouting and yelling a racial slur at the cabin crew after growing enraged. The decision was made to return to the gate to deplane the passenger, where she was met by local law enforcement officer. It was noted that the cabin crew handled the situation professionally.<sup>12)</sup>

### 3. First Aider Role

Korean Aviation Act, Enforcement Regulations, Article 218(Crew, etc on Board) prescribes in Paragraph 6, Number 2 that cabin crew shall be trained for First Aid Kit/Universal Precaution Kit/Emergency Medical Kit contents and using methods.<sup>13)</sup> Passengers do fall sick from air sickness to even giving birth in an extreme case in a different environment of air for numerous reasons and cabin crew are supposed to treat them as soon as possible in most appropriate manner as trained.

The cabin crew aboard a recent Turkish Airlines flight helped successfully deliver one pregnant passenger's newborn daughter. The Boeing 737 had already taken off from Guinea's capital Conakry to Istanbul, when the woman (who was 28-weeks pregnant) began experiencing labor pains. That's when a team of cabin crew and fellow passengers stepped in to assist the mother-to-be in welcoming the little girl.<sup>14)</sup>

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12) Cydney Henderson, Traveller, Southwest Airlines removes 'unruly' passenger for yelling N-word at cabin crew, Oct 3, 2018:<http://www.traveller.com.au/southwest-airlines-removes-unruly-passenger-for-at-flight-attendant-h165ni>.

13) Korea aviation Act, Enforcement Regulations, Article 218, 11. 22, 2018.

14) Mckenna Aiello, E-News, Woman Gives Birth Mid-Flight, and This Cabin Crew Helped Deliver the Baby Like Total Bosses, April 9, 2017: <https://www.eonline.com/news/8423>

#### 4. Customer Service Professional Role

Cabin crew provide services such as offering food and beverages, assisting with special needs and providing for the comfort of passengers. It is also important to possess the ability to listen to what customers are saying, anticipate their needs and pro-actively handle various situations. Their working conditions are peculiar as they work in limited time constraint, limited space, and sometimes in turbulent air. To ensure that their in-flight service is attentive and prompt, some air carriers have established performance standards for the cabin crew and evaluate crews based on these standards. The standards typically are deadlines that specify a time by which a specific activity must be completed. Their performance is being evaluated. cabin crew who fail to meet the performance standards might receive a letter of reprimand, have disciplinary hearings, or in cases of repeated failures to meet the standards, lose their jobs.<sup>15)</sup>

#### 5. Cabin Crew Duties by Flight Phase

Cabin crew should carry out least what is described in the below sub-paragraphs<sup>16)</sup>:

##### 1) During passenger boarding

- Greet passengers;
- Assist passengers with seat assignments;
- Offer assistance with special needs passengers;
- Individually brief passengers with special needs;
- Ensure child restraints are properly located and configured: check with the

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73/woman-gives-birth -mid-flight-and -this-cabin-crew-helped-deliver-the-baby-like-total-bosses.

15) Diane L. Damos et al, The International Journal of Aviation Psychology, April, 2013: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3646309/>

16) GAIN, Cabin Safety Compendium, December 2001, p.2-2.



parent/guardian to ensure that requirements have been met;

- Check ID and brief jump seat riders as necessary;
- Ensure seat assignments are in compliance with exit seat criteria.

## **2) During Taxying<sup>17)</sup>**

- Following the closure of all doors and prior to first movement of the aircraft, the cabin crew should ensure doors are prepared for departure (slide mode to armed: slide can be deployed and inflated when an emergency evacuation is required).
- Passenger safety briefing should be completed before take-off that is a legal requirement:
  - Importance of following crew member instructions;
  - Restrictions of the use of electronic devices;
  - Smoking restrictions;
  - Fastening seat belts;
  - Ensuring passenger seat backs in the upright position;
  - Stowing tray tables;
  - Opening window blinds fully open;
  - Location of emergency exits;
  - Guiding passenger briefing cards;
  - Use of life vest;
  - Use of drop-down oxygen masks.

## **3) Preparation Prior to Take-off<sup>18)</sup>**

Cabin crew should check in the galleys and passenger cabin:

- Cabin baggage should be stowed in approved locations;
- Overhead lockers should be closed;

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17) Ministry of Land, Infrastructure and Transportation, Korean Flight Safety Regulations for Fixed wings, Paragraph 8.1.12.4 Required Passenger Briefings, November 18, 2016, p.8-65.

18) GAIN, Cabin Safety Compendium, December 2001, p.2-12.

- Safety instructions should be carried out;
- Galley and cabin curtains should be open and securely latched;
- Galley electrical systems should be “off”;
- Trolleys and ovens should be secured and latched;
- Loose objects and equipment should be stowed;
- Passengers should have seat belts fastened and seat backs secured in the upright position;
- Electronic devices should be turned off and stowed;
- Infants should either be held on an adult lap or secured in an approved Child Restraint System device;
- Cabin lights should be adjusted for departure to match outside ambient light conditions acclimate crew and passengers’ eyes to outside conditions;
- Exits should not be blocked;
- Lavatories should be vacant with the doors closed.

#### **4) Preparation for Landing and after landing<sup>19)</sup>**

The preparation for landing is same as for take-off preparation. And in the announcement made after landing, the cabin crew can give information regarding to the airport, connections, terminals and smoking lounges in the airport. Once landed, as soon as the last passengers leave the airplane, the cabin crew will check again the security process to make sure that nobody forgot any luggage in the airplane, intentional or not, and the compartments in the galley will be sealed if the plane landed on base or if it will be another cabin crew to meet on board.

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19) Anca Dumitrescu, The responsibilities of Cabin Crew, before and after each flight, December, 2018.

### III. Korean Low Cost Air Carriers and Cabin Crew Members

#### 1. Korean Low Cost Air Carriers' Status

Presently Korea is home to six low-cost passenger carriers: Air Busan, Jin Air, Eastar Jet, Jeju Air, T'way and Air Seoul with the exception of two small air transportation operators with 50 passenger seats like Air Philip and Air Pohang while some three or four potential airliners are queueing in line for the air carrier's license. The popularity of Low Cost Carriers(hereinafter referred to as LCC) has been growing rapidly since 2010, and LCCs made up just 41.4 percent domestic flights in 2011, that rate grew to 56.8 percent in 2016. For international flights, the share grew from 4.3 percent in 2011 to 19.6 percent in 2016 after LCCs began establishing routes to short-haul international destinations like Japan, China and Hawaii, etc. As LCCs expand, the competition over prices and service has gotten fiercer, and there are now concerns about the sector's sustainability as more airlines crowd into an already packed market.<sup>20)</sup>

Korea's LCC sector ended 2016 with 103 aircraft: the first time the collective fleet had crossed the 100 mark for what, until recently, was Northeast Asia's most dynamic market. with Jeju Air regaining a strong lead as the largest LCC. Half of Korea's LCC fleet has been added in the last three years. It is Northeast Asia's largest LCC market after China and, surprisingly, well ahead of Japan.<sup>21)</sup>

The cabin crew on LCCs are now in the circumstances to cope with this aggressive survival competition in terms of passenger service, and their fatigue linked to the safety duty performance has increased. LCCs are considered less likely to provide in-flight passenger services than Full Service Carriers, and

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20) Kim, J.H., Low-cost carriers start a race to the bottom, Korea Joong Ang Daily, July 14, 2017: <http://koreajoongangdaily.joins.com/news/article/article.aspx?aid=3035845>.

21) Capa, Korean LCCs: fleet surpasses 100 aircraft but market faces growth constraints; China the latest, Jan.17: <https://centreforaviation.com/analysis/reports/korean-lccs-fleet-surpasses-100-aircraft-but-market-faces-growth-constraints-china-the-latest-321809>.

service procedures are also thought to be simple. However, in the case of international routes, LCCs offer a variety of entertainment services performed by cabin crew themselves like games, magic, balloon art, musical instruments playing, etc. together with free/paying material services due to intense marketing competition among air carriers. Cabin crew carry out services such as free/paying beverages, meals, and duty free sales when the aircraft is cruising.<sup>22)</sup>

## 2. Number of Cabin Crew on Board of LCCs

Canada uses a 1 cabin crew member to 40 passengers on board ratio as a basis. However, Transport Canada Civil Aviation (TCCA) permits operations with the use on the 1:50 model, if the operator meets a series of criteria to the satisfaction of the competent authority. Australia requires 1 cabin crew member to 36 passengers on board.<sup>23)</sup>

In Korea's case, it is prescribed in Korean Safety Aviation Act, Enforcement Regulations Article 218(Crew, etc. on Board), Paragraph 1, Number 2 as in the following table:<sup>24)</sup>

〈Table 1〉 Minimum Number of Cabin Crew Required on Board

Installed Seats	Number of Cabin Crew Required
Above 20 seats Below 50 seats	1 Cabin Crew
Above 51 seats Below 100 seats	2 Cabin Crew
Above 101 seats Below 150 seats	3 Cabin Crew
Above 151 seats Below 200 seats	4 Cabin Crew
Above 201 seats	5 Cabin Crew, and add 1 Cabin Crew when adding 50 seats

22) [www.airbusan.com](http://www.airbusan.com), [www.jejuair.net](http://www.jejuair.net), [www.jinair.com](http://www.jinair.com), [www.flyairseoul.com](http://www.flyairseoul.com), [www.eastarjet.com](http://www.eastarjet.com), [www.twair.com](http://www.twair.com).

23) ICAO, Doc 10072 First Edition, Manual on the Establishment of Minimum Cabin Crew Requirements, July, 2017, p.3-2.

24) Korea aviation Act, Article 218, Enforcement Regulations, 11. 22, 2018.

LCCs carry only the minimum number of crew on board, and at times only 3 cabin crew members as passenger seats are less than 150 seats while there are 4 floor level doors for emergency evacuation. Due to the minimum cabin crew complement, cabin crew are responsible for opening two emergency exits for an evacuation when they are assigned to handle those particular doors while they are not practiced opening two exits with passengers on during their emergency procedure training.<sup>25)</sup> And there was a case on a LCC's international flight that a cabin crew fell sick in-flight and all the passengers had to be transferred to other airlines in a peak season<sup>26)</sup>, as the minimum cabin crew complement requirement was not met, and it was a dire hard thing to be handled by ground crew and for passengers heading home. The present minimum cabin crew complement requirement can be a serious threat to cabin safety and passenger service.

## IV. Minimum Cabin Crew Requirements

### 1. International Standards and Practices

A new manual on the Minimum Cabin Crew Requirement(Doc 10072) was published by ICAO's International Cabin Safety Group. It is stated in the manual that cabin crew play a key role regarding passenger and operational safety. The number of cabin crew on board, and their performance, are crucial in the successful evacuation of aircraft. Therefore, a minimum number of cabin crew members are required to effectively conduct an expeditious evacuation and increase the survivability of passengers during an accident in view of the below considerations.<sup>27)</sup>

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25) Ibid, p.3-App B-1.

26) Yoo, K.I., Cabin Incident Report, August, 2010.

〈Table 2〉 Major Consideration for Minimum Cabin Crew Numbers  
(Doc. 10072)<sup>28)</sup>

Paragraphs	Contents
5.3	in-flight crew rest
5.4	aircraft/cabin consideration
5.5	special categories of passengers on board
5.6	cabin crew incapacitation

As an international standard, Annex 6 to the Convention on Civil Aviation Organization states that the operator shall establish, to the satisfaction of the State of the Operator, the minimum number of cabin crew required for each type of aeroplane, based on seating capacity or the number of passengers carried, in order to effect a safe and expeditious evacuation of the aeroplane, and the necessary functions to be performed in an emergency or a situation requiring emergency evacuation. The operator shall assign these functions for each type of aeroplane.<sup>29)</sup>

The base is seating capacity or the number of passengers in determining the number of minimum cabin crew to be on board, though it mentions that the purpose is for carrying out the effective evacuation in an emergency. ICAO Doc 10072 also mentions that any task that flight or cabin crew are required by the operator to perform, including, for example, flight duty, administrative work, training, positioning and standby is likely to induce fatigue. The critical items into consideration for the establishment of the minimum cabin crew complement as in table 2 is not included in Annex 6 base.

27) ICAO Doc 10072 First Edition, Manual on the Establishment of Minimum Cabin Crew Requirements, July, 2017, p.II.

28) Ibid, p.viii.

29) ICAO, Annex 6 to the Convention on International Civil Aviation, Part I—International Commercial Air Transport-Aeroplane, 10/11/2016, p.12-1.

## 2. Necessity for Cabin Crew Fatigue to be Taken into Consideration

It is not mentioned in Annex 6 what the cabin crew fatigue will lead to in context with the establishment of minimum cabin crew requirement. The term “fatigue” has been criticized as a vague multidimensional construct that can be interpreted in a variety of ways, the term is now widely used, and in general is understood to reflect the underlying sleepiness/tiredness that results from extended wakefulness, insufficient sleep, and circadian desynchrony.<sup>30)</sup> Performance, alertness, and well-being of personnel working in the aviation industry, including cabin crew are significantly influenced by the presence of circadian rhythms in physiological and psychological processes. These influences reflect 1) the body’s circadian timing system or the body’s internal clock, and 2) the homeostatic mechanism or recent sleep history, which includes the amount of time since the last sleep period and the amount of prior sleep.<sup>31)</sup>

There is no cabin crew fatigue data or reference available domestically at the present time. Taking reference from USA, FAA, there are anecdotal reports indicating that the workload for cabin crew has increased. For example, prior to 9/11 passenger disruption was reported to be the number one complaint submitted by cabin crew to the Aviation Safety Reporting System. According to that study, one-fourth of passenger disruptions resulted in a cockpit crew-member leaving the cockpit to help resolve the situation. Since recent security regulations require cockpit crews to secure and remain in the cockpit, the cabin crew have to deal with problem passengers without help from the cockpit crew. It can also be presumed that at a minimum security duties would include closer inspection of passengers as they board, greater vigilance and monitoring of passenger behavior during flight. These days cabin crew are showing more concern for and attention

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30) Akerstedt, T., Knutsson, A., Westerholm, P., Theorell, T., Alfredsson, L., & Kecklund, G. Mental fatigue, work, and sleep. *Journal of Psychosomatic Research*, 57, 2004, p.p.427-433.

31) Caldwell, J.A, Fatigue in aviation. *Travel Medicine and Infectious Disease*, 3(2), 2005, p.p. 85-96.

to meeting passenger needs, since there is a tendency that passengers are arriving at the aircraft more harried and annoyed than previously, and the cabin crew appear to be trying to compensate. Although helpful to the passengers, this added attention places additional workload on the cabin crew.<sup>32)</sup>The below is one example of cabin crew fatigue related reports of the NASA's Aviation Safety Reporting System:

- cabin crew advises that routine assignment of maximum duty days coupled with minimum rest periods results in unacceptable deterioration in performance of safety related duties. Cabin crew did not feel safe with layover minimum guidelines of eight hours coupled with 10-14 hours on duty. Further, she reported previously falling asleep on her jump seat during taxi in and out of gates. "I forget the easiest tasks, including arming my doors for takeoff and giving safety briefings to passengers on an exit row." The cabin crew reported being too fatigued to look for suspicious behavior as required for security.

To truly address the fatigue issue, regulations must be combined with sound and realistic operational practices and supplemented, as needed, by personal strategies. Air travel will always require flexibility in operations in order to adjust to unusual and/or non-routine circumstances. From the standpoint of cabin crew fitness and wellbeing, consideration needs to be given to the establishment of work/rest practices that take into account the occurrence of unusual circumstances.<sup>33)</sup>

### 3. The Effect of Minimum Cabin Crew in an Emergency Evacuation

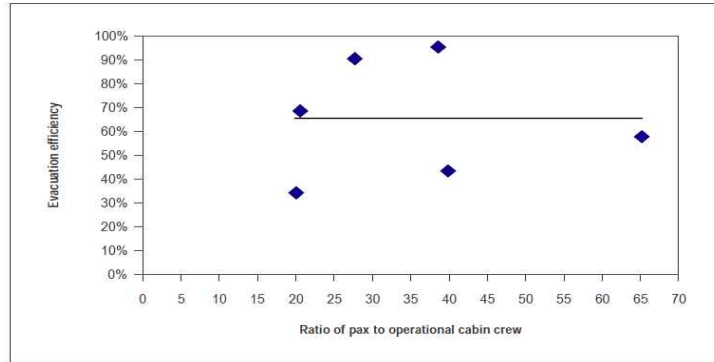
A strong relationship was reported between the number of operational cabin crew and the evacuation efficiency as shown in fig.1 & 2.<sup>34)</sup>

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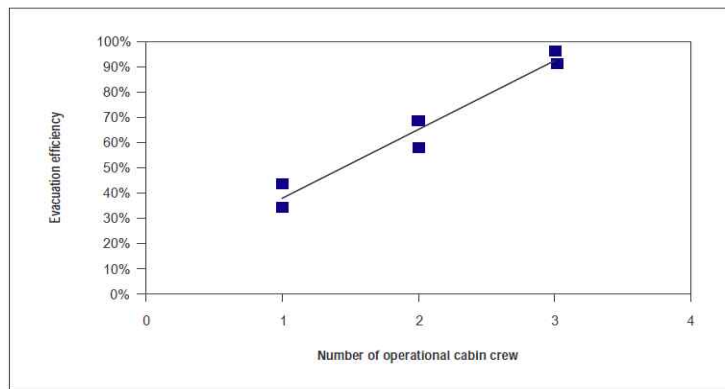
32) FAA, DOT/FAA/AM-07/21, Office of Aerospace Medicine Washington, DC 20591, 2007, P.5.

33) Ibid, p.vi.





〈Figure 1〉 Ratio of Passenger to Operational Cabin Crew



〈Figure 2〉 Number of Operational Cabin Crew

The operator should consider the impact of a reduction in the number of cabin crew members on the accomplishment of duties and responsibilities in normal, abnormal and emergency situations. A reduction in the number of cabin crew members may result in several consequences which should be assessed, such as:

- a) unstaffed exits;
- b) limited opportunity for crew rest and increased crew fatigue;

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34) ICAO, Doc 10072 First Edition, Manual on the Establishment of Minimum Cabin Crew Requirements, July, 2017, p.3-App B-8.

- c) increased cabin crew workload during normal operations;
- d) increased cabin crew workload during abnormal or emergency situations (e.g. in-flight medical event, fire/smoke, or security threat);
- e) reduced situational awareness/reduced awareness of the cabin environment;
- f) increased time needed during an evacuation.<sup>35)</sup>

## V. Conclusions

Korean low cost carriers are expanding in an enormous speed, now we have 6 of them apart from 2 small air transportation business carriers while about 3 more new low cost carriers wanting to be are queueing in the line. The most concerned part is of aviation safety. We have been taking numerous accident preventive measures such as SMS and other most intelligent approaches one can come up with. Still aircraft accidents do happen domestically and worldwide. Once an accident breaks out, passengers' survivability comes to depend on the cabin crew's competent safety related performance.

At the moment, only a minimum number of cabin crew is required on board: 1 cabin crew for 50 passenger seats, and all low cost carriers religiously adhered to that. And it is evident that the cabin crew's workload on low cost carriers has increased to the expansion of LCCs in the fiercely competitive airline business world. This is directly linked to their fatigue that can impact on their safety duty performance while they are required to be in mentally and physically fit condition.

Hereby, it is suggested that the pertinent prescription in Annex 6 to the Convention on International Civil Aviation need to be amended as the following:

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35) Ibid, p.6-3.

(Present) 12.1 ASSIGNMENT OF EMERGENCY DUTIES

The operator shall establish, to the satisfaction of the State of the Operator, the minimum number of cabin crew required for each type of aeroplane, based on seating capacity or the number of passengers carried, in order to effect a safe and expeditious evacuation of the aeroplane, and the necessary functions to be performed in an emergency or a situation requiring emergency evacuation. The operator shall assign these functions for each type of aeroplane.

(Proposal) 12.1 ASSIGNMENT OF EMERGENCY DUTIES

The operator shall establish, to the satisfaction of the State of the Operator, the minimum number of cabin crew required for each type of aeroplane, based on seating capacity or the number of passengers carried, in order to effect a safe and expeditious evacuation of the aeroplane, and the necessary functions to be performed in an emergency or a situation requiring emergency evacuation. The operator shall assign these functions for each type of aeroplane. **The cabin crew members' workload linked to their fatigue and floor level emergency exit seating should be taken into consideration.**

Also domestically the LCC operators need to review the cabin crew workload on international flights for the purpose of enhancing the cabin safety. And the civil aviation regulatory bodies need to review the cabin crew fatigue on LCCs, especially when all the floor level exits cannot be cross checked and manned for take off and landing.

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## 초 록

최근 3년간 우리나라의 저비용항공사는 총 6개사(소형항공운송업 항공사 포함 8개사)로서 국내시장 점유 뿐 아니라 일본, 중국, 동남아 및 미국령까지 그 영역을 확대하고 있다. 현재에도 약 3개 항공사가 저비용항공사로 출범하고자 항공운송사업증명을 신청한 상태에서 이 확장세는 지속될 전망이다. 이러한 국내 및 외국의 저비용항공사의 공격적인 항공사 운영 실태에 대응하며 경쟁력을 제고하고자 각 저비용항공사는 객실서비스 증진에 많은 전략을 강구하고 있다. 따라서 객실승무원의 업무량이 확장세에 비례하여 증가되어 안전업무 수행 능력과 직결되는 피로를 가중시키고 있다.

우리나라는 승객 좌석 50석 당 최소 1인의 객실승무원이 탑승하도록 항공안전법 시행규칙에 규정하고 있으며, 이를 기반으로 모든 저비용항공사에는 최소 객실승무원만 탑승하고 있다. 때로는 객실승무원의 주 업무인 비상 시 비상탈출에 필요한 비상구(창문형 비상구 제외)에 착석이 불가능하게 되어 비상 시 승객의 혼란을 야기할 수밖에 없는 상황에 처해 있다.

또한 최소 객실승무원 중 1인이 부상 등으로 업무수행 불능상태가 되면 비상탈출 업무를 수행하는데 큰 장애요인으로 작용하게 되고, 정상상황에서도 최소 객실승무원의 성원을 이룰 수 없으므로 위규가 되어, 모든 승객이 다른 가용한 항공사 비행편으로 이동할 수밖에 없는 불편을 초래하게 된다.

국제민간항공협약 부속서 6에는 최소 객실승무원의 수를 정할 때 안전하고 신속한 비상탈출을 위하여 승객좌석 수 또는 탑승 승객 수만을 기반으로 정하도록 국제표준으로 규정하고 있다. 객실안전의 강화 및 승객의 편의를 위하여 객실승무원의 다양한 업무특성(서비스, 안전, 보안, 응급처치)에서 발생할 수 있는 피로 및 비상구 착석(창문형 비상구 제외)을 최소 객실승무원 수 산정에 고려할 필요가 있다. 정부의 항공사 관리·감독 차원에서도 저비용항공사 객실승무원의 업무량에 기인한 피로, 비상구 착석불가 상황 등을 검토하여 최소 객실승무원 수 규정에 반영함으로써 승객과 승무원의 객실안전을 강화할 필요가 있다고 사료된다.

**주제어** : 최소 객실승무원, 저비용항공사, 객실안전, 비상탈출, 업무량, 피로, 국제민간항공협약부속서 6

## **Abstract**

### **A Study on Minimum Cabin Crew Requirements for Korean Low Cost Air Carriers**

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In recent 3 years, Korea's low-cost airlines have expanded their areas of passenger transportation not only to domestic market but also to Japan, China, Southeast Asia and US territory as a total of 6 companies (8 airlines including small air operation business carriers). Currently, three more airlines have filed for air transportation business certification as future low-cost carriers, and this expansion is expected to continue. To cope with the aggressive airline operations of domestic and foreign low-cost carriers and to enhance their competitiveness, each low-cost airline is taking a number of strategies for promoting cabin service. Therefore, the workload of the cabin crew is increased in proportion to the expansion, and the fatigue directly connected with the safety task performance is increased.

It is stipulated in the Enforcement Regulations of the Korea Aviation Safety Act that at minimum, one cabin crew is required per 50 passenger seating capacity, and all low cost carriers are boarding only the minimum cabin crew. Sometimes it is impossible for them to sit in a floor level emergency exit for evacuation, which is the main task of the cabin crew, and this can cause confusion among evacuating passengers in the event of an emergency.

In addition, if one of the minimum cabin crew becomes incapacitated due to an injury or the like, it will become a serious impediment in performing emergency evacuation duties. Even in the normal situation, since it will be violating the Act prescription on the minimum cabin crew complement, passengers will have to move

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to another available airline flights, encountering extreme inconvenience.

Annex 6 to the Convention on International Civil Aviation specifies international standards for the determination of the minimum number of cabin crew shall be based only on the number of passenger seats or passengers on board for safe and expeditious emergency evacuation. Thereby in order to enhance the safety of the passengers and the crew on board, it is necessary to consider the cabin crew's fatigue that may occur in the various job characteristics (service, safety, security, first aid) and floor level emergency exit seating in calculating the minimum number of cabin crew. And it is also deemed necessary for the government's regulatory body to enhance the cabin safety for passengers and crew when determining the number of minimum cabin crew by reflecting the cabin crew's workload leading to their fatigue and unavailability to be seated in a floor level emergency exit on low cost carriers.

**Key words** : minimum cabin crew, low cost carrier, cabin safety, emergency evacuation, work load, fatigue, Annex 6 to the Convention on International Civil Aviation