行政院及所屬各機關出國報告
（出國類別：會議）

ASC-TRM-03-03-001

參加
「第二十屆國際客艙安全研討會」
報告書

服 務 機 關：行政院飛航安全委員會
出國人姓名 ：戎　凱、任靜怡
出國人職稱 ：執行長、飛安官
出 國 地 區：美國加尼福力亞州 環球城
出 國 期 間：民國九十二年二月十日

至二月十三日
報 告 日 期：民國九十二年三月十日

行政院及所屬各機關出國報告提要
系統識別號 C09200942
出國報告名稱：參加「第二十屆國際客艙安全研討會」報告書
頁數：112 頁
含附件：是

出國計畫主辦機關：行政院飛航安全委員會
聯絡人：
電　話：(02) 2547-5200ext.175

出國人員姓名：戎　凱/ 任靜怡
職　　稱：執行長/ 飛安官
服務機關：行政院飛航安全委員會
電　　話：(02) 2547-5200ext.111/167

出國類別：□1 考察□2 進修□3 研究□4 實習■5 其他

出國期間：民國九十二年二月十日至二月十三日

出國地區：美國加利福尼亞州

報告日期：民國九十二年三月十日

分類號/目

關鍵詞：客艙安全、航機失事、意外事件、客艙組員、駕駛員、保安、人為因素、生還因素

摘要：

行政院飛安委員會派執行長戎凱、飛安官任靜怡等二人前往美國加州環球城（Universal City）參加「第二十屆國際客艙安全研討會」(The 20th International Cabin Safety Symposium)。該研討會之目的為交換及發表客艙安全心得以促進飛航安全。

研討會計分五個不同專題:

一、 客艙安全二十年之回顧、檢討、前瞻

二、 目前之保安政策及措施

三、 客艙安全訓練及其檢討

四、 客艙安全異常事件

五、 客艙安全相關之議題

在本「二十屆國際客艙安全研討會」(International Center for Safety Education, ICSE)中除了分別請到加拿大及美國 ATA 高階主管 Mr. Cliff Mackay & Mr. Mac Armstrong 做開幕及閉幕之貴賓並發表演說外，並邀請包括業者、民航主管機關、保安專家、人為因素專家二十一人，更於第二及第三日下午安排四個類型各異之小型工作討論會，主辦單位希望藉本次年會對二十年客艙安全之回顧、檢討及展望由與會之學者專家及參會者交換意見，尤其是對自一年半前 911 事件後在採取各種保安新措施後所帶來之衝擊有深入探討。

行政院及所屬各機關出國報告審核表

出國報告名稱: 赴美國加州環球城參加「第二十屆國際客艙安全研討會」

報告

出國計畫主辦機關名稱: 行政院飛航安全委員會

出國人姓名：戎　凱、任靜怡

職　　稱：執行長、飛安官

服務單位:行政院飛航安全委員會

出國計畫主辦機關審核意見:

□1.依限繳交出報告

□2.格式完整

□3.內容充實完備

□4.建議具參考價值

□5.送本機關參考或研辦

□6.送上級機關參考

□7.退回補正,原因:

□(1)不符原核定出國計畫

□(2)以外文撰寫或僅以所蒐集外文資料為內容

□(3)內容空洞簡略

□(4)未依行政院所屬各機關出國報告規格辦理

□(5)未於資訊網登錄提要資料及傳送出國報告電子檔

□8.其他處理意見：

層轉機關審核意見:

□同意主辦機關審核意見

□全部　□部份_____(填寫審核意見編號)

□退回補正,原因:_____(填寫審核意見編號)

□其他處理意見:

赴美國環球城參加
「第二十屆國際客艙安全研討會」報告目錄

壹、目的

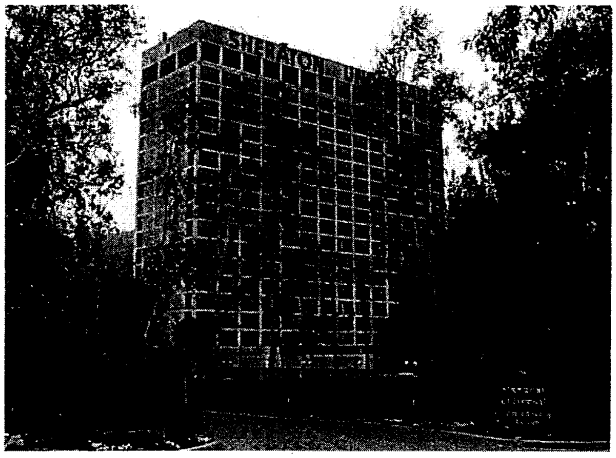
過去我國內民航失事調查，對於航、機務及氣象、航管等因素之調查均有深入討論，惟對客艙安全之有關資訊則較少。多半著重在民航駕駛員之飛航訓練與操作、航機維修管理、航空公司航務操作流程、航機失事原因調查，反觀國際間對客艙安全之深入調查已行之有年，並提出各方改善建議。客艙安全之相關議題應包括：客艙緊急疏散、空中緊急醫療程序、客艙中無理或粗暴乘客處理、幼兒安全設施、隨身行李規定、客艙乘客隨身電子用品規定、逃生門設計、氧氣及灑水系統的有效性、乘客身心因素及乘客教育、前後艙組員聯合訓練、組員輪值調動、安全與服務對立認知協調、組員訓練課程設計、及意外事件調查等等。

藉由本次會議專題討論，可充份了解國際間目前在客艙安全之重點議題及911事件後保安措施之爭論。

貳、會議日程

本次國際客艙安全研討會由美國南加州安全學院（Southern California Safety Institute）主辦，於九十二年二月十日至十三日間在美國加州環球城喜來登飯店（如圖一）大會議堂舉行完畢。研討內容極為廣泛且深入、講員陣容亦堅強，共有

二十餘篇之論文發表，會後並有發問討論。研討會日程表詳如附錄一)。



圖（一）美國加州環球城喜來登飯店

參、與會心得

本次研討會計分五個不同專題:

一、 客艙安全二十年之回顧、檢討、前瞻

二、 目前之保安政策及措施

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四、 客艙安全異常事件

五、 客艙安全相關之議題

謹就各個不同專題報告提出摘要報告及心得如后

一、 客艙安全二十年之回顧、檢討、前瞻

加拿大ATA總裁Mr. Cliff Mackay 首先就目前航空運輸業因911事件後所面臨之挑戰做了綜合說明:世界各國航空業因經濟衰退及恐佈份子造成運量大幅減少而航空公司亦面臨前所未有之生存危機，票價戰及折扣戰開打亦造成旅客以低價格導向之趨勢，以上這些負面的影響均造成航空公司必須改變以求生存，這對客艙安全發展之衝擊是直接及相對的，包括可能客艙組員未來可能需要被賦與多項工作項目以節省成本，此篇談話也造成與會客艙人員不少相反意見，包括客艙安全之重要性及功能在多重任務之要求後會漸形忽視。

****客艙組員安全行為之發展及評估**

主講人:澳航 Peter Simpson, Graham Edkins, Christina Owens & Stuart Godley

航空業界近年來非常重視組員非技術性之表現， 而人為因素是其中重要項目，此項在客艙組員部份特別明顯，客艙組員在如何面對挑戰及改正錯誤之相關資訊與飛航組員比較相差甚多，澳航在此部份之做法極為先

進，該航以二部份之研究計劃具体將客艙組員之人為因素有關之科目及觀察方法納入，包括訪談多位相關主管以了解與客艙運作有關之人為因素，如決心下達同時藉由資深人員之經驗知道組員對客艙安全行為之認知。第二部份則藉由量化並仿照飛航組員 LOSA 客艙觀察來了解客艙安全行為之實際執行。

由客艙異常事件得知，即便客艙組員在異常事件中了解組員所犯錯誤為何，但如何改正及其改正技巧則甚少參考資料。在業界中普遍對服務有內部評鑑機制，但未見與安全最習習相關之安全或客艙人為表現之評估。在目前法規中已要求組員應有適職性訓練及成果審查，一年半前 911 恐佈事件後，客艙之客觀環境亦有所改變，也相對提高了客艙組員對此需求。

在評估客艙組員安全行為模式上分為四個階層，由最初開發、相關訓練研發、LOSA 觀察、及最後相關訓練科目發展。該航依 1989 年 Klein 發展之 80 項決心下達科目加入代碼，以問卷及訪談方式蒐集資料，同時並以客艙異常事件案例包括該航發生之案例以訪談中設定假設性問題詢答。在訪談中也發現一些如人員經驗、詢答

方式及訪談地點適當性之疑慮。

經過篩選後發現，客艙異常事件依序排列為:滋擾旅客、急病、911 後與保安有關之行為、客艙門及充氣滑梯、客艙冒煙及客艙機械故障等，依此分類，具備安全行為之人為因素排序為:狀況警覺、旅客管理、工作安全、組員管理、航務運作了解、談判技巧、資訊管理等，依此分類該航並發展了一套評估客艙安全行為表現之相關表格，目前先運用於人為因素訓練上未來將會實際運用於人員招募及客艙觀摩。

經此研究計劃發現客艙人為因素仍有許多議題待解決，包括客艙環境與駕艙差距性，未來雙座艙衍生之問題，觀摩 LOSA 之經驗、對服務可能產生之影響、客艙錯誤行為發生機率等，這些仍待學者專家共同努力解決。

二、 目前之保安政策及措施

本次會議中接續上次年會熱烈討論項目仍為 911 後之各項保安措施。保安已成為全球面對之挑戰，自 911 事件後，

航空界成為恐佈份子最有興趣之攻擊目標，911 亦非首次攻擊而是繼 60 70 年代後即有徵兆，而媒体及一般大眾更加速了恐佈份子達到其預期目的，而航機之多項特性如保安措施週延性之困難、航站之空間及預期死亡人數等均是恐佈份子選擇攻擊該標的原因，可能之漏洞還包括航空公司之員工、貨運站、餐廚、機務部份及旅客，而 911 亦造成業界與旅客信賴度流失。

要建立有效及完善之保安系統必須從建立國際性之保安標準、有效風險評估工具、反制訓練著手，而其中最有效的防制方法包括

1. 國際間反恐合作:聯邦合作計劃、國際反恐計劃及資訊分享

2. 機場外圍:加強機場外週邊安全、貨運站/餐廚/機務維修補給/相關員工安全、資訊分享

3. 機場:服務導向保安系統、具彈性緊急應變計劃、符合國際化之保安標準

4. 航機停機坪:地停戒護、彈性緊急應變、符合國際化之保安標準

5. 航機:組員保安訓練、空中警察之警力、駕艙門加鎖

以此証明唯有系統化之保安方能有效反制恐佈組織

**對目前航空保安措施之評估

主講人: Andrew R. Thomas

本次大會中幾位具爭議性之專題主講人中 Mr. Thomas 亦為其一，該員對目前在層層保安措施及系統安全理論下提出:應對現行保安措施之有效性做評估，其原因是--系統安全固然有從根本預防之效果，但也同時增加了更多失效的空間，同時亦給予製造者更多機會發動或挑戰另一次恐佈攻擊的機會。

在審視目前之保安系統得到之結論包括如保安系統之好壞很難有明顯界定，航空系統未來只會日異複雜，對反恐而言應無所謂一勞永逸之解決方案，科技並不能提供完全有效之預防，只有人及具体有效程序方能徹底防止。在主講人之看法中風險是不可避免，但應該予以管理。

911 之後，各種專家之理論包括如果增加多一點的保安防制措施則總會發揮部份效用，因此採取設置空中警察或在機場增加之保安人員或其他之保安措施，此重方式除了消耗

大筆經費外，更因訓練經費之減少造成人員對警備武力知識欠缺，而禁航令更造成數起軍機及民航機因溝通不良而可能被擊落之危險。因此目前之保安措施(如機場通行証之有效性、機上保安警察之座位、駕艙保持關閉等)均應有更嚴謹之替代及加強程序。

真正之保安系統是一種有效並經完善管理之程序，其成功完全取決於人對可能風險之預防、偵測及反應能力。尤其是否具備有彈性之應對及應變計劃。

以下是主講者提供之五階段評估方法:

1. 審視該項保安措解決了何種保安問題?

2. 解決之有效度如何?

3. 是否會造成其他任何問題

4. 該措施之經濟效應成本?

5. 綜合評估後之有效性如何?

主講人在其他講者大聲急呼保安之重要及提出各項新解決方案後，以另一種思考方向讓與會者重新對目前或未來更多保安措施之納入能先予評估後再行實施。

**保安政策與安全政策之整合

主講人:Capt. MA Vivian

UK CAA 查核員/JAA 前後艙合併訓練主席

主人為 UK 民航局查核員，針對 911 後之保安措施，以民航監理及 JAA 角度出個人看法，包括如目前國際間安全與保安權責各異，各有專業領域，二單位間之協調合作及權責劃分至為重要，保安政策及相關措施在 911 後引發國際間之重視，並紛紛採取預防及反制手段，但任何保安措施決不應造成更多之安全顧慮或危害。

以駕艙門上鎖為例，包括 MEL 適法、關迴波器、空中警察訓練、前後艙組員人為因素等均造成安全上之新議題。

安全與保安在權責界定上本來就存在灰色地帶，而國際組織中立法單位各異，包括 ICAO ECAC JAA EU 等 ，這也造成各國在保安政策及措施上各行其事，英國民航主管機關在 911 後陸續發佈許多改善建議，諸如:駕艙門上鎖、禁止人員進入駕艙、駕艙中座椅之使用、組員值勤時全程就座、旅客監控、組員休息區之使用及雙層客艙組員人數之要求等。針對上述項目，該單位亦已陸續發佈相關執行細則，如組員人為因素訓練及飛航運作對作業單位之禁運要求，但對於駕駛艙門上鎖規定(則亦應考量緊急狀況可開啟之

許可，如緊急狀況、失能、失壓、放棄起飛、亂流及飛動機起火等）對人員進入駕艙規定、截機應變及機載文件及物品放置及單組員之保安亦有特別規定(如簡報、服務要求、座位位置、ABM協助及替代異常事件通訊方式等)該國均予明訂。

該民航主管機關無論在配合國際民航組織之做法及對其國內業者之要求上，均值得我學習。

三、客艙安全訓練及其檢討

**機上乘客類別界定

主講人:Mr. Bud Williams & Steve Waltrip

客艙組員應藉由對旅客行為之觀察,具備對機上乘客類別界定之技巧，這包含對所謂正常及不正常旅客之基本分類。

就觀察及基本類別界定技巧包括:直覺、談話及歷史檔是目前較多使用的方法，而其中亦包括直覺、旅客之非肢體語言、談話分析、音調及表達之行為及意識反應。

依照人類行為及心理學家之研究，非口語之表達、情緒、壓力、自我控制、積極表達均有相關之參考徵兆可循，至於如何呈報異常旅客、包括技巧談話以便更進一步了解旅客

之情緒反應及異常程度等則屬業者之訓練及要求。

**客艙組員保安及人為因素精進訓練

主講人:Capt. Dietrich Langhof

Condor Air

目前熱烈討論中之保安及相關安全訓練，包括人為因素訓練以促進組員間之合作及溝通。在國際民航組織 2002 年 3 月間發佈 Annex 6 中已明訂保安訓練之要求。

訓練科目包括事故類別鑑定、組員溝通、自衛、使用非攻擊性之自衛工具、對截機恐佈份子了解及旅客反應、實務之反制訓練、進入駕艙程序等

在科目中駕艙門上鎖之規定要求上，增加了對前後艙組員溝通障礙項目，也顯示人為因素、組員合作及溝通因無法進入駕艙門要求後更為重要之原因。由於截機、滋擾旅客、爆裂物威脅等均與保安作業息息相關，在客艙組員按規定執行標準作業程序時，必須無懼於會違反進入駕艙規定同時駕艙組員亦須對客艙組員有相當程度之信賴。

Condor 航空針對上述問題發展出一套前後艙 LOFST (Line

oriented Flight Safety Training)，該訓練包括飛航組員模擬機訓練、客艙緊急逃生、組員合作、溝通及保安訓練，訓練客艙模擬機中實施，以假設情況由組員自行設定解決方案，此種訓練方式在該航二年前之 CRM 與安全合併訓練中已開始施行，因為近年對保安訓練科目之要求，工作小組集合相關單位專家共同發展此項訓練，訓練已於 2002 .9 月開始，預計 2003.8 月完成，同時於年度複訓科目中加入 LOFST。

在前後艙之合併訓練中，共計有七階段訓練，包括前後艙人為因素訓練、前後艙任務了解 CBT、前後艙急救訓練、安全複訓、保安及 CRM 訓練，該航之客艙模擬機裝備包括不同機型之艙門、滑梯、動態駕艙、煙及火模擬、緊急裝備、攝影機及視覺及動態系統。

新修正之保安訓練亦包括與保安有關之狀況模擬，其中印象較深者為針對前後艙之工作流程職掌(緊急逃生程序)製作之電腦線上教學系統，此系統可讓組員熟悉各方程序並達到節省訓練經費之目的。

保安及人為因素訓練中最重要者是視前後艙組員為一体，共同合作並能在壓力下解決問題，客艙組員必須有能力在

壓力下仍依既定程序及人為因素技巧，由分析至評估再採取行動。

Condor 航空雖以娛樂為主，但在此合併訓練上之努力及先進作法值得國內業者學者學習。

四、客艙安全異常事件

**客艙組員之傷害及疾病統計分析

主講人:Mr. Dinkar Mokudam

OSHA 專家

經由歷史事件之回顧，客艙組員受傷之機率極大，研究發現其中以肌肉、骨骼及上下背脊(後背、脖子、 肩膀)居多。調查發現以事件統計類別而言，碰撞、艙壓改變、淤青、氣壓傷害居多，造成原因以滾車、氣壓、抽屜、肢體動作不當等，而受傷部位則以背部、下半身、耳、手部居多。

依照國際飛安基金會研究報告顯示，受傷客艙組員年資以四至六年居多，疲勞、營養不均是可能造成之原因。其中疲勞造成注意力不集中，反應不當，而組員班表之安排及時差、重力、噪音、震動 、亂流等及長時間站立、彎腰、推力、提重物、休息設備不當亦有可能造成傷害。

其他因素包括航程長短、任務性質及工作量及時間壓迫性亦有相當程度之對等關係。

其預防方法包括對手提行李重量限制、對旅客無法自行安排手提行李應要求託運、增加組員人力、同時對廚房及其他客艙用品之設計及放置地點應考量人性化及避免造成職業傷害。至於在客艙組員訓練中亦應加入如亂流認知、亂流標準作業程序、客艙扶手之使用及体能訓練等。

經由上述統計分析可知客艙組員因工作環境而造成之傷害有時難以完全避免，這些傷害是工作性質所造成的，但是組員必須對其有相當程度之了解及預防觀念，這此則係經由訓練單位持續性之要求及提供資訊以減少傷害。

國內業者雖對職災安全已有初步認識，但實務上及資訊分享上仍應學習國外做法由建立觀念程序後，納入實務執行。

五、客艙安全相關之議題

**SAE S9 客艙安全分組組織功能介紹

SAE 係由工程師設立之社團，創立於 1916 年，之後加入航太、動力艇及與交通運輸有關之各小組，其設立目

的為促進及提昇科技新知、發展設計製造維修標準。

組織下包含多個委員會及專門部門，其中 S-9 係在航太下航務部門之客安全部，專門針針對安全設備、逃生、客艙內裝、操作及人為因素之分組，經由會員對客艙安全及技術法規之經驗交流，促進旅客及客艙組員在緊急狀況下之安全及生還性，同時建立相關之作業標準以減少異常事件之傷害。

S-9 下目前分為三個工作小組:安全裝備/生還系統、客艙內裝、操作及人為因素，目前該小組已針對多項安全標準完成相關之研究文件並積極廣徵會員中。

該組織網

址:http;//forums.sae.org/access/dispatch.cgi/TEAs9_pf

大會閉幕前由美 ATA 資深副總裁 Malcolm B 針對世界民航現況及未來發展說明。

該員首先對近期世界重大失事率之平穩表示欣慰，但同時亦對 911 後航空界面臨前所未有之經營危機憂心，其

中包括商務客及旅遊市場蕭條，旅客訂票習慣改變，而低價策略導向更造成經營生態之壓力，航空公司如不合併聯營就必須採裁員減薪，而造成工作機會大幅下降，傳統之經營理念及操作方式已不再可行，這也相對造成客艙安全重視 性的問題。

當經營者面臨強大生存壓力時，飛安不打折之理念就受到考驗，而在準時率之考量下，更對組員工作環境及工作方式有影響。

客艙單位人員在此階段最明智之選擇是幫助經營者渡過難關，與主管合作，減少不必要的支出方能對自己的工作權有更佳之保障。

肆、建議

綜合上述專題報告個人心得，謹提出下列建議事項

一、 落實策略會議建議成立國家保安委員會之建置，參考歐美保安措施中具体可行方案，並協助國內業者針對保安新措施(如駕艙門上鎖、前後艙協調聯絡替代流程等)提供諮詢及資訊。

二、 民航局客艙查核員參照國外客艙查核 標準及要求規範國內客艙安全有關之程序及訓練標準(包括客艙人為因素訓練)

三、 民航主管單位及業者共同研究安全與保安相關、重疊及權責模糊地帶。

四、 國內業者與機場緊急應變及消防搶救單位就緊急逃生之指令、溝通方式可能衍生之問題研討及對彼此程序說明。

五、 國內業者參考國外職災安全之訓練科目納入年度訓練中以減少客艙組員職災受傷率。

六、 國內民航主管機關及業者多參與類似研討會以獲取新知及與國際相關單位資訊分享。

七、 成立客艙安全工作小組針對客艙安全重要議題研發及交換資訊。

伍、附錄

一、 參加人員名單及通訊錄

Participant List by Name

二、 客艙組員安全行為之發展及評估

Development and Evaluation of Cabin Crew Expected safety Behaviors

三、 保安政策與安全政策之整合

Reconciling Security policies with Safety Requirements

四、 客艙組員保安及人為因素精進訓練

Integrating the New Security Requirements in our Safety and CRM Training

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Development and Evaluation of Cabin Crew Expected Safety Behaviours

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Abstract

Within the airline industry, expected safety behaviours are being increasingly used to assess or observe flight crew non-technical skills (CRM) performance. While safety and human factors programs are well established components of cabin crew training, airlines are yet to identify the non-technical skills required of cabin crew to successfully manage safety critical tasks and situations. In addition, there is a lack of data on how cabin crew deal with threats and avoid, recover and manage error. This paper describes a two-part research project being undertaken within Qantas Airways. Phase 1 involved the application of the Critical Decision Method protocol to identify successful decision making skills amongst experienced cabin crew. From a qualitative analysis of interviews with eighty Customer Service Managers (CSMs), expected safety behaviours were identified, and grouped under the following seven elements: situational awareness, information & resource management, operational understanding, passenger management, crew management, negotiation & influencing skills, and workplace safety. The use of these expected safety behaviours in training and performance planning is discussed. Phase 2 of the project involves the proposed implementation of a LOSA-type program within the Cabin Crew environment, utilising the expected safety behaviours developed in Phase 1. The applicability of LOSA for cabin operations as well as the logistical and practical challenges of planning and implementing normal operations monitoring for cabin crew is discussed. In addition, an outline of the expected benefits of this research to air operators and the wider aviation industry is provided.

Introduction

In recent years, human factors training programs have begun to develop more rigorous criteria for training and evaluation. Behavioural competencies are replacing the traditional approach to CRM, which has focused on attitude change (eg. van Amermaete & Krujisen, 1998). Behavioural marker systems are becoming increasingly accepted as a legitimate means of measuring individual and team performance in a range of high reliability contexts, most notably aviation (Flin & Martin, 2001), nuclear power (O'Connor, Flin & O'Dea, 2001) and medicine (Fletcher, McGeorge, Flin, Glavin & Maran, 2002).

Expected Safety Behaviours (ESBs) are generally thought of as observable, non-technical behaviours that contribute to effective or ineffective performance within a specific work environment. They are usually structured into several categories, and the categories are comprised of the actual behavioural markers or indicators. A behavioural marker should describe a specific, observable behaviour, not an attitude or personality trait, and demonstrate a causal relationship to performance outcome. Klampfer et al. (2001) suggest the following uses for ESBs:

- To enable performance measurement for training and assessment;
- To highlight positive examples of performance; and
- To build performance databases to identify norms and prioritise training needs.

In contrast to the initial development of CRM style programs, characterised by their wide variety, different assumptions, different training methods, and a lack of common content, the recent growth of behavioural human factors training has been accompanied by a shift toward standardised programs. In the aviation industry, three research groups have led the push for behavioural markers systems.

In Europe, the Joint Aviation Authority has produced the NOTECHS (Non-Technical Skills) framework, an amalgamation of existing airline behavioural markers systems, to measure non-technical skills (van Avermaete & Krujisen, 1998). The NOTECHS project was motivated by Joint Aviation Requirements (JAR) which mandate the training and assessment of pilot's CRM skills. The NOTECHS system includes five principles, which are intended to provide objective assessment. The first requirement is that only observable behaviour is assessed. Secondly, for behaviour to be rated unacceptable, it is a requirement that there be a threat to flight safety. The third requirement is that unacceptable behaviour must be repeated during a check to determine if there is a substantive problem. Fourthly, each behaviour must be rated as either acceptable or unacceptable. Finally, an explanation is required for each unacceptable rating. These five basic principles of NOTECHS will also apply to any future inflight CRM assessment at Qantas.

In the United States, the University of Texas has developed the Line Operations Safety Audit (LOSA) program to provide a new platform to collect data. LOSA utilises trained observers to collect data about flight crew behaviour on normal flights under non-jeopardy conditions. Observers record potential threats to safety and how the flight crew detect, recover and manage threats and errors (Helmreich, Klinect, & Wilhelm, in press). Qantas has implemented LOSA for pilots.

The Gottlieb Daimler and Karl Benz Foundation launched the GIHRE (Group Interaction in High Risk Environments) aviation project to validate the existing behavioural markers for

CRM assessment under conditions of high workload. Comparisons between the NOTECHS and LOSA behavioural markers will identify which behavioural markers differentiate best between effective and ineffective crews under high workload (Klampfer et al., 2001).

In addition to the three projects described above, a number of airlines have developed their own behavioural marker systems for training and assessing flight crew skills (see Flin & Martin, 2001, for a review). For example, Qantas assesses CRM expected behaviours as part of their Advanced Proficiency Training (APT) project.

However, methodological guidelines for the development of behavioural markers are lacking. For example, the NOTECHS system has been developed based on an amalgamation of existing marker systems amongst various European carriers, rather than utilising any formal cognitive task analysis process. A number of airlines have developed their own behavioural markers, using a variety of informal methods and techniques. It appears that studies using established, valid and reliable processes such as cognitive task analysis or critical decision techniques are required (eg., Hoffman, Crandall, & Shadbolt, 1998).

Furthermore, there does not appear to be any published research into the development of behavioural markers for cabin crew, despite CRM training being mandated in many countries since the early 1990's. Numerous accident and investigation reports reinforce the need for cabin crew to take appropriate action to deal with situations involving in-flight fire, ill or disruptive passengers, or passing on critical information to the flight crew. The handling of such emergencies calls for knowledge, skills and abilities quite different from those associated with normal service duties.

While the duties and functions assigned to cabin crew in the interests of passenger safety are well established across the aviation industry, there is no consensus on which skills are needed for effective cabin crew CRM or how to train CRM behaviours (ICAO, 2002). There are a number of benefits for establishing behavioural marker systems for cabin crew, including the ability for air operators to more easily identify risks to the operation in order to target cabin crew training effectively.

A behavioural marker system for cabin crew is also on the regulatory agenda in Australia. Unlike other countries such as the United States and in Europe, human factors training and assessment has not been mandatory for Australian air carriers. Recently, the Civil Aviation Safety Authority (CASA) released a proposal (CASR 121A) which details a plan for regulating human factors training for flight and cabin crew, based on a competency-based framework. This includes the identification of competency standards and behavioural markers, the development of evaluation methodologies for training feedback and the integration of technical and non-technical training. Therefore, the development of a behavioural marker system for Qantas cabin crew training is expected to not only meet this requirement but lead the wider industry towards this type of program. A proven, practical methodology to identify and assess cabin crew behaviours would be beneficial to the wider industry in the form of guidance material.

Therefore, the aims of this study were:

1. To identify specific behaviours that are central to proficient cabin crew safety performance (ESBs); and
2. To determine the best method for the assessment of identified safety behaviours (ESBs) during normal line operations.

Method

Participants

The participants for the critical decision interviews consisted of eighty Customer Service Managers (CSMs). CSMs are responsible for the supervision of cabin crew and the management of cabin services (known as Pursers or Cabin Supervisors in some airlines). The CSMs were a mixture of short haul (54%) and long haul (46%) from various bases across Australia. They had spent an average of 7.5 years operating as a CSM (range = 1-25yrs, sd = 6.2yrs), and their mean age was 42 years (sd = 7.0yrs).

The participants were recruited via posters placed around crew lounges and sign-on areas. The criteria for participation were that the person must be a CSM, and that they could discuss, in detail, a recent (within 18 months) safety-related event that was challenging. CSMs were paid for the ground duty time they spent being interviewed (usually 1.5 – 2 hours).

The interviews were conducted by six interviewers, who were also CSMs. Although their main role was interviewing, these six team members also helped with data analysis and development of the safety behaviours, and acted as expert practitioners for the project. CSMs were used as interviewers because they are subject matter experts, with a large domain knowledge of cabin safety issues

Design

The variables of home base location (Sydney, Melbourne, Brisbane, Perth) and operation type (short or long haul) were controlled to ensure the CSMs proportionally represented the Qantas operation.

The interview process was based on Klein's Critical Decision Method (CDM) (Klein, Calderwood & McGregor, 1989), which is a variant of Flanagan's (1954) Critical Incident Technique. Flanagan states that the Critical Incident Technique can be applied for a variety of situations and uses in aviation, including:

- Measuring typical performance - developing critical requirements for evaluating the typical safety behaviour of an operator;
- Measuring proficiency - providing a basis for evaluating proficiency in a check and training situation; and
- Measuring training effectiveness - providing an indication of the effectiveness of training programs.

These are three areas that the Expected Safety Behaviour project may eventually cover at Qantas.

The CDM is a retrospective interview strategy that applies a set of cognitive probes to non-routine incidents that requires expert (CSM) judgement or decision making (Klein et al., 1989). A semi-structured interview format is used to probe different aspects of the decision process.

The CDM is effective in revealing experts' knowledge, especially tacit knowledge, reasoning and decision strategies. Compared to other methods of knowledge elicitation, the CDM yields more information, including a wider variety of specific cognitive details, more information about underlying causal linkages among core subjects, and the revelation of tacit knowledge (Hoffman, Shadbolt, Burton & Klein, 1995). The reliability of the procedure is based on the idea that experts have clear memories of salient or unusual safety-related incidents (Hoffman et al., 1995). This method of knowledge elicitation has been used successfully in naturalistic environments such as fire fighting (Taynor, Klein & Thordsen, 1987), para-medicine, nursing (Crandall & Gretchell-Reiter, 1993), helicopter flying (Thordsen, Klein & Wolf, 1992), and military command and control (Kaempf, Wolf, Thordsen & Klein, 1992). It is now established as a valid and reliable method of cognitive task analysis and knowledge elicitation (Hoffman et al., 1998; Taynor, Crandall & Wiggins, 1987).

Procedure - Critical Decision Method (CDM)

The first step in Phase 1 was the CDM interviewing. The procedure for employing CDM is well documented (Klein et al., 1989; Hoffman et al., 1998), but the basic steps used in the interviewing process included:

1. Incident selection - CSMs select a recent, non-routine incident that was challenging;
2. The interviewer obtains an unstructured recall of the event;
3. Both participant and the interviewer establishes the sequence of decision events and constructs a time line;
4. Decision point identification –the interviewer identifies specific decisions that were made;
5. Decision point probing – probing/questioning techniques are used to identify effective decisions and resultant behaviours (see Table 1 for examples of the probes);
6. Hypotheticals and 'what ifs ?' The interviewer chooses several decision points, and asks hypothetical questions based upon different event outcomes (eg., what would you do if the Captain didn't take your request seriously?). These queries serve to identify potential errors, alternative decision-action paths, and expert/novice differences (Hoffman et al., 1998); and
7. Standard case study - CSMs are provided with a standard case study[1] and repeat steps three to six as if they were the CSM onboard that aircraft.

Probe Type	**Probe content**
Cues	What were you seeing, hearing, smelling?
Knowledge	What info did you use in decision making and how was it obtained?
Analogues	Were you reminded of any previous experience?
Standard scenarios	Does this case reflect a typical scenario or a scenario you were trained in?
Goals	What were your specific goals and objectives at the time?
Options	What other courses of action were considered or were available?
Mental models	Did you imagine the possible consequences of your action?
Experience	What specific training, experience ort knowledge was necessary?

[1] The standard case study was a real Qantas incident on-board a B737. It involved smoke and fumes in the cabin, with many CRM issues and problems.

Decision making	Was there any time pressure? How long did it take to make the decision?
Aiding	What training, knowledge or experience could have helped you?
Errors	What mistakes are common at this point? How might a novice act?

Table 1. A Sample of CDM Probe Questions (Adapted from Hoffman et al., 1998)

Participants were informed that the interviews were anonymous, and the only identifying information collected was age, years operating as CSM, home base, and operation type (long/short haul). Interviews were conducted in a quiet office and tape-recorded (if permission was granted). Most interviews lasted for 1.5 – 2 hours; requiring at least one hour for the first critical incident, and half to one hour for the repeated case-study incident. Verbatim transcripts were made from the tapes.

Procedure - Development of Expected Safety Behaviours (ESBs)

The second step in Phase 1 of the study involved the coding of the interviews and development of the ESBs. The procedure consisted of a number of stages (stages 1, 2, 3 and 4 have been completed, stages 4, 5 and 6 will be completed in 2003):

1. Initial coding of the transcripts to develop behavioural markers.
2. Improve code structure and markers with feedback from cabin crew subject matter experts (the six CSMs within the project team).
3. Analysis of behavioural markers by general CSM population, including written feedback requested from the entire CSM population to gain general comment and feedback on the list of ESBs, and brief interviews (20 mins) with random CSMs (n=20) to attain more detailed responses. Both methods included rating the importance of each behavioural marker to the safe, efficient conduct of the flight.
4. Produce a master list of ESBs.
5. Measure inter-rater reliability (kappa) and then code remainder of interviews.
6. Attain a frequency count of behavioural marker elements/behaviours occurring in each incident.
7. Construct a 'training focus matrix' (frequency ESB occurring *vs* importance ESB) for the training of expected safety behaviours (see Fig. 1). This is based upon the results from steps 3 and 6 and allows objective prioritisation of training.

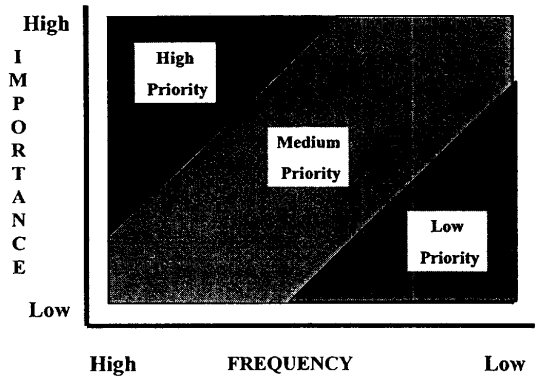


Figure 1. Expected Safety Behaviour Training Focus Matrix.

Results and Discussion

Critical Decision Method

Eighty interviews based on the Critical Decision Method were used to attain the initial list of ESBs. Six interviews could not be used due to failed or poor quality tape recording, unsuitability of the incident, or lack of decision probing. The majority of critical incidents recalled by CSMs could be categorised under seven headings (see Fig 2). Almost half of the incidents were related to disruptive or drunk passengers (20%), in-flight medical emergencies (17%), or security/terrorism threats (12%). The large number of security/terrorism threats has only occurred since Sept 11th. It is interesting to note that so many safety issues revolve around aircraft door and slide issues (10%). Aircraft technical issues (8%) refer to problems such as aborted take-offs, engine problems, and cockpit and cabin equipment malfunctions.

The break down of all Qantas reported cabin safety incidents for the 13 month period Jan 2001 to Feb 2002 is proportionally similar to those of this study. For example, the main reported incidents were passenger behaviour (24%), medical (16%), door/slide issues (5%), smoke/fumes (18%), and turbulence (1%) (Qantas, 2002).

The initial coding of interviews revealed seven ESB categories, each with multiple elements. These are listed in Table 2.

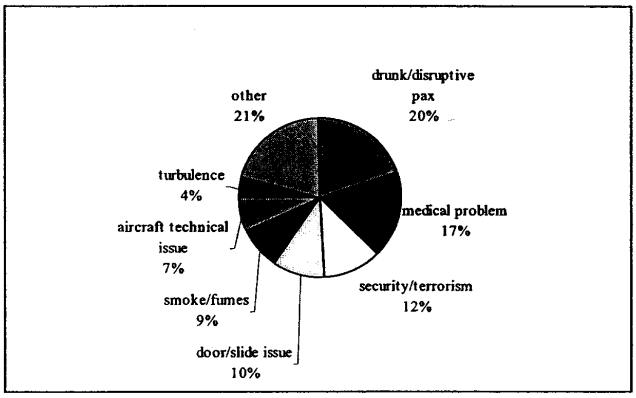


Figure 2. Type of Critical Incidents Recalled in the CSM Interviews

Development of Expected Safety Behaviours (ESBs)

Once the initial list of ESBs was drafted, it was distributed (via internal mail) to all CSMs for feedback and comment. Further, twenty interviews (20 mins each) were conducted with random CSMs in crew lounges during their pre-flight sign-on period. The interviews provided more detailed information and feedback than the mailed feedback survey.

Feedback and comments from the CSMs have reinforced the validity of the ESBs, and have allowed the production of a final 'master list' of behaviours (see Table 2). Typical comments from these interviews included "this list looks like my (job) position description", and "now management may understand what I do". CSMs also believed that such behaviours could be trained, and would make CRM/HF assessment possible.

Feedback was also required on the relative importance of the ESB categories. CSMs were asked to rank the seven categories in order of importance to safe, efficient conduct of their job and the flight. The ranking process is based upon the median scores, rather than the mean to avoid the problem of outlying rankings. The seven categories are displayed in the resultant rank order in Table 2 and Figure 3. The four highest ranked categories (situation awareness, workplace safety, passenger management, crew management) were clearly defined in order, however the last three categories (operational understanding, negotiation & influencing skills, information & resource management) were not, and could have appeared in any order (see Fig. 3). The general ranking process is still in progress (only 40 feedback forms have been returned), and rankings may change slightly as further feedback forms are returned. The ranking of importance is to be used in the "ESB Training Priority Matrix" (see Fig. 1). The matrix can be completed when all the interviews are coded and the frequency of behaviours is determined.

Expected Safety Behaviour Category	Expected Safety Behaviour Element / Behaviour
Situation Awareness	• Demonstrates awareness of flight phase • Considers political & cultural context • Considers time constraint • Recognises higher safety goals and priorities • Anticipates decision consequences • Develops contingency plans
Passenger Management	• Assesses passengers (boarding or in-flight) • Monitors potentially threatening pax behaviour/condition • Acts decisively to modify passenger behaviours/condition • Considers passengers well-being • Presents a calm, controlled image to passengers • Diffuses situation in a non-confronting manner • Minimises cabin disruption
Workplace Safety	• proactively manages OH&S situations • reactively manages OH&S situations • follows-up OH&S situations • communicates OH &S importance • displays role model OH&S behaviours
Crew Management	• Assesses crew • Provides onboard coaching and training to modify behaviour • Considers crew well-being • Considers impact of non-routine events on crew performance • Allows and provides crew debrief
Operational Understanding	• Demonstrates Basic Aeronautical Knowledge (BAK) • Understands authority/duty of CSM • Understands authority/duty of others
Negotiation & Influencing skills	• Consults with others to develop a common strategy • Manages upwards – identifies problem • Manages upwards - expresses concern • Manages upwards - provides options • Manages upwards - uses emergency language
Information & Resource Management	• Identifies & utilises all resources • Gathers information • Confirms common understanding of information • Critically analyses information • Provides timely feedback to those who need to know • Prioritises tasks

Table 2. Expected Safety Behaviour Categories and (preliminary) Elements

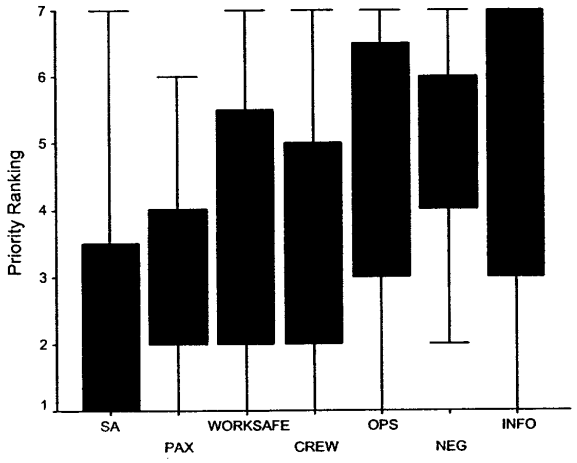


Figure 3. Boxplot showing median and interquartile ranges for the seven ESB Categories (Black line indicates median rank. Box indicates inter-quartile range. Error bars indicate entire ranking range.)

*Future Phases - **Phase1***

The main product to be developed from the cabin crew expected safety behaviours project is a master list of ESBs (as per Table 2). These are to be used in training of cabin crew, and for the evaluation of human factors and CRM skills.

Figure 4 is a representation of how such ESBs may look when they have been transferred to a Qantas in-flight observation form. This is based on a version currently in use with pilots. The back of such a form would contain the full list of behaviours/elements (as listed in Table 2) for reference.

The interview transcripts are currently being used as training aids for human factors and CRM training. There are now eighty Qantas-specific incidents that can be used as case studies and examples for cabin crew training and education. Because the incidents focus on the cognitive aspects of the situation, they are an excellent training aid for teaching expert skills and behaviours to novices. Further, most incidents have positive outcomes, and Qantas training is refocussing largely on positive examples (what went right) for crew training, rather than negative examples (what went wrong), as has traditionally occurred in aviation CRM training.

CSM:
Cabin Crew Sector: Date:

		Ineffective	Marginal	Effective	Highly effective	COMMENTS
1	**Situation awareness**					
2	**Workplace Safety**					
3	**Passenger management**					
4	**Crew management**					
5	**Operational understanding**					
6	**Negotiation & influencing skills**					
7	**Information & resource management**					

Ineffective	Marginal	Effective	Highly Effective
This is a behaviour which: • May contribute to an uncorrected error • Immediate improvement is required in this area	This is a behaviour which: • May impair crew from completing a task, but is unlikely to contribute to uncorrected error • Crew members will benefit from further training or self-improvement	This is a behaviour which: • Facilitated the effective completion tasks free of significant error • Demonstrates an example of CRM that crew members should achieve in line operations	This is a behaviour which: • Facilitated the completion of tasks with more efficiency than is normally required • Demonstrates an example of CRM that all crew members should strive to achieve

Figure 4. Mock-up of Cabin Crew Expected Safety Behaviour Evaluation Form

The ESBs could also be used in recruitment of cabin crew. Potential staff could be recruited against the actual safety behaviours and skills required by Qantas cabin crew, rather than against generic industry requirements, ensuring that only the most suitable applicants are selected.

Future Phases - Phase 2

In the longer term the ESBs can be used in a similar manner to the way in which they are used for cockpit crew – the evaluation of CRM and non-technical skills in training. However, the greatest challenge is moving the evaluation and observation of safety behaviours out of the training environment and into normal line operations, in the form of a cabin crew LOSA program. There are many issues and problems to overcome before in-flight cabin observations can take place. Such problems include:

- Cabin environment is not as contained as a cockpit.
- Double deck aircraft.
- All information goes through CSM.

- Observers are more obtrusive in cabin.
- Errors tend to be less consequential in the cabin.
- Impact on customers & service.
- Multiple crew to observe.
- Less external threats to inflight safety in the cabin.

Many of these logistical issues are not relevant to the cockpit, where check and training for technical skills has been an accepted practice for decades. Further, CRM and non-technical skills audit and evaluation is gaining acceptance in the cockpit, and a cockpit LOSA program is running at Qantas. As yet, no airline has committed to a LOSA-style program for cabin crew, and to our knowledge, the proposed Qantas project is the first attempt to apply this program within the cabin environment.

Summary and Conclusion

Expected safety behaviours or non-technical skills are being increasingly used to assess or observe flight crew CRM performance. Safety and human factors programs are well established components of cabin crew training, but the non-technical skills required to successfully manage safety critical tasks and situations have not yet been identified. This paper described a two-part research project being undertaken within Qantas to address this lack. Stage 1 involved the application of the Critical Decision Method protocol to identify successful decision making skills and expected safety behaviours amongst experienced cabin crew (CSMs). Seven main categories were developed. These expected safety behaviours can also be used to improve the future recruitment of cabin crew, and the eighty interviews can be used as training aids for cabin crew CRM and safety training. Stage 2 of the project (which is yet to be completed) may involve the implementation of a LOSA-style program within the cabin crew environment, utilising the expected safety behaviours developed in Stage 1. The applicability of LOSA for cabin crew operations as well as the logistical and practical challenges of planning and implementing normal operations monitoring for cabin crew are still major issues to be resolved.

References

van Amermaete, J.A.G., & Krujisen, E.A.C. (Eds) (1998). *NOTECHS: The evaluation of non-technical skills of multi-pilot aircrew in relation to JAR-FCL requirements.* National Aerospace Laboratory NLR.

Crandall, B., & Getchell-Reiter, K. (1993). CDM: A technique for eliciting concrete assessment indicators from the intuition of NICU nurses. *Advances in Nursing Science, 16*(1), 42-51.

Flanagan, J., (1954). The critical incident technique. *Psychological Bulletin, 51*(4), 327-358.

Fletcher, G., McGeorge, P., Flin, R., Glavin, R. & Maran, N. (2002). The role of non-technical skills in anaesthesia. *British Journal of Anaesthesia, 88,* 418-429.

Flin, R. & Martin, L. (2001). Behavioural markers for Crew Resource Management: A survey of current practice. *International Journal of Aviation Psychology, 11,* 95-118.

Helmreich, R.L., Klinect, J.R. & Wilhelm, J.A. (in press). System safety and threat and error management: The Line Operations Safety Audit (LOSA). *In Proceedings of the Eleventh International Symposium in Aviation Psychology.* Columbus, OH: The Ohio State University.

Hoffman, R., Crandall, B., & Shadbolt, N. (1998). Use of the CDM to elicit expert knowledge: A case study in the methodology of cognitive task analysis. *Human Factors, 40*(2), 254-276.

Hoffman, R., Shadbolt, N., Burton, A., & Klein, G. (1995). Eliciting knowledge from experts: A methodological analysis. *Organisational Behaviour and Human Decision Processes, 62*(2), 129-158.

International Civil Aviation Organisation (ICAO) (2002). *Draft Human factors digest: Human factors in cabin safety.* Montreal, Canada.

Kaempf, G., Wolfe, S., Thordsen, M., & Klein, G. (1992). *Decision making in the AEGIS combat information centre. (KATR-9007-92-052).* Fairborn, OH: Klein Associates.

Klampfer, B., et al. (2001). *Behavioural markers workshop.* Swissair Training Centre, Zurich, 5-6 July.

Klein, G., Calderwood, R, & McGregor, D. (1989). Critical decision method for eliciting knowledge. *IEEE Transactions on Systems, Man & Cybernetics, 19*(3), 462-472

O'Connor, P., Flin. R. & O'Dea, A. (2001). *Team skills for nuclear power plant operating staff.* Technical Report to Nuclear Industry Management Committee. Industrial Psychology Group, University of Aberdeen.

Qantas (2002). *Safety analysis paper: Cabin safety incidents - causal factors (SAP 06/1).* Sydney, Australia: Qantas, Corporate Safety Dept.

Taynor, J., Crandall, B., & Wiggins, S. (1987). *The reliability of the critical decision method. KA-TR-863(b)-8707F.* Yellow Springs, OH: Klein Associates.

Taynor, J., Klein, G., & Thordsen, J. (1987). *Distributed decision making in wildland fire fighting (KATR-858(A)-04f).* Yellow Springs, OH: Klein Associates.

Thordsen, M., Klein, G,. & Wolf, S. (1992). *Observing team co-ordination within army rotary wing aircraft crews. (ARI Research Note 92-40).* Fort Rucker, AL: US Army Research Inst for Behavioural and Social Sciences

20th International Aircraft Cabin Safety

Symposium 2003

Integrating the *New* Security Requirements

in our **Safety** and **CRM Training**

Speaker: **Capt. Dietrich Langhof**
Purser Arnd von Schwanewede

Biography for Captain. Dietrich Langhof

Capt. Langhof started his flying career in the German Navy in 1972.

During his time as an aircraft commander and instructor pilot on the Breguet Atlantic, a maritime patrol aircraft for long range surveillance and search and rescue, he has been in charge for the safety and survival training in his navy squadron. In 1989 he retired as Lt. Cdr. from the navy and joined the AERO LOYD charter airline in Frankfurt as training captain on the MD-80 and flight safety instructor.

In 1992 he hired at CONDOR and is now a captain on B757-200, -300 and B767-300ER. As a S.E.P- Safety and Emergency Procedure and Security Manager he is in charge for the Flight Safety Department at Condor. Since two years he is a member of the JAA Flight Crew and Cabin Crew Study Group

Biography for Purser Arnd von Schwanewede

Purser Arnd von Schwanewede started his flying carrier as a flight attendant in 1994, to be able to finance his economics studies. In 1999 he took the opportunity to become a Purser and CRM trainer. Since 2002 he became additional a security trainer and since January 2003 he is now the head of the Cabin Human Factor and security training.

20th International Aircraft Cabin Safety

Symposium 2003

Integrating the *New* Security Requirements

in our **Safety** and **CRM Training**

Captain Dietrich Langhof

SEP and Security Manager, Condor Airlines,
member of the Thomas Cook Group

Purser Arnd von Schwanewede

Security und CRM instructor, Condor airlines

Introduction

Since 20 years this symposium is the great chance for us to discuss to exchange and to talk about issues concerning flight safety training. This has always been a wonderful opportunity to share experience. After the tragic event of the 9/11/01 we all have now another item on our training agenda. That is common security for all of us.
Many of us present here today from the aviation industry and security experts have common goals and work hard to improve flight safety and security training.
As a team from the cockpit and the cabin we appreciate very much the opportunity to share our experience and what we did:

Not losing but improving crew coordination and crew communication

by connecting

Safety - Crew Resource Management (CRM)– Security

This year we are celebrating 20 years Cabin Safety Symposium, 100 years ago , the Wright brothers created the discipline of aeronautical engineering and achieved the first powered flight; aviation was born
Thomas Cook started round about 160 years ago with his first organized tourist tour, this has been the start of a great industry.
-Tourism worldwide-.
During that time people started to travel by horse carriage or by ship later by train and today we are travelling round the world with international civil aviation.
Global applied aviation safety and security is a need and a must and we all in the aviation industry will be judged by our passengers on it's resolution in providing it.

But before we start our presentation in a short time
let us show you how fast changes in the airline business can be today.

From CONDOR to THOMAS COOK

1997

Until 1997 Condor Flugdienst GmbH belongs to C&N Touristic AG (today Thomas Cook AG): by merging Condor Flugdienst GmbH and NUR Touristic GmbH , the two shareholders in C&N Touristic AG, Deutsche Lufthansa AG (50%) and KarstadtQuelle AG (50%), lay the foundations for an integrated leisure group of European proportions.

2002

Thomas Cook is set to become the first fully international leisure brand - this is the goal which the travel group has set itself within the framework of the ongoing development of its international brand strategy. This means that Thomas Cook is being launched as a tour operator in Germany too and that the company's holiday airlines are being given a new design to communicate the brand throughout the world.

In Germany, the aircraft flown by **Condor and Condor Berlin** are to be given a new corporate livery. In future, the **name Thomas Cook** will be written on the aircraft's fuselage and the **Thomas Cook logo** will appear on its tail-fin. The slogan **'Powered by Condor'** is a clear indication that the new airline brand will be drawing on Condor's proven qualities.
In June 2002 we already saw the first of the 50 Condor aircraft flying in the new colours. As from April 2003, seat-only sales will also be renamed from Condor to Thomas Cook as part of the airline rebranding activities.

Thomas Cook is set to become the first fully international leisure brand - this is the goal **Europe's second-largest travel group** has set itself within the framework of the ongoing development of its international brand strategy. The Thomas Cook brand - hitherto used as the company's name as well as for its sales and service activities – will in future appear in all markets and on all levels of the travel-related value chain. This means that Thomas Cook is being launched as an operator in Germany too and that its holiday charter airlines are being given a new design to communicate the brand throughout the world.

Thomas Cook Group Airlines

Condor	Germany's favorite airline with 50 aircraft
JMC	the UK's second largest leisure airline With a fleet of 24 aircraft,
Sun Express	From Turkey Sun Express with 10 aircraft
Thomas Cook	Belgium with 6 aircraft

Total of 90 aircraft.

Integrating the *New* **Security** Requirements

in our **Safety** and **CRM Training**

We all remember the tragic and horrible terrorist attacks at the 9/11/01.
Aircraft hijacks up to that point were usually negotiated and resolved with minimal loss of life.
But at this tragic day terrorist used airplanes as weapons of mass destruction and thereby essentially changed the nature of hijacks and the level of threat against civil aviation. In the aftermath we have seen a lot of changes in aviation security round the world.
New requirements and rules were laid down and had to be implemented in a very short time.
First by the US government and the FAA and then from the ICAO.
Followed by JAA and most national authorities.

The ICAO wrote it on the wall for all of us.

Montreal, 21 March 2002 ANNEX 6 Amendment 27

In order to prepare crew member for dealing effectively with acts of unlawful interference, expanded security training shall include:

- determination of the seriousness of any occurrence;
- crew communication and coordination;
- appropriate self-defence response;
- use of authorized, non –lethal protective devices assigned to crew members;
- understanding of behavior of terrorist so as to facilitate the ability of crew member to cope with hijackers behavior and passenger response;
- live situational training exercise regarding various threat conditions;
- flight deck procedures to protect the airplane

The document identifies issues beside the new cockpit doors that operators have to address in both procedures and training for flight deck crews and cabin crews in order to deal with the new threat world wide to meet the new requirements.
The new security standards apply to all international flights using civil aircraft of more than 60 passengers, effective 1 November 2003.

Ladies and gentleman time is running and time is also money in our business and we have seen many airlines in the last two years who got financial problems after the 9/11/01.We are all facing the same problem, that is our budget Reaching a good training standard does not always need to be expensive.

Let's do it---- but how?

CRM problems

With all this new locked cockpit door regulations some people, mostly pilots take the view that seeking to tighten security on board airliners, possible could cause negative effects upon other safety matters.
But we think that is not true and we would like to show you in our presentation ,why.

It is now more important than ever that with the new cockpit doors and access requirements, we have to establish procedures to keep effective communication and coordination between flight deck and cabin crew and vice versa.
Some operators will have less problems to adopt the new requirements because they are used to the closed cockpit door policy others who had face to face communication up to now between cockpit and cabin crew, have to be aware of the fact that we all have to do more concerning CRM, crew co-ordination and communication to be able to avoid risks shown within the cartoon.

With all these changes in mind a good management of a flight from a security, safety, and customer service point of view requires a steady flow of communication and co-ordination between the flight crew and cabin crew. (CRM)

What we are looking for is---

THE Perfect Team or Ideal Crew

Here is what we expect:

Safe conducting flight	Security standards
Professional work	friendly, service minded

Joint training

By now more and more airlines round the world realize that the relationship, communication and coordination between flight deck and cabin crew is paramount. The two groups are working together as a team to ensure a safe and secure operation. Especially if we focus on security matters the three major threats situations that a crew might experience during flight operations.

-Hijacking
-Unruly passengers
-Bomb threat

But this can only work, if our cabin crews are confident about relating events that are happening in the cabin to the cockpit without fear of being told that they are wrong or that they should not interrupt the cockpit crew.
And on the other hand our cockpit crews , must have the confidence to invite such communication from the cabin.
The most important point is, that we have to trust and understand each other and this can only be generated during join training to ensure that we can act, even under stress in the most appropriate manner to minimize errors and operate as a team.
According our experience we believe there is no other way than a joint training what we at CONDOR are doing now since years.

To achieve all this we were looking for ways how we can include the new requirements in our training which is now a ----

Line Orientated Flight Safety Training (L O F S T)

With today's technology it is possible to use virtual reality simulation in flight crew

training, cabin evacuation, crew co ordination, communication **and security** training.

Condor was looking for new ways of using these modern technology to improve cockpit- and cabin crew skills during flight safety training.

For cockpit crews we established **L**ine **O**rientated **F**light **T**raining (LOFT) some years ago. As a result of the knowledge of our cockpit-, cabin-, flight safety-, CRM- and security trainer we changed the definition a little bit so it fits also for joint cockpit- cabin training.

> "Line Orientated Flight **Safety** Training, that is the use of the **C**abin **E**mergency **E**vacuation **T**rainer(CEET) and structured script or scenario to simulate the total line operational environment. During the LOFST mission problem solving skills are practised by introducing a developing situation and allowing the crew to follow it through to its conclusion without any comments or instructions from the instructor.".

Two years ago we combined already Safety and CRM –training.

CRM-Training according JAR-OPS should address the following matters:

- the importance of effective co-ordination and two-way communication between cockpit and cabin crews in various normal, abnormal and emergency situations,
- combined cockpit and cabin crew training should, wherever practicable, include joint practice in aeroplane evacuations and discussions of emergency scenarios

How can we now integrate additional **the new security** requirements-

in our training **?**

New Security training

We had a vision:

To set up a new Security training according ICAO and national requirements.

Therefore we installed a security working group to work out a concept together with cockpit-, cabin-, flight safety-, CRM instructors and security experts for the new basic security training. That training we started by end of September 2002 and will be accomplished for all our crews by end of August 2003. And further more we will integrate Security in our

"Line Orientated Flight **Safety** Training"

for our recurrent training.

Our vision -

Not losing but improving crew coordination and

crew communication

by connecting **Safety - CRM – Security**

According to our slogan since 20 years now here at the symposium

"share your experience"

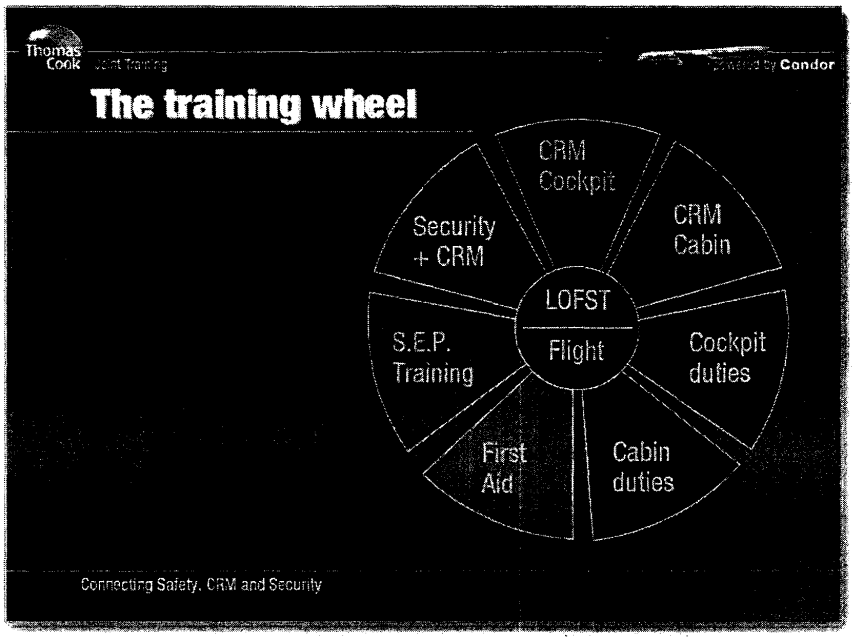
We now like to present you our

TRAINING WHEEL

Or the 7 steps of our joint training

1. Crew resource management cockpit,
2. Crew resource management cabin,
3. Knowledge about Cockpit duties for cabin crews,
4. Knowledge about cabin duties for cockpit crews,
5. First Aid for cabin and cockpit crews,
6. Flight safety recurrent training,(SEP)
7. Security and CRM.

All this different sections feed the center of our wheel and
in the center of our wheel we have L O F S T.



Before we show you how the different steps work together ,a few words about our Training's facilities, so it is easier for you to understand why this facility is the heart of our training to conduct relative real time joint practical training.

Cabin Emergency Evacuation Trainer (CEET)

In 1999 we began to install our new CEET for real time training at our safety training facility in Frankfurt.

We like now to introduce some details about our magic emergency flying machine.

Overview CEET

The cabin trainer represents the Boeing 757-200, -300, Boeing 767 and Airbus 320.

Doors

The CEET offers three doors:

- a B757 main door 1L
- a B767 main door 1L and
- a A320 main door 1R

For each type one over-wing "plug type" exit and one B757 emergency escape door is installed.

Slides

The trainer is fitted with two slides; a single aisle type slide from the B757 and a twin aisle from the B767.

Cockpit

New cockpit door with key pad, same as on our airplanes *neu Photo Tür*

It is very important for us to have a cockpit section now, which is divided into two sides to represent a B757 cockpit on the left hand side and a A320 cockpit on the right hand side. For Pilot Incapacitation Training, we have one B757 and A320 seat in the cockpit.

We have one altimeter and a time indication for the pilots, to check the remaining flying time and the aircraft height.

Full face oxygen masks with fully functioning intercom are installed in the cockpit to allow communication with the cabin crew. For passenger calls or announcements by the captain a passenger address system is fitted, thus allowing a very good combined cabin - flight deck communication training, something we value very highly. In addition a smoke source to simulate smoke in the cockpit and one camera on the cockpit ceiling is installed.

Smoke And Fire

Smoke and fire are the most dangerous situations for a crew, so we installed various fire and smoke sources in our CEET. Smoke and fire in the lavatory incl. a hot lavatory door, smoke and fire in one overhead bin and in the video entertainment area, hot smoke and fire in the galley, smoke behind the wall, smoke in the cockpit and smoke in the air-conditioning system.

These sources are controlled from the instructors position by a touch screen allowing to keep the crews very busy.

Equipment

We installed the emergency equipment in the cabin as closely as possible to their actual location in the real aircraft, i.e. we have every equipment starting from fire extinguisher, smoke hood up to the life-raft and entertainment system on board.

Cameras

We have eight cameras installed giving us the opportunity to monitor and record all phases during the training. Cameras are positioned in the cockpit, in the lavatory, in the galley, in all door areas and outside over-wing.

New: galley area to check clear area, to be monitored from the cockpit crew

Thus the instructors can follow the training mission precisely on the video system and use the replay later during de-briefing.

Visual System

Perhaps the most unique feature of our trainer is its visual system, which reproduces a realistic impression of the outside environment. There are two projectors, installed on the outside right hand side of our trainer which project the image onto a screen that runs nearly the full length of the CEET.

The manufacturer "TFC" has developed a database that includes scenes at the gate, pushback, taxiing, take-off, take-off aboard, cruise, landing and ditching. Different take-off and landing situations can be simulated, for example:

- the right wing with the engine running normally or on fire
- smoke condition

is projected onto the screen.

Motion system

The CEET has been installed on a three-axis motion base. The whole system is integrated into the motion system so that our crews can actually feel the movement they see outside the cabin windows. The motion is very sensitive, allowing different levels of movement to be felt from taxiing to take-off, turbulence and different landing scenarios. Aircraft specific noises are reproduced over a sound system.

Emergency landings with fire or collapsed gear and other scenarios can therefore be simulated. With the new door and the visual monitoring system, motion, sound and visuals all linked together, the flights become very realistic.
For joint cockpit- and cabin training we are now able to simulate a flight in a real time different scenarios, as close as it could actually happen during a flight the CEET is more a simulator rather than a cabin mock-up.

For our training it means **more practise ,practise , practise!**

"What I read, I forget –

what I see, I may remember –

what I practise, I am able to do."

Modified Rules for LOFST including Safety-CRM-Security:

1. Normal, abnormal emergency and **security** situations should be as realistic as possible.

2. All phases of flight must be flown in real time, like a scheduled flight from A to B

3. **Security** ,CRM- and Flight Safety trainer will assume the role of various resources, i.e. ground personal, police, handling, operations and air traffic control (ATC).

4. During LOFST the trainer will not give any help to the crew, they are only allowed to act as an observer, communicator and scenario co-ordinator.

5. For crew confidence, the video tape will be erased immediately after debriefing.

TRAINING and trainer qualification

For a good training you need a motivated training staff.

We do have a few full time trainer, but most of our trainer are crew members, pilots and flight attendants.

Good trainer are not easy to get. One of a trainer attribute is enthusiasm. The enthusiastic trainer is motivated to train and this helps him or her to motivate the crews, especially if the trainer are also crew members.

To motivate our trainer we tried to give our trainer a excellent train the trainer courses by experts. **Without a good background knowledge you can't do a good job.**

To meet the 1 November 2003 ICAO deadline we had no time to recruit total new trainer for our security raining so we were looking for ways to solve the problem.

The facts:

we have safety and CRM trainer from the cockpit and the cabin and a few security trainer but not enough to train the whole company within one year.

All our CRM trainer from the cabin are qualified to do CRM basic, recurrent and unruly passenger training for Threat Level 1 and 2.

Why not use the capacity of our trainer from the cockpit and the cabin who got already the training skills and to train them for the new security training?
Remember the most important point is ,**that we have to trust and understand each other**, that why we belief, if both sides from the cockpit and the cabin are doing the training, we will have a much greater acceptance from our crews, and that is what already happens since august 2002.

"I can do it, you can do it, we can do it".

That is what we did.

Train the trainer course

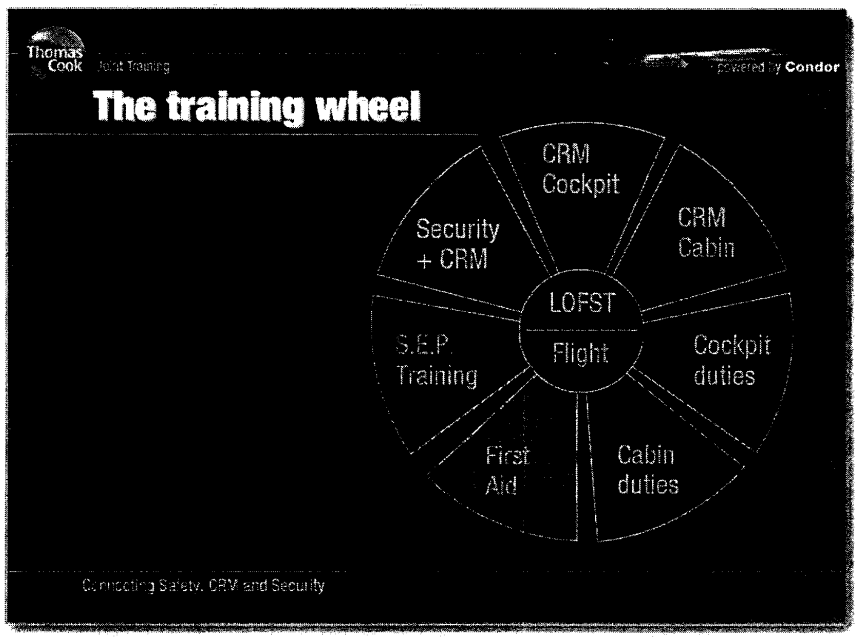
We arranged a special security "train the trainer course". At that time security specialists where hard to find, who could offer us a proper training according our demands, so we decided to do our training with the security specialists of Greenlight and React from Great Britain, together we worked out a 4 day seminar, covering the new requirements. The German national law requirements and self defence and crew response was accomplished by TFC Käufer in a 2 day course with special airport policemen.

Now we got our certified security trainer according the requirements of our national authority .The trainer of the security working group who wrote also the trainer handbook coached all the new security trainer during their training within the first four weeks and than all were ready to do the new training.

Training Wheel

Let us now go back to our wheel to check for some more details , due to the short time we can give you only one example, a highlight from each section.

Like an engine needs fuel, our LOFST needs other training elements who feed the centre of our training wheel.



Crew resource Management (CRM) cockpit

CRM is defined as the utilization of all available human, information and equipment resources towards the effective performance of a safe and efficient flight.
CRM is an active process by crew members to identify significant threats to an operation, communicate them to each other and to develop and take measures to avoid or minimize the risk.

One of the two days training highlights is to improve CRM by using the "F O R – D E C" Model as a strategy to optimise the solution of problems.
"F O R – D E C" is a made-up word to symbolise six different phases of the decision making process:

Facts, **O**ptions, **R**isk & Benefit – **D**ecision, **E**xecution, **C**heck

Facts (What is actually going on here?):
- recognise the need for a decision
- analyse the situation: collect relevant facts
- define possible outcome and set priorities accordingly

Options (What are the choices we've got?):
- sift through applicable procedures
- gather the various ways of dealing with it

Risks and Benefits (Weighing up the pros and cons):
- estimate the benefits
- estimate the risks involves
- assess the uncertainty

Decision (So, what shall we do after all?):
- choose option with the lowest risk and factor and highest chance of success
- if necessary have the choice of a back up option
- re-check if the assessment is still valid

Execution (Who shall do what, when , and how?):
- Precise planning and co-ordinated carrying out of the chosen option

Check (Is everything still all right?):
- control of the actions carried out
- critical comparison of actual effect with the expected result
- have events been overtaken in the meantime?
- have we taken the best course of action? If necessary go back to "Facts" and start again

Crew resource Management (CRM) cabin

CRM Initial Training and Unruly Pax

Units: Briefing, First Impression Effective Communication, Decision Making, Teamwork, Stress Management, Live situational Training, Feedback, Unruly Passengers Company Policy. Debriefing.

CRM Quick Reference List

The CRM Quick Reference List is part of the CRM seminar and **should be used in all sections of our wheel** and **in the daily** work routine.(**Flight Operation)**
It can be used as a base for discussion when holding debriefing as well as help for self-analysis.

The most important motive in using CRM should come from the crews themselves, as they are the ones affected by incidents and accidents. Therefore the use of the CRM list in our daily working life is paramount.

Before we start our training we make sure that all crew members have their pocket-card, with the CRM Quick Reference List on one side and "F O R – D E C" on the other side.

The CRM Quick Reference List consists of the following items:

Communication	**Teamwork**	**Management**
• effort to make a positive impression	• give feedback	• search for options
• listen to others	• voice doubts	• evaluate pros and cons delegate sensibly
• ask other's opinion	• discuss differences	• analyse decisions
• use of knowledge accordingly	• reduce the human error factor	• set yourself gates
• support reasonable views on subject	• use of all sources of information	• advance planning
• support others		• avoidance of time-pressure
• accept criticism/objection		• defeat distraction
		• structured conclusion

Knowledge about Cockpit duties workload and technical background for cabin crews

Safety pilots from European airlines made a research about critical incidents that happen in aviation. They found that 18% occurs due to poor communication between cockpit and cabin, because the cabin crews have not enough technical knowledge and know to little about cockpit duties. That is why we started in 2001 to give our cabin crews a half day presentation about cockpit workload ,duties and technical background knowledge by our cockpit trainer.

The presentation is a flight from Frankfurt to Mauritius and shows all steps of the flight from briefing, flight planning., outside check (technical background),different phases of flight, simulator with engine fire and take off aboard (evacuation) and all the different sounds and warning signals on board of an aircraft.
To increase the technical knowledge of a cabin crew will vastly enhance their value as a technical resource to the flight crew and equally important, their credibility with the flight crew will likely be substantially increased.
So we have to train our cabin crews and than they will be more confident about relating events that are happening in the cabin to the cockpit without fear of being told that they are wrong or that they should not interrupt the cockpit crew.

Example: **aircraft** *walkaround*

Knowledge about Cabin workload and duties for cockpit crews

And on the other hand our cockpit crews , must have the confidence to invite such communication from the cabin .
Also we are doing join training since years. We found that also our cockpit crew should have more knowledge about cabin workload and duties.
That is why we started in 2001 to give as well our cockpit crews a presentation about cabin crew workload and duties by one of our cabin trainer.

Example: service *computer animation*

First Aid Training

For our first aid training we use the facilities of our cabin service mock up or our CEET. The training is conducted according guidelines set down by JAR-OPS regulations, practical cardio-pulmonary resuscitation and the use of airplane equipment including first aid kits , first aid oxygen and for cardiac problems defibrillators.

Example: **DEFI**

Flight Safety-S.E.P-Training

Recurrent Flight Safety Training

At Condor, recurrent Flight Safety Training has always been a joint training with cockpit and cabin crews since the beginning.

Review

For a review we use a magnetic board and a special virtual walk-around, designed by our in- house specialists.

The virtual walk around enables the instructor to show every section of our aircraft and equipment without actually being on the aircraft.

Additionally we use computer based training stations in our building close to our survival equipment, so we are able to combine it with our hands on training

Hands-On Training

The importance of hands-on training should never be underestimated.

We are using different hands-on training stations: for life-vests, oxygen-masks, smoke-hoods, fire-extinguisher and for training with our survival equipment.

For example the topic for 2003 : **ditching.**

Security-CRM-Training

With the new closed and locked cockpit door regulations it is very important that we view now our cockpit crew and cabin crew as one single crew.
The most important point is ,that we have to trust and understand each other and this can only be generated during join training to ensure that we can act, even under stress in the most appropriate manner to minimize errors and operate as a team. Today cabin crews have to be more aware about what happens on our airplanes and in an unruly passenger, safety or security problem situation they have initially to analyze, to assess the situation, to communicate and to take action based on their training and own experience to a much higher degree than before.
It is ,and some people may not agree, but it is a new revised role for cabin crews (purser)- he or she is now an extension of the decision-making role of the flight crew (captain).
Having both sides together during the security training we will support the process to trust ,understand and rely on each other.

Program:

1. Introduction about training setup, Trainerqualification, why combined training and connection of Security-CRM-Flight Safety.
2. Aviation Security History
3. Flight Deck security
4. Cockpit Door Handling(Service mock-up)
5. Crew Coordination and Communication.
6. Determination of Seriousness of any Occurrence
7. Self-Defence:use of Able bodied Person (ABP),use of restraint device, use of equipment as weapon, use of evading and self-defense tactics.
8. Weapon and explosives
9. Live situational Training Exercises
10. **CISM** (Critical Incident Stress Management)
11. Feedback

Round about 8 hours

At the end of a long training day our crews should be sure that they have been well trained and are now mentally prepared, that they can count on their fellow crew members and that procedures are in place to provide the support that is necessary to response on the situation they have to deal with.

Be aware, assess, communicate, act

Line Orientated Flight Safety Training (L O F S T)

our center

Some short information about the set-up of a L O F S T- mission,.

Briefing

- cockpit and cabin crew is provided with the mission papers by the flight safety instructor
- passengers are briefed about specials, unruly ,security or medical problems etc. by the CRM instructor
- 15 min.

2. Boarding
   - passenger boarding with unruly or security problem
   - 10 min. closing doors

3. Engine start and taxi:
   . 6 min. to the runway

4. Flight-phase:
   - depending on the decision, return to the airport
   - 6 to 10 min

5. Pilot returns to the airport:
   - return between 5 to 7 min. until landing

6. Evacuation:
   - 5 min.

7. Debriefing:
   - crew, passengers, safety-instructor and Security- CRM-instructor
   - 50 min.

8. Feedback:
   15 min.

Let us show a short video from one of our scenarios.

LOFST Debriefing

1. The crew debriefing will be a critique by the crewmembers providing feedback using their own observations.

   The following items should be considered as a guideline when contemplating a debriefing:
   - a debriefing should be a matter of course
   - a debriefing should take place immediately after flight
   - a debriefing should take place in private
   - both Captain and the Purser should be responsible for initiating the debriefing
   - all concerned should be involved
   - positive performance should be mentioned before negative and blame should be avoided
   - feedback should be given to both peers and those in higher ranks
   - ones own behaviour should be analysed, other options taken into consideration
   - the result of a debriefing should be used as a means of working together better
   - for the future
   - praise should be given as a means of motivation

   After the crew on duty of the training mission has completed their debriefing, the rest of the cockpit and cabin crew members acting as passengers join the debriefing.

2. The Flight Safety Trainer concentrates his debriefing on safety issues and standard procedures.

3. The Security CRM Trainer role is to manage the critique, not to "teach" right solutions or test the crew member. To focus those areas of the LOFST mission, where the principles of CRM could have helped the crew in handling the problems.

4. Security issues and procedures will be debriefed by both trainer.

Conclusion

Safety-CRM- Security (S. C. S)

An FAA Advisory Circular from 1991 already stated that:

*"Aircraft crew personal are **'on-the-scene' team members** working together, who are best able to determine their situation and needs for information. These personnel must initiate and process the required communication in order to make and execute decisions that lead to positive and safe conclusion."*

Our crews have to deal with people, because our payload are human beings, and they must have the chance for more practical training to improve their skills.

Now it is up to us, to give our crews a better chance to do their job and may be we have to invest a bit more in our training.

Nobody is perfect, but we believe that this is the right way for us,
with seven steps to **LOFST** in the centre of our **training wheel** and the connection of Safety-CRM- Security training, we can influence and create a more positive atmosphere within the cockpit - cabin team, and that will finally result in a safer, secure and more professionally conducted flight for our crews and our passengers

If it works with **LOFST** it also reflects on our **daily flight operation** and has a strong and positive influence not only on safety, crew resource management and security but also on the quality of service that an operator can provide.

With LOFST we have the chance to check the quality of our training and our crews, as a

"Quality Management" for our Daily Flight Operation.

Finally the most important thing for all of us involved in training is that we have to do something now, because time is running and what we said in the beginning" global applied aviation safety and security is a need and a must and we all in the aviation industry will be judged by our passengers on it's resolution in providing it".

"I can do it, you can do it, we can do it"

Thank you for your attention

Information and Inspiration has been obtained from:

Annual International Aircraft Cabin Symposiums

The International Flight Safety Strategy Seminar
Mauritius in 1994

Cabin Safety Conference Brighton 2002

Condor Operational Manual

Condor Flight Safety- and Security Manual

DLH, Condor CRM seminar

Greenlight " Violence in the sky" seminar

Greenlight trainer course

TFC trainer course

Hörmann, H.J. (1994). FOR-DEC: A prescriptive model for aeronautical decision making

Reconciling Security Policies With Safety Requirements

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United Kingdom Civil Aviation Authority
Chairman of Joint Aviation Authorities
Flight Crew and Cabin Crew Training Group

Safety Regulation Group Civil Aviation Authority

Overview

Two parts:

- General principles.
- Specific actions/responses.

Note: Some matters are not discussed in detail, or at all, for security reasons.

Roles of Relevant State Organisations

- Safety regulators are not usually part of the security agencies.
- Security agencies are not usually part of the safety regulator.
- The result is that expertise is different and that some decisions may conflict.

State organisations:

- Experience dictates that as a minimum there has to be very close cooperation and liaison between the two agencies.
- Where there is a conflict of interests, State considerations may dictate the result. In such cases there will be a need to accept responsibility for consequential differences.

As a Bottom Line

- Security measures must not cause or contribute to an accident.
- Any degradation or effect on safety standards because of security demands, must be carefully evaluated and identified, with finite periods imposed where possible, eg Phase 1 flight deck doors.

Examples of Security Taking Precedence Over Safety

- Installation of Phase 1 flight deck doors (bars or bolts) = compromise of airworthiness standards, (decompression, egress and access).
- MEL relief.
- Transponders that cannot be switched off.
- The carriage of Sky Marshalls.
- CRM.

Examples of Safety Taking Precedence Over Security

- Discussions about the wisdom of evasive manoeuvres.
- Discussions about depressurisation following a passenger incident.
- 'Limited' life for Phase 1 flight deck doors.

Examples of Safety and Security Overlap

- Training and deployment of Sky Marshals, (deployed for security but also enhances safety).
- Disruptive passengers = Safety, Leading to a hijack = Security.
- Restrictions on the carriage of passengers on the flight deck.

Some Difficulties in Resolving Safety and Security Issues

- No agreed single source of competence or expertise.
- Multiple agencies/bodies – national bodies, ICAO, ECAC, JAA, EU, etc.
- Differing individual State response to perceived security threat/risk resulting in additional standards beyond ICAO, eg:
  - UK Directive to foreign carriers, Nov 2002;
  - Small aeroplanes;
  - Phase 1 requirements;
  - UK Directive to UK operators, Jan 2003.

UK Background Prior to 11th September 2001

- Disruptive passenger incidents had required a great deal of regulatory input, including compilation of statistics, new offences and police protocols.
- These incidents, including a particular serious event, caused the UK CAA to develop several recommendations.

UK Recommendations Included:

- Locking of the flight deck door.
- Banning passenger visits to the flight deck.
- Restrictions on persons occupying flight deck seats.
- Need for 2 crew members to be on the flight deck at all times – Phase 1 doors.
- Monitoring of passengers.
- Taking of crew rest.
- Crewing of decks on multi-deck aeroplanes.

UK Requirements

- These recommendations were upgraded to requirements and issued to the UK industry on 18 September 2001.
- They became the basis for further UK initiatives and more detailed operational guidance/requirements, and also the template for JAA Member States in an advisory/guidance document (to be issued February 2003).

UK Guidance and Requirements

- This UK material preceded the ICAO document on the implementation of the Security Provisions of Annex 6. It is noteworthy that:
  - By and large the documents are compatible;
  - It has been found necessary to provide more specific operational guidance in several areas;
  - Some items contained in the ICAO document such as live situational training and self- defence responses have not been included.

Basic Principles

- The flight crew to remain in control of the aeroplane.
- The flight crew to fly the aeroplane following standard operating procedures (SOPs).
- The flight crew to land the aeroplane as soon as practicable.
- The cabin crew to take all reasonable steps to maintain control in the passenger cabin.

Basic Principles

- Crew co-ordination and communication to be maintained and enhanced as far as possible.
- The flight deck door to be kept closed and secured.
- The flight deck door to be opened only for essential access and egress.
- The flight deck door to be opened only for the shortest time possible and not to be left open.

Crew Resource Management (CRM)

- The secured flight deck door does impact on CRM.
- The issues may be greater on a large aeroplanes with larger numbers of cabin crew.
- Longer sectors may create additional issues.

CRM

- What can be done:
  - Need for the flight crew and the cabin crew to act as a 'total' team.
  - Provision of joint training when practical.
  - Provision of joint crew briefings when practicable.
  - Cabin crew visits to the flight deck on longer sectors.
  - Common rostering of flight and cabin crew for a series of flights or a particular duty period.
  - Single cabin crew operations will need special consideration.

CRM

- Cabin crew and flight crew to have an awareness of each other duties and workloads.
- This should take into account different phases of flight.
- Enhanced interphone training.
- Need for positive and objective reporting.
- Cabin crew will need to have some knowledge of technical terminology.

CRM

- Common language – this is a potential problem with some lease operations where the flight crew and the cabin crew may have a different national language.

Operational Aspects

- Refusal of carriage:
  - This should be the responsibility of ground crew.
  - Problems should not be passed from the ground crew to the aeroplane crew.
  - The Captain retains the ultimate authority to refuse carriage.
  - If ground staff refuse a passenger carriage, this decision should not be overruled by the Captain.
  - Passengers who are not disruptive, or who not under the influence of alcohol or drugs, but still give cause for concern, should be reported to the aeroplane crew.

Operational Aspects

- Securing of the flight deck door:
  - UK requirement is that the flight deck door must be secured *from before engine start up until after engine shut down*.
  - This is to take into account amongst other things the 'remote hold' when an aeroplane may wait at a remote stand due to weather or ATC delays.

Operational Aspects

- Opening of the flight deck door – normal operations:
  - In-flight failure of the interphone;
  - Serving of food and beverages;
  - Transfer of operational paperwork;
  - Flight crew restroom breaks and other physiological needs.

Operational Aspects

- Opening of the flight deck door – emergency situations.
  - Some situations when the flight deck will/might be opened:
    - Flight deck fire;
    - Emergency landing;
    - Turbulence;
    - Rejected take-off;
    - Pilot incapacitation;
    - Ditching;
    - Depressurisation;
    - Engine fire after take-off.

Operational Aspects

- There are some situations when the flight deck door should remain secured. These include any situation which might be initiated by a passenger and include:
  - Passenger disturbance;
  - In-flight fire;
  - Dangerous goods incident;
  - Medical emergency;
  - Bomb hoax.

Operational Aspects

- Visits to the flight deck and use of flight deck supernumerary seats.
  - Flight deck visits are no longer allowed.
  - Use of supernumerary flight deck seats is strictly controlled and is limited to those who have a justified operational need to be on the flight deck.

Operational Aspects

- Responding to an attempted hijack.
  - Need to specify procedures for cabin crew and flight crew.
  - Need for the cabin crew to maintain control in the cabin.
  - Passenger involvement has the potential to escalate a situation.
  - Flight crew to fly the aeroplane to standard operating procedures.

Operational Aspects

- Four levels of threat culminating in the most extreme, ie attempted flight deck entry.
- The purpose of defining the levels of threat is to enhance objective and succinct reporting, together with clarifying appropriate responses, between the cabin crew and the flight crew, and between the flight deck crew and the ground.

Operational Aspects

- Relocation of items carried on the flight deck.
  - The following should be relocated to the passenger cabin:
    - Passenger compartment keys (overhead bins, crew rest);
    - Cabin Manuals;
    - Cabin Defect Logs;
    - Passenger restraint kits;
    - Medical kits.

Operational Aspects

- Restraint devices:
  - Whilst there is no current mandatory UK or European requirement for the carriage of restraint kits, many UK operators carry such equipment on board their aeroplanes.
  - Cabin crew should be trained in the use of restraint devices when carried on board aeroplanes.

- Other operational aspects include:
  - Allocation of cabin crew stations;
  - Minimum Equipment Lists;
  - Search Procedure Checklist;
  - Carriage and location of crash axes and crowbars;
  - Reduction of cabin crew numbers;
  - Avionic bays and cargo holds;
  - Regular monitoring of the flight deck crew by the cabin crew;
  - Cabin crew view of the passenger compartment.

Operational Aspects

- Single cabin crew operations - Need for special considerations:
  - Joint briefings with the flight deck crew;
  - Serving of flight deck crew refreshments prior to flight;
  - Increased awareness of passengers seated near the flight deck door;
  - The implications of enlisting the assistance of passengers in the event of a security incident;
  - Alternative methods of the cabin crew alerting the flight deck crew to a security incident;
  - Monitoring of passengers and compartments, especially remote areas.

Conclusion

- These are challenging times.
- There may well be differences between the USA and Europe, for example the arming of flight crew.
- There may be differences between USA and UK on the one hand, and Europe on the other, for example smaller aeroplanes.

Conclusion

- The USA must be given credit for having taken the lead in many of the new initiatives and requirements.
- We genuinely believe, based on in-depth investigations and studies, together with the UK operational requirements and recommendations, that a more secure and safer operational environment can be achieved for the benefit of passengers and crews alike.
- But the reality of the security situation that we have now to confront, must be recognised and actioned.