

出國報告(出國類別：其他)

參加第 70 屆國際飛航安全會議 暨國際適航年會出國報告

服務機關：民用航空局

姓名職稱：林俊良/標準組組長

張泰誠/標準組航務檢查員

派赴國家：愛爾蘭都柏林

出國期間：106 年 10 月 20 日至 27 日

報告日期：106 年 11 月 30 日

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壹、目的

國際航空安全峰會(International Air Safety Summit, IASS)是航空業領先的安全峰會，該會自 1947 年起每年舉辦的國際飛安年會迄今已 70 年，提供全球民航產、官、學界對飛安關切議題研討及建立共識之平台，期藉由資訊分享消除或降低可能之飛安風險，進而達到促進整體飛安之目標，屬全球性之會議，參加國際航空安全峰會是獲得航空新知以及快速蒐集航空安全資訊的機會。

第 70 屆國際飛安年會及國際適航年會合併於愛爾蘭都柏林舉辦，與會者包含航空產品設計製造、航務、維修、訓練及民航主管機關之代表計達三百六十餘人，我國參加單位除本局外另有我國飛安基金會、飛安委員會及中華、長榮、遠東等航空公司代表參加。2017 國際航空安全峰會（IASS）討論的主題中，包括航空業新的安全議題，加拿大運輸安全委員會報告，無人機未來安全操作概念，北極地區空域及機場能力分析，飛行自動化訓練執行與飛行安全，全球安全資訊專案，文化的轉變-重飛程序符合性以及目前中國大陸的安全績效管理推行…等，皆為全球民航主管機關關注的安全議題。



貳、過程

一、出國行程

(一) 搭乘航班：

日期	航空公司	航班編號	航段	時間
10月20日	長榮航空公司	BR-67	桃園→倫敦	0900~1925
10月22日	英國航空公司	BA-830	倫敦→都柏林	1415~1540
10月26日	英國航空公司	BA-829	都柏林→倫敦	1625~1755
10月26日	長榮航空公司	BR-68	倫敦→桃園	2135~2115+1

(二) 參與人員：

單位	姓名	職稱
交通部民用航空局	林○○	組長
交通部民用航空局	張○○	航務檢查員

(三) 行程摘要

106年10月20日(台北→倫敦)執行長榮航空公司 BR-67 國際航線駕駛艙及客艙航路查核。

106年10月21日參訪倫敦希斯洛機場運控中心及生物辨識系統。

106年10月22日由英國倫敦搭乘 BA-830 班機前往愛爾蘭都柏林。

106年10月23日至25日 70TH IASS 會議，議程如附件一。

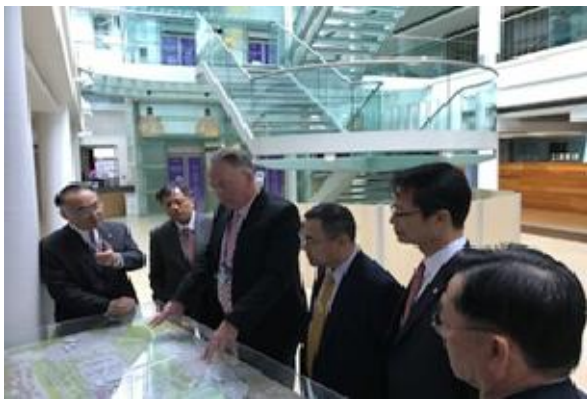
106年10月26日由愛爾蘭都柏林搭乘 BA-829 前往英國倫敦轉機。

106年10月26-27日(倫敦→台北)執行長榮航空公司 BR-68 國際航線駕駛艙及客艙航路查核

二、 參訪紀實:

(一)倫敦機場運控中心(Airport Operations Centre, APOC)

歐盟於 2004 年發展單一歐洲天空 (Single European Sky, SES) 計畫，其中技術方面的主要支柱便是「單一歐洲天空空中交通管理研究計畫」(Single European Sky ATM Research, SESAR)，目的是要改造歐洲空中交通管理的架構，期使未來整體空中容量與安全，能滿足全歐洲而非單一區域的需求，並發展所需以增加空中管制效率建立智慧型空中交通系統，在此概念下便有機場運控中心(APOC)的產生，目前歐洲除了倫敦希斯洛機場還有巴黎戴高樂機場也採用這樣協同作業模式。



圖左:倫敦機場運控中心



圖右:運控中心辦公室

APOC 經理 Paul Jowett 首先引領團員至機場運控中心辦公室參觀，內部主要硬體元件是由高達 60 部高解析螢幕所組成的兩面電視牆，可用於監控機場整體運作，其範圍包含安檢區域、進出通道、行李作業區及場面狀況，同時利用顏色區分人員安檢動線是否流暢，可監控各動線之等候時間，若高於平均值則會出現紅色以提醒監控人員採取適當的措施。

接著參觀的是位於機場運控中心旁的決策中心，Paul Jowett 表示若

機場有異常緊急狀況處理時，會藉由集合各專業領域人員參與決策過程，利用決策模組(Decision Module)如附件二，及時做出對機場全面性最有利的解決方案，將機場運作受不良天候及特殊狀況所造成的負面影響降至最低。

(二)生物辨識系統(biometric passenger screening systems)

該項科技用於自倫敦希斯洛機場飛往英國境內或愛爾蘭為目的地之航班，包括從愛爾蘭或英國出發，以及從國際線轉機到愛爾蘭及英國的旅客，在經過大廳前臉部生物圖像就已被攝取。這些安全措施是英國政府的要求，若拒絕提供自己的數據，或者登機之前驗證，乘客將被拒絕入境，也不能夠登機飛行。

負責介紹該系統的是旅客保安暨體驗中心 Demetrios Geniris 先生，該系統在通關時照相系統便首次拍攝臉部影像，到達登機門時系統再次自動比對旅客登機證名字是否與先前的臉部資料相符，以確保通關及候機過程中旅客身分的安全性，同時也減少旅客搭錯航班的風險。



圖左:生物辨識系統功能介紹



圖右:訪團與講解人員合影

三、 會議摘要：

(一)加拿大運輸安全委員會報告

加拿大運輸安全委員會是一個負責調查海運、輸油管、鐵路及空中運輸事件發生的獨立機構，在過去 10 年中，每年約有 270 起飛安事故及 730 起飛安意外事件報告交由運輸安全委員會處理，在國際間也參與近 200 起事件的調查行動。

本次由加拿大運輸安全委員會主席 Kathy Fox 女士提報該國 2016 年觀察名單，其中與空中運輸有關的項目計有不穩定進場 (Unstable approaches)、衝出跑道 (Runway overruns) 及跑道碰撞風險 (Risk of collisions on runways) 等三項。

這些項目安全委員會一直列入觀察名單直到改正措施完成為止，該會所提出的相關建議改正行動如下：

1. 不穩定進場

- A. 航空公司經由內部安全管理系統，持續追蹤穩定進場政策符合性，並採取適當處置，以減少不穩定進場卻持續到落地的情況。
- B. 不穩定進場的事件數目降低，這些事件中，進場穩定度是主要因素或具有因果關係。

2. 衝出跑道 (Runway overruns)

- A. 飛行員在任何季節都能接收到即時跑道情況的資訊，以計算飛機落地所需的距離。
- B. 加拿大交通部要求國內機場需要適當的跑道端安全區域 (RESA)，當衝出跑道事件發生時能減輕風險。
- C. 主要機場提供適當的跑道端安全區域或其他工程系統與結構，以有

效使衝出跑道的飛機安全停止。

3. 跑道碰撞風險(Risk of collisions on runways)

- A. 新的科技防衛系統安裝於國內主要機場，以減少嚴重的跑道入侵。
- B. 整體跑道入侵的數目減少。

Kathy Fox 女士也指出該國的建議改正行動執行相當緩慢，在航空運輸類迄今仍有 32 件建議事項已提出超過 20 年卻仍未能達到滿意的結果。簡報資料亦針對加拿大航空 624 號班機事故調查報告案例分享；2015 年 3 月 29 日，一架由多倫多飛往哈利法克斯的定期航班，當日飛航所使用的空中巴士 A320 由於機場附近下大雪導致的低能見度飛機過早觸地，受損嚴重。這起事故造成哈利法克斯羅伯特·洛恩·斯坦菲爾德國際機場停電並關閉了一段時間。這起事故共造成 23 人受傷。調查報告針對機場燈光、進場穿降方式、機場緊急應變能力、旅客安全及飛航組員因睡眠障礙可能造成的疲勞因素提出檢討，另該機型所使用的飛行路徑角度 (Flight Path Angle, FPA) 下降模式，在受到風向改變及亂流情況下，飛行員必須重新調整才能回歸正常下降路徑，值得航空公司注意。

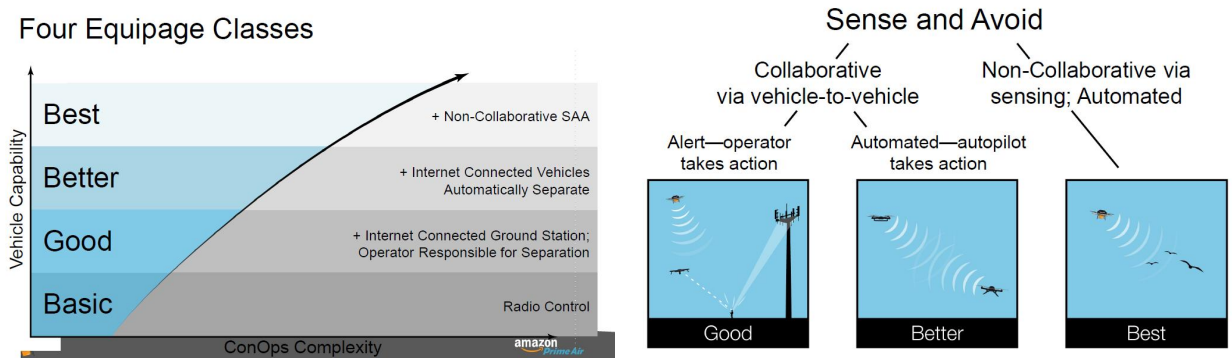
(二)無人機未來安全操作概念

由亞馬遜 Amazon Prime Air 公司對無人機送貨的未來前景及想像進行簡報，該公司一直以來致力於發展無人機送貨，已經測試 Prime Air 多年，並達成在 20 海哩距離內，可將重量 5 磅以下的貨物於 30 分鐘內送達的目標。

無人機安全發展部份，由現行的操作人經由雲端方式主動避讓，進展到無人機相互辨識之避讓，未來再發展到主動偵測到物品如鴿子

飛禽等的 AI 主動避讓。雖然 Amazon 已經完成了技術研發，但要實際運做還是需要有關當局許可才行，因為無人機送貨日前在美國仍然是被禁止的。

亞馬遜公司無人機安全及公共事務組長 Sean Cassidy 指出，安全的運作必須考量操作概念、網路指揮管制能力及載具重複(redundant)能力，建議政府部門僅負責無人機之註冊及 ID 辨識，有關管理監理應由政府部門授權業界，採用業界的標準進行，該公司期待工業界及各國主管機關對無人機的發展輔導及管理能有正面的提升，亦可作為國內參考。



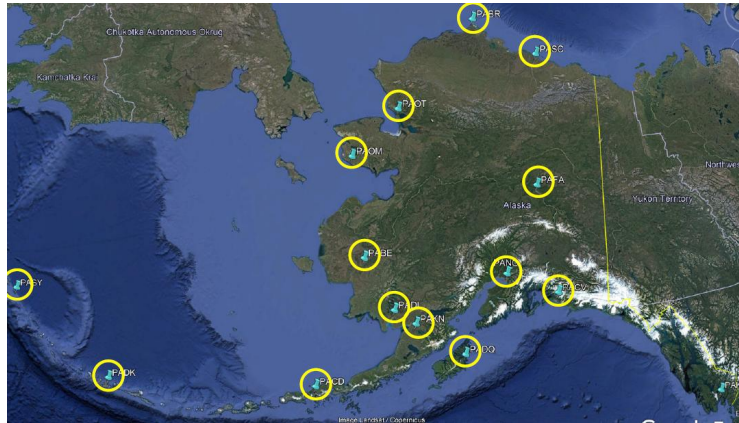
圖左:無人機操作能力等級

圖右:感知並避讓操作概念

(三)北極地區空域及機場能力分析

民航飛行員協會(Air Line Pilots Association, ALPA)極區操作委員會主席 Peter Black 機長分享個人經驗，提及轉降機場可能會遭遇的問題及現階段備降場需求，在團隊的研究與探訪發現，極區的許多機場對大型飛機所能提供的支援、地面裝備、醫療支援、航站及住宿都有不足之處，也提出北美地區航路備降場需要設置更大的網絡、

增強航路備降場資源、改善空中管制服務、提升通訊導航裝備能力及請 ICAO 針對備降場需求進行研究等建議。



(四)飛行自動化訓練執行與飛行安全

Jeppesen 公司飛航法規標準部組長 Scott Blum 博士針對飛行自動化訓練發表相關研究，該研究藉由檢視美國政府量化與定性化資料，評估訓練與政策有關飛行自動化在航空安全所扮演的角色以探討飛機失事率與操作者行為的衝擊。

從定性(Qualitative)研究藉由綜觀、概念、主題三階段取得下列四個面向：

1. 組織影響：公司政策與民航主管機關監理
2. 不安全的管理：訓練、經驗、監督。
3. 不安全行為的先決條件：人為因素、組員資源管理、疲勞。
4. 不安全行為：自動控制、分心、過分依賴、過慢或不當的反應。

所需探討的問題有下列四項：

1. 自動化科技是否在飛機失事有明顯的影響？
2. 現行的駕駛艙自動化規範是否足夠？

3. 訓練的型態是否會改變駕駛艙自動化與飛機失事的關聯?
4. 何種訓練與政策可為飛行安全自動化帶來的正面的效應?

研究報告建議及未來工作方向:

1. 組織影響: 主管機關給證時增強人為因素的強調性、標準化的組員資源管理課程安排、強化監理、補助裝備升級已達標準化。
2. 不安全的管理: 更新低發生率事件與失效模式的訓練教材、最低限度組員組成能力等級。
3. 不安全行為的先決條件: 更新對抗疲勞法規、外部科技及第三方監控。
4. 不安全行為: 更明顯的警告與失效模式、整合精確引導計畫。

(五)全球安全資訊專案(Global Safety Information Project, GSIP)

該專案由飛安基金會提出，包含不同形式的危害，從過往的被動到目前的主動到未來的預測式，以及不同形式的分析:

Descriptive (What has happened?)

Predictive (What could happen?)

Prescriptive (What should we do?)

GSIP 將風險管理分成三個等級:

Level 1 : 意外事件報告、強制報告、員工自願報告系統。

Level 2 : 自動化/系統化的資料，例如飛航資料監控(FDM)/飛航品保系統(FOQA)、空中交通管制雷達、航機通信定址與報告系統(ACARS)。

Level 3 : 觀測資料，例如線上操作安全評估(LOSA)、正常操作安全考察(NOSS) 維修線上操作安全評估(MLOSA) 以及多重資料來源分析。

有關安全績效指標(SAFETY PERFORMANCE INDICATORS, SPI)的建言，提報者認為部分單位對安全績效指標及目標有誤解，GSIP 建議審慎選擇主要的指標及相對要達成的目標，並視需要使用其他的運作績效評量方式，以了解單位的整體績效。其流程演變從運作→蒐集資料→進行分析→建立計畫→執行計畫，到運作→使用蒐集到的資料→提供操作者建議，並重複循環直至達成目標。

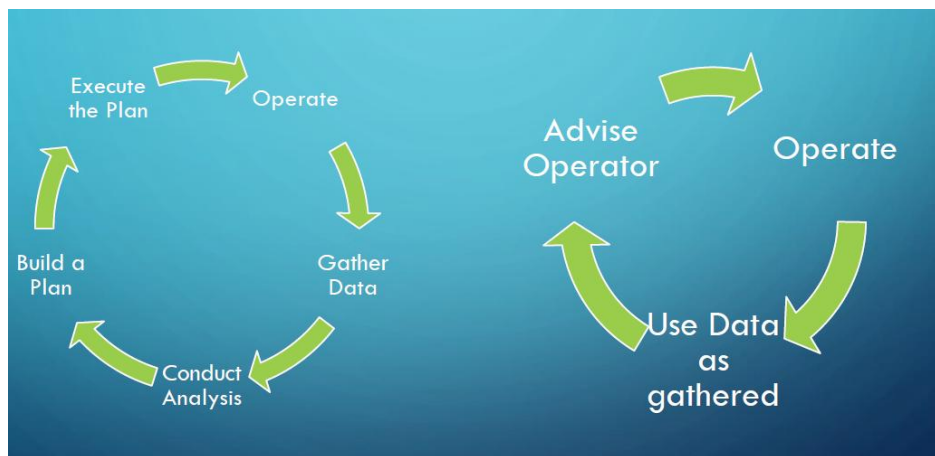
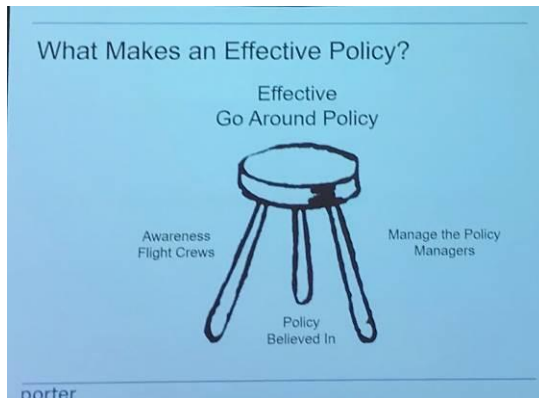


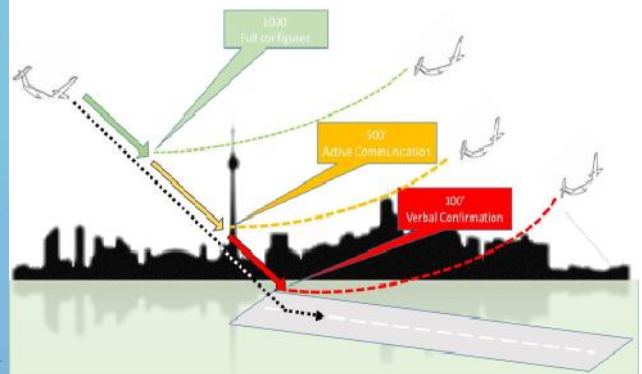
圖: 運作績效評量方式的演變

(六)文化的轉變-重飛程序符合性

加拿大波特航空公司分享如何有效率地推行一個政策的經驗，以公司重飛政策為例：包含管理者設定政策，飛航組員的警覺性以及對政策的信賴度三個面向。該公司在 2015 年經由加拿大 Presage 公司的設計協助，在落地前 1000 英尺高度以下採行新的重飛程序及訓練作法，增訂飛機高度 500 呎以下，駕駛艙飛航組員的溝通確認程序，以及 100 呎時必須口頭確認的操作，避免駕駛員在不穩定進場的情況下，仍勉強繼續操作飛機降落，波特航空公司表示，推行初期的六個月就有明顯的改善，並且獲得大多數飛行員的認同，也同時建立更安全的文化。



圖左:如何使政策有效率



圖右:波特航空公司新訂重飛程序

(七)中國大陸的安全績效管理推行

中國民航科學技術研究院的高級工程師戎梅女士針對中國大陸推行中的安全績效管理概念作介紹，同時亦提出安全績效指標的分類可分為下列四種的論點:

1. 安全結果指標(例:地面意外事件、嚴重安全錯誤事件)
2. 安全流程指標(例:裝載平衡錯誤、不穩定進場)
3. 安全基本指標(例:平均機齡、安全管理人員比例)
4. 安全管理指標(例:自願報告與強制報告、安全會議出席率)

至於目前推行安全管理所遭遇到的困難與問題有三項

1. 安全管理軟體的功能無法滿足需求。
2. 欠缺足夠的安全歷史資料庫。
3. 部分管理階層熱忱不足。



圖左: 中國大陸安全績效管理推行



圖右: 高級工程師戎梅女士

(八) 維修人員的疲勞管理

航空人員的疲勞一直是與飛航安全相關的重要因素之一，飛行組員的疲勞在各國均有明確之規範，但維修人員的疲勞問題亦應經由安全管理系統進行管理。由 RyanAir 提出其實務推動作法:

1. 建立維修人員的疲勞報告系統(Fatigue Report)
2. 分析了解造成疲勞可能的原因，例如班表型態、排班的穩定度、換班之限制、環境管理等。
3. 經由組織管理降低造成疲勞之風險，例如大夜班工作應於凌晨 4 點前完成以進行後續文件工作、降低工作中外來因素造成干擾、避免交辦計畫工作以外的額外工作、允許領班對工作量的警示、工作須考量天氣因素以及有次序的分配工作等。

參、心得及建議：

- 一、全球機場在航行量迅速成長情況下，對於機場營運管理必須結合機場管理單位、航管、主要航空公司協同作業，希斯洛機場以此協同模式運行，並視需要逐步引進作業單位的資訊系統，利用決策模組將資訊及時供相關單位在營利與安全間取得平衡，由機場管理單位為主，召集航管與主要航空公司協同作業，這樣的方式也可以引進國內機場管理作業。
- 二、目前各個行業都運用大數據建立出數據模型進行預測，而航空業則可用於風險評估，我們每天都可以看到大數據的一些新奇應用，從而幫助人們從中獲取到真正有用的價值。在風險管控的分析條件下，我們應設法整合各項工具及應用軟體，將大量搜集到的資料(data)轉化成有用的資訊(information)，並整合成適當的知識(Knowledge)從中產生消彌風險提升飛安的智慧(Wisdom)。
- 三、在全球化的演變下，發展最迅速並首當其衝的即是航空業，民用航空局的安全監理與飛航服務，應能保持與國際間相同的航空標準，透過持續參加航空安全基金會所舉辦國際航空安全峰會 IASS，並獲得最新的航空業資訊，是提升飛行安全的最佳途徑。



【附件一 會議議程】

MONDAY, October 23

0730 – 1700	Registration and Information Desk Open
0830 – 1000	Welcome and Opening Keynote Address <i>Session Sponsored by The Boeing Company</i>
	Welcome Mr. Greg Marshall , <i>Vice President, Global Programs</i> , Flight Safety Foundation Mr. Jon Beatty , <i>President and CEO</i> , Flight Safety Foundation Mr. John Hamilton , <i>VP Engineering</i> , The Boeing Company, <i>Chairman, Board of Governors</i> , Flight Safety Foundation
	Opening Keynote Mr. Willie Walsh , <i>CEO</i> , International Airlines Group
	Safe Travels – ICAO’s Agenda for Safety Captain Claude Hurley , <i>Vice President, Air Navigation Commission</i> , ICAO Mr. Catalin Radu , <i>Deputy Director (Aviation Safety)</i> , Air Navigation Bureau, ICAO
1000 – 1030	Business Break
1030 – 1210	SESSION I <i>Session Chair:</i> <i>Captain Bill Curtis, Chair International Advisory Committee, Flight Safety Foundation</i> <i>Session Sponsored by The Boeing Company</i>
	A320 Accident, Halifax, Nova Scotia & TSB Safety Watchlist Ms. Kathy Fox , <i>Chair</i> , Transportation Safety Board of Canada
	Amazon Prime Air Mr. Sean Cassidy , <i>Director Safety and Regulatory Affairs</i> , Amazon Prime Air

	FSF President's Citation
1210 – 1330	Luncheon
1330 – 1510	Session II <i>Session Chair:</i> <i>David Mawdsley, Aviation Safety Advisor – Digital, Rolls-Royce</i> <i>Session Sponsored by The Boeing Company</i>
	Data Innovations to Get Game Changing Outcomes in Operational Safety Mr. Christopher Murray , Head of Operations Singapore – Digital, Rolls-Royce
	Opening the Walled Garden: Using Technology to Bring Airline Flight Data Analytics to the Enterprise Mr. Christopher Solan , <i>Senior Product Manager</i> , GE Aviation Digital Solutions
	Global Safety Information Project Mr. Mark Millam , <i>Vice President Technical</i> , Flight Safety Foundation
	Boeing/FSF Lifetime Achievement Award
1510 – 1540	Business Break
1540 – 1710	Session III <i>Session Chair:</i> <i>Captain Bill Curtis, Chair, FSF International Advisory Committee</i> <i>Session Sponsored by The Boeing Company</i>
	TCAS Resolution Advisories Not Followed: Study Results Mr. Tzvetomir Blajev , <i>Operational Safety Coordinator</i> , Eurocontrol, <i>Chair</i> , FSF European Advisory Committee Mr. Stanislaw Drozdowski , Senior ACAS Expert, Eurocontrol

	<p>Safe in an Unsafe World? A Resilience Engineering / Safety-II Perspective Professor Erik Hollnagel, PhD, University of South Denmark</p>
1710 – 1730	Speaker Meeting

TUESDAY, October 24

0830 – 1000	<p>Session IV – Flight Operations Track <i>Session Chair:</i> <i>Captain Jonathan Tree, Director of Aviation and Regulatory Standards and International Relations for Boeing Digital Aviation & Analytics</i> <i>Session Sponsored by Airbus</i></p>	<p>Session IV – Maintenance and Engineering Track <i>Session Chair:</i> <i>Mr. Joseph Barclay, Chief Executive Officer & President, Inflight Warning Systems & Chair, Maintenance Advisory Committee, FSF</i> <i>Track Sponsored by Airbus</i></p>
	<p>Aircraft Automation Training Implications for Aircraft Safety Dr. Scott Blum, Director Aviation, and Regulatory Standards, Jeppeson</p>	<p>Key Issues Affecting Maintenance Safety Mr. Joseph Barclay, Chief Executive Officer & President, Inflight Warning Systems & Chair, Maintenance Advisory Committee, FSF</p>
	<p>Studying Evaluating if Targeted Training for Startle Effect can Improve Pilot Reactions in Handling Unexpected Situations Captain Mike Gillen, Ph.D., Check Airman, United Airlines</p>	<p>Managing Safety Interfaces Between Operations, CAMO & MROs Mr. Jorge Leite, Vice President Quality and Safety, Maintenance and Engineering Compliance Manager, TAP</p>
	<p>A Friend’s Eye is a Good Mirror: Using Eye-Tracking in the Airline Context Captain Mark Cameron, Pilot, Emirates Airlines Dr. Nicklas Dahlstrom, Human Factors</p>	<p>Cleared to Disconnect? Understanding the Communication Barriers between Flight Crew and Maintenance Personnel Dr. Tahlia Fisher, Senior Safety Specialist, Air New Zealand</p>

	<i>Manager, Flight Operations Training, Emirates</i>	
1000 – 1030	Morning Business Break <i>Sponsored by ALPA</i>	
1030 – 1200	Session V – Flight Operations Track <i>Session Chair:</i> <i>Captain Harry Nelson, D/Chair International Advisory Committee, FSF</i> <i>Session Sponsored by Airbus</i>	Session V – Maintenance and Engineering <i>Session Chair:</i> <i>Mr. Joseph Barclay, Chief Executive Officer & President, Inflight Warning Systems & Chair, Maintenance Advisory Committee, FSF</i> <i>Track Sponsored by Airbus</i>
	Train Like you Design: From Scenario-Based Design to Scenario-Based Training Dr. Nicklas Dahlstrom, <i>Human Factors Manager, Flight Operations Training, Emirates</i> Dr. Ratan Khatwa, <i>Senior Chief Engineer, Human Factors, Honeywell Aerospace</i>	Safety Performance: Listening & Learning Mr. Andy Evans, <i>Director, Aerossurance LTD</i> Mr. Stephen Bramfitt-Reid, <i>Safety Manager (Airworthiness), Rolls-Royce PLC</i>
	International Survey on Controlled Rest on the Flight Deck Dr. Alexandra Holmes, <i>Research Director, Clockwork Research Ltd.</i>	Maintenance Safety Programs From an Outsiders Perspective Mr. Ronald (Ron) Donner, <i>Chief Editor Aircraft Maintenance Technology – AMT Magazine</i>
	Moving Toward Joined-Up Safety Culture Across Different Aviation Players Dr. Barry Kirwan, <i>Safety Research Coordinator, Future Sky Project Safety Manager, Eurocontrol</i>	Systemic Safety Risk Analysis Ms. Christine Zylawski, <i>Flight Safety Delegate, LOSA Project Manager, Air France</i>
1200 – 1330	Lunch	
1330 – 1500	Session VI – Flight Operations Track <i>Session Chair:</i>	Session VI – Maintenance and Engineering Track <i>Session Chair:</i>

	<p><i>Captain Joe DePete, First Vice President and National Safety Coordinator, Air Line Pilots Association International (ALPA)</i> <i>Session Sponsored by Airbus</i></p>	<p><i>Dr. Bill Johnson, Chief Scientific and Technical Advisor Maintenance Human Factors, FAA</i> <i>Track Sponsored by Airbus</i></p>
	<p>Analysis of Airspace and Airport Capabilities in the Remote North Captain Peter Black, Chair <i>President's Committee for Remote Operations, ALPA</i></p>	<p>Fatigue Management in Maintenance Panel Discussion Mr. Neil Hickey, Technical Manager Safety – Engineering, Ryanair Mr. Jorge Leite, Vice President Quality and Safety, Maintenance and Engineering Compliance Manager, TAP Dr. Maggie Ma, Associate Technical Fellow, The Boeing Company</p>
	<p>Pilot Mentoring and the Value Proposition for Safety Captain Paul Ryder, <i>National Resource Coordinator, ALPA</i></p>	
	<p>Electronic Flight Bags: Friend or Foe? First Officer Bryan Lesko, <i>Chair Aircraft Design and Operations Group, ALPA</i></p>	
1500 – 1530	Business Break	
1530 – 1700	<p>Session VII – Flight Operations Track <i>Session Chair:</i> <i>Mr. Frank Hilldrup, NTSB & Member, International Advisory Committee, FSF</i> <i>Session Sponsored by Airbus</i></p>	<p>Session VII – Maintenance and Engineering Track <i>Session Chair:</i> <i>Mr. Ronald (Ron) Donner, Chief Editor Aircraft Maintenance Technology – AMT Magazine</i> <i>Track Sponsored by Airbus</i></p>
	<p>SMS is to Airline as CRM is to Pilot: The JetBlue Experience Captain John Allen, Vice President Safety, JetBlue</p>	<p>Panel Discussion: Key Issues Affecting Maintenance Safety: Professionalism, Oversight & Quality, and Failure to Follow Procedures Mr. Joseph Barclay, Chief Executive Officer & President, Inflight Warning Systems & Chair, Maintenance Advisory Committee, FSF Dr. Tahlia Fisher, Senior Safety</p>
	<p>The Shoreham Hunter Accident Mr. Alan Thorne, Senior Inspector of Air Accidents, UK AAIB</p>	

	<p>Lessons from UPS flight 6; Shipment of Lithium-ion Batteries as Cargo Mr. Daniel I. Cheney, <i>Safety Program Manager, Transport Airplane Directorate, Federal Aviation Administration</i></p>	<p><i>Specialist, Air New Zealand</i> Mr. Dominic Ryan, <i>Director of Maintenance and Engineering, Aer Lingus</i> Ms. Christine Zylawski, <i>Flight Safety Delegate, LOSA Project Manager, Air France</i></p>
1700 – 1730	Speaker Meeting	
1700 – 1800	Networking Reception in the Exhibit Marketplace	

WEDNESDAY, October 25

0730 – 1700	Registration and Information Desk Open
0730 – 0830	Breakfast with exhibitors
0830 – 1000	<p>SESSION VIII <i>Session Chair:</i> <i>Captain Mike Gillen, PhD, United Airlines</i> <i>Sponsored by Embraer</i></p>
	<p>FORAS – A Tool to Enhance your SMS Danny Ho, <i>Chief Executive Vice President, EVA Air</i> Greg Marshall, <i>Vice President Global Programs, Flight Safety Foundation</i></p>
	<p>Measuring the Effects of New Go Around Policy & Procedures, Simulator Trials – Methodology & Results Dr. Martin Smith, <i>Chief Executive Officer, Presage Group</i> Captain Bruce Campbell, <i>Director AQP & Pilot Recruitment, Air Canada</i></p>
	<p>Improving Go-Around Compliance Captain Bill Curtis, <i>Chair, FSF International Advisory Committee</i></p>
1000 – 1030	Business Break

<p>1030 – 1200</p>	<p>SESSION IX <i>Session Chair:</i> <i>Dr. Ratan Khatwa, Senior Chief Engineer, Human Factors, Honeywell Aerospace</i> <i>Sponsored by Embraer</i></p>
	<p>Beyond Assessment of Individual Safety Management & Operational Processes: A Set of Uniform and Novel Aviation Safety Metrics Dr. Nektarios Karanikas, <i>Associate Professor of Safety and Human Factors, Amsterdam University of Applied Sciences</i></p>
	<p>The Implementation of Safety Performance Management in China Ms. Rong Mei, <i>Senior Engineer of Safety Management, China Academy of Civil Aviation Science and Technology</i></p>
	<p>A Data-Driven Approach to Making Safety Investment Decisions Mr. Andrew Kilner, <i>Human Performance & Safety Research, Eurocontrol</i></p>
	<p>Laura Taber Barbour Award</p>
<p>1200 – 1330</p>	<p>Lunch</p>
<p>1330 – 1500</p>	<p>SESSION X <i>Session Chair:</i> <i>Mr. Michel Piers, Principal Safety Advisor, NLR – Netherlands Aerospace Centre</i> <i>Sponsored by Embraer</i></p>
	<p>Measuring Safety Through an Integrated Safety Assessment Model Dr. Poornima Balakrishna, <i>Research Engineer, SAAB Sensis Corporation</i></p>
	<p>Integrating Live ATM Data Sources and SWIM in Support of Safety/Risk Performance Assessment Mr. Ian Crook, <i>Director, ISA Software</i></p>
	<p>Undeclared Dangerous Goods Captain Steve Jangelis, <i>Aviation Safety Chair, ALPA</i></p>

1500 – 1530	Business Break
1530 – 1700	SESSION XI <i>Session Chair:</i> <i>Captain Harry Nelson, D/Chair International Advisory Committee,</i> <i>Flight Safety Foundation</i> <i>Sponsored by Embraer</i>
	Session TBA
	Management of Cross Department Risks in the Ramp Environment Captain Davina Pratt, Director of Operations, Aer Lingus Mr. Dominic Ryan, Director of Maintenance and Engineering, Aer Lingus
	Understanding Pilot Wellbeing and its Impact on Flight Safety: Identifying Self-Management Strategies to Promote the Bio-Psycho-Social Pillars of Wellbeing Captain Paul Cullen, Independent Researcher
1710	IASS 2017 Concludes – See You Next Year!

【附件二 決策模組範例】

Table 1: The Heathrow Decision Model - step by step

PURPOSE:
A foundation for value-driven decision making across Heathrow Airport to build confidence and consistency.

PRINCIPLES:

- 1 Use your intuition and experience alongside your plans, procedures and training
- 2 Be confident and consider how our Values apply to guide you
- 3 Communicate early, clearly, simply and use the Framework to guide you
- 4 Be informed, prepared and proactive



STEP 1	STEP 2	STEP 3	STEP 4	STEP 5
<p>Gather information and intelligence</p> <p>Early warning indicators, information, intelligence or your intuition indicate that the Business as Usual plan is or could be impacted.</p> <p>RELEVANCE In the current situation, how well does the information meet my needs? Do you need to know more?</p> <p>ACCURACY How well does the information/intelligence* reflect reality?</p> <p>TIMELINESS How current is the information/intelligence?</p> <p>RELIABILITY What is the quality of the information? Is it from a reliable source?</p> <p>CREDIBILITY Is the information supported or contradicted by other information? Is what I have information or intelligence? Who are the SMEs I must involve?</p> <p>Who is accountable? Let's brief them now. THINK RISK AND OBJECTIVES</p>	<p>Assess risks, opportunities and develop objectives</p> <p>Having now decided that I need to make some decisions, and having gained some understanding, I will consider the following:</p> <p>PART 1 What risks are relevant to this situation and getting us to our outcome? Think: People, Process, Facility</p> <p>List them</p> <p>PART 2 Using the grid overlay (Table 3), assess the risks, think likelihood/consequence and state High (due to likelihood being High and impact being High (Risk = Likelihood + Impact), Medium, Low next to each.</p> <p>PART 3 Write down your objectives Prioritise them against your desired outcome If applicable, consider the P-rating at this stage and activate additional COMMAND AND CONTROL (see Table 4 for guidance)</p> <p>Who is accountable? Let's brief them now. THINK RISK AND OBJECTIVES</p>	<p>Consider powers, policies and procedures</p> <p>Having identified and promised risks, and established my objectives, consider the following:</p> <p>Powers: How can I best align with existing powers (i.e. bye-laws) to achieve my outcome?</p> <p>Policies: Which existing policies can help me get to my outcome?</p> <p>Procedures: Which existing plans apply to this? APPLY THEM</p> <p>Who is accountable? Let's brief them now. THINK RISK AND OBJECTIVES</p>	<p>Identify options and contingencies</p> <p>I now have a good idea of what we need to achieve, I have a clear outcome, am continuing to gather information and intelligence and understand the key risks.</p> <p>Identify the options: List the actions you can take to achieve your objectives: - Where powers, policies and procedures are insufficient, consider mitigating risk using the 4 T's (Treat, Tolerate, Transfer, Terminate) as part of your options - Use your objectives to guide you.</p> <p>Weigh up the benefits against the risks: What risks are associated with each option? What additional resources do I need? What support do I need for those involved?</p> <p>Evaluate which option will achieve your desired outcome: Assess each option against our values – how aligned are they? How will the situation change as a result of these actions? What are my measures of success?</p> <p>Who is accountable? Let's brief them now or if you are accountable, MAKE A DECISION</p>	<p>Take action and review</p> <p>Let's act and learn through a review.</p> <p>Create a common understanding: Who must I communicate my decisions with? Consider the terminology. What goals are linked to this decision that may affect others?</p> <p>As an individual: What role do I need to play in responding? If applicable, is the collective decision in line with my professional judgement and experience?</p> <p>Reflect on your decision: How can we best implement our learning? As the information changes, use the model to inform decision making until the issue is resolved.</p> <p>Repeat process if there's new information or the situation changes</p>

* Definitions: **INFORMATION** - facts provided or learned by someone or something; **INTELLIGENCE** - information that has been assessed and interpreted.

Table 2: Decision Support

STEP 1	STEP 2			STEP 3	STEP 4	STEP 5			
	Gather information and intelligence	Assess risks, opportunities and develop objectives					Consider powers, policies, and procedures	Identify options and contingencies	Take action and review
		Part 1 – Identify risks & opportunities	Part 2 – Assess & Prioritise (Table 1)						
	<p>Stop and think...</p>								
	<p>EXAMPLE: Met weather warning of severe snow</p>	<p>Risk to significant aircraft flow restrictions and disrupted passengers</p>	<p>High</p>	<p>Objectives: Mitigate impact on passengers Proactive communication Quickly implement relevant contingency plans</p>	<p>Procedures: Capacity reduction (Demand v. Capacity process) Snow Plan Contingency Plans and relevant SOPs</p>	<p>Option 1: Reduce Capacity by 10%, place all additional resource for Snow Plan on high readiness, brief all stakeholders and ensure terminal teams ready to enact contingency with lead defined.</p> <p>Option 2: Reduce Capacity by 20%, fully activate Snow Plan including all resources, brief all stakeholders and activate contingencies in all terminals.</p>	<p>Schedules to be reduced by 20%, all stakeholders to be informed, passenger comms sent, Snow Plan now fully active. Warm-up planned into activity with lead defined.</p>		

Table 3: Assess and evaluate the risks

LIKELIHOOD	IMPACT				
	5 LOW	10 LOW	15 MEDIUM	20 VERY HIGH	25 VERY HIGH
4 MEDIUM	8 MEDIUM	13 HIGH	18 HIGH	23 VERY HIGH	28 VERY HIGH
3 LOW	6 MEDIUM	9 MEDIUM	12 HIGH	16 HIGH	21 HIGH
2 LOW	4 LOW	6 MEDIUM	8 MEDIUM	11 MEDIUM	14 HIGH
1 LOW	3 LOW	4 LOW	6 MEDIUM	8 MEDIUM	11 MEDIUM

Table 4a: P Status definitions

P0	P1	P2	P3	P4	P5
Severe impact on operations, multiple Operational Functions affected, Significant impact on global impact.	Major impact on Operations, Potential reputational impact. Potential impact to UK operations.	Significant impact on Operational Function. Potential to impact an Operational Function.	Local disruption terminal or part of an Operational Function. Contingencies activated.	Potential for minor local disruption. Major issues. Stakeholders informed and contingencies monitoring in place.	Potential for minor local disruption. Major issues. Stakeholders informed and contingencies monitoring in place.

Table 4b: Command and Control

GOLD - P0/P1	SILVER - P2	Bronze - P3
An incident/accident or escalating event of proportions that requires strategic guidance and management from the business. Impact is pan airport/par-business.	An event or situation causing (or is likely to cause) major disruption affecting one or more operational units requiring high level response. Co-ordination with other agencies is required.	Actual or potentially disruptive event situation requiring co-ordinated intervention to drive containment and business recovery.

Table 4c: Risk examples

Situation	Likelihood (Illustrative)	Impact (Illustrative)	Likely P Status	Likely Command and Control
Aircraft accident (e.g. BA flight 782 which crashed on the runway, May 2013)	Low	High	P0	Gold
Significant loss of baggage systems (e.g. Western baggage system, loss of high level baggage system, Jan 2017)	Medium	High	P1	Gold
Major protest event (e.g. main round turned obstructed, Nov 2015)	Low	High	P2	Silver
Severe weather event (e.g. heavy unplanned rainfall, August 2015)	Medium	Medium	P3	Bronze Incident Response Teams Airport Operations Manager
Planned industrial action (e.g. British Airways, May 2017)	Low	Medium	P4	Business as usual (APOC)
EU planned air traffic control strike (e.g. strikes in EU's current state, Sep 2018)	Low	Low	P5	Business as usual (APOC)