

查核表之運用-航空界為例

行政院飛航安全委員會
王興中



1

內容 - 飛航組員為主體

- 航空界查核表/檢查表使用情形
- Briefing & Debriefing
- 執行查核表之問題



2

飛航任務

- 桃園國際機場 - 舊金山國際機場
- 起飛台北時間 12月8日 2250
- 到達舊金山時間 12月8日 1900
- 飛行時間 12:10



3

報到

- 2120機場報到
 - 瞭解任務
 - 認識組員
 - 初步簡報
 - 酒精測試
- 2150前上飛機作飛行前準備
 - 全體組員提示



4

停機坪



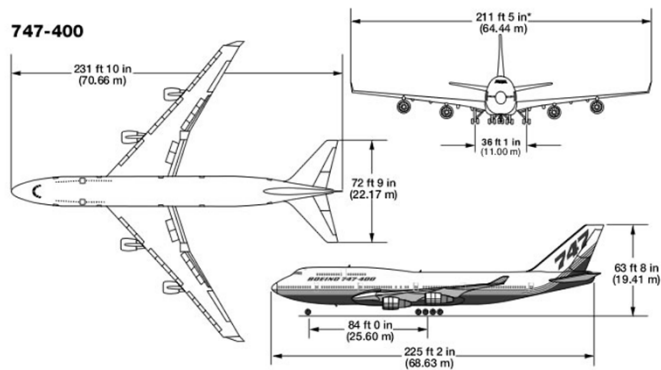
飛行前準備

- 飛航組員確認
 - 航空器已完成維護簽放，為適航狀態
 - 飛航計畫已合理完成
 - 天氣狀況得以飛行
 - 油料足夠
 - 載重與平衡在安全範圍
 - 危險物品皆合法裝載
- 機外360度檢查
- 駕駛艙內部檢查及設定

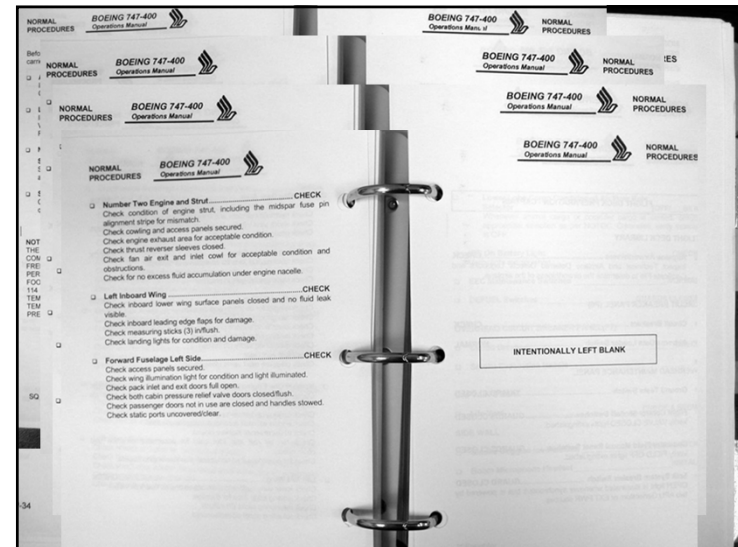


6

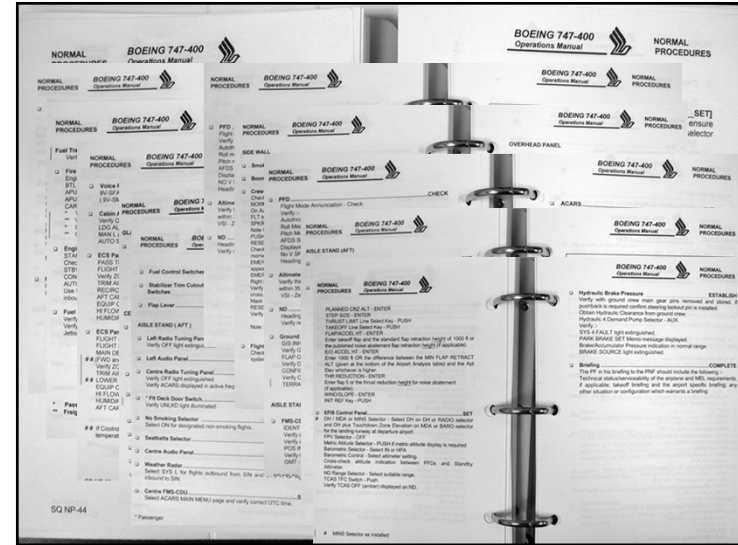
360度檢查



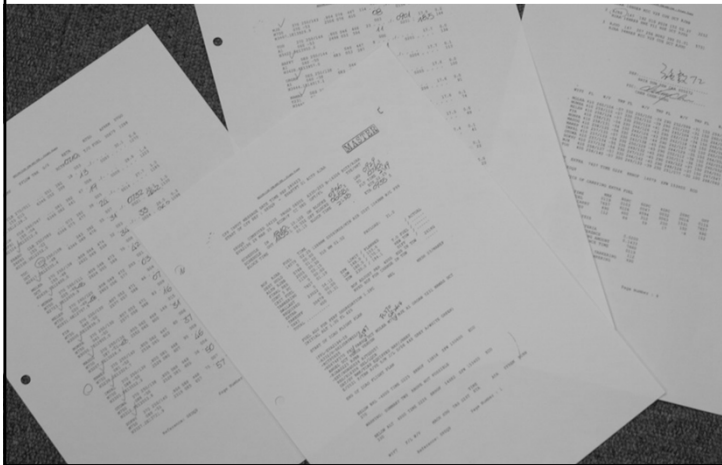
7



駕駛艙內部檢查及設定



將飛航計畫輸入導航電腦



準備就緒後

- 登機
- 關機門
- 後推

登機

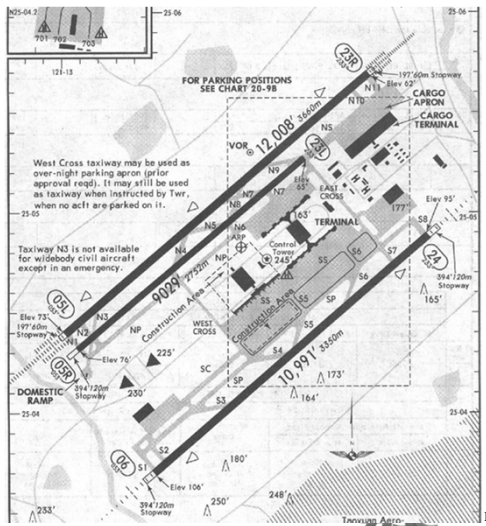


13

後推完成準備滑行 (ATC : TPE Ground)



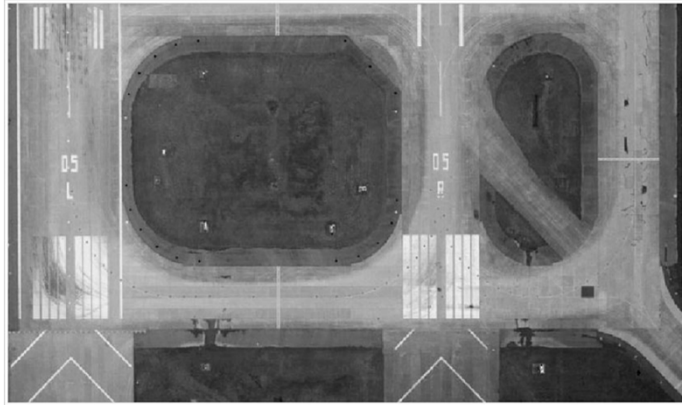
機場圖



滑行 執行 Taxi Checklist Takeoff Briefing



等待線 執行 Before Takeoff Checklist
(ATC : TPE Tower)



ASC 17

進入跑道



ASC 18



23跑道起飛 After Takeoff Checklist



ASC 20

爬升 Climb Checklist



巡航 Cruise Checklist
(ATC: Taipei Control/Center)

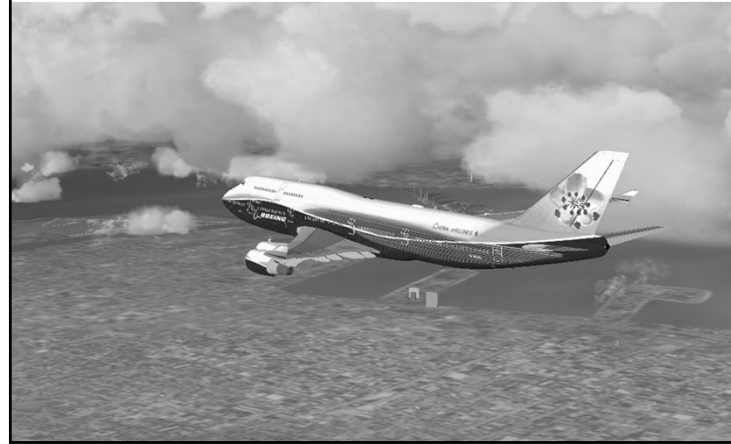


準備下降 Descent Checklist
Approach Briefing



23

接近機場 Approach Checklist
(ATC : SFO Approach)



準備落地 Before Landing Checklist
(ATC : SFO Tower)



安全落地

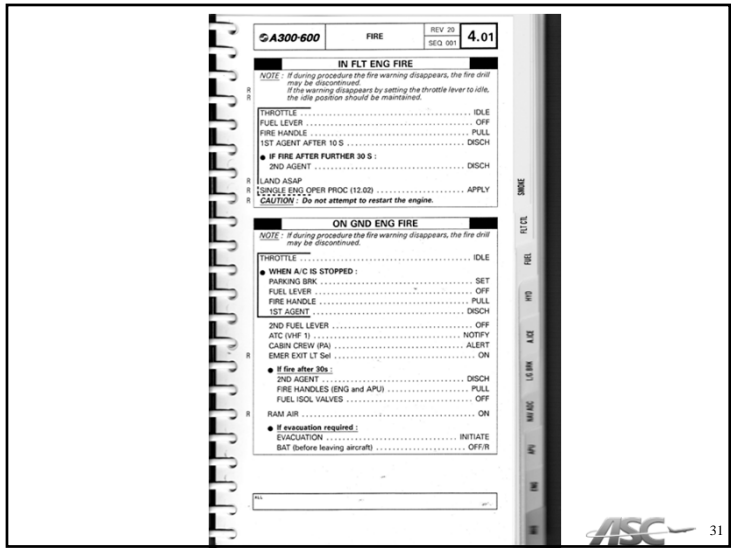
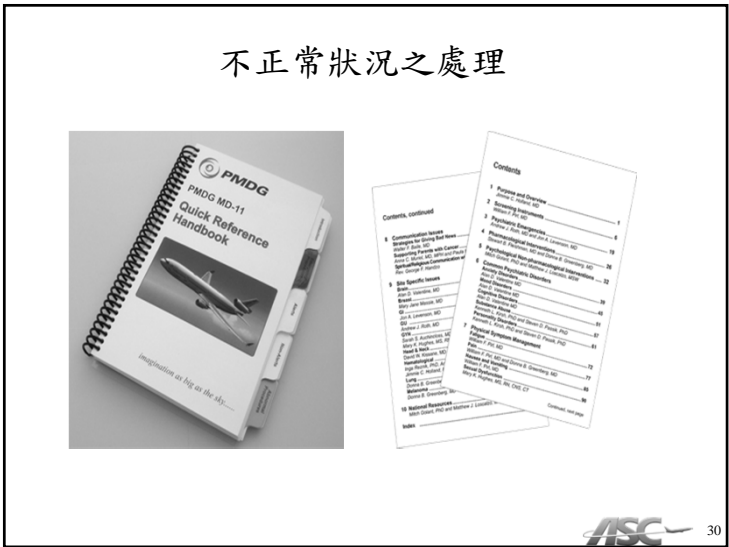
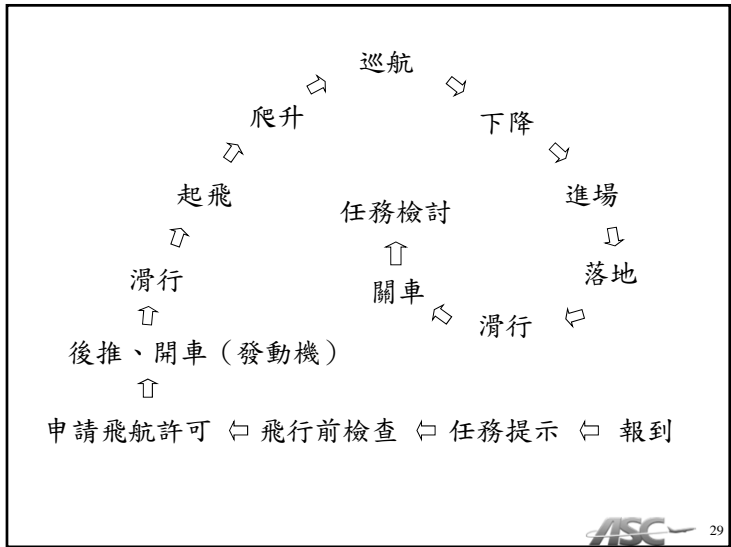


滑行至停機位 After Landing Checklist
(ATC : SFO Ground)



停機 關車 Parking and Shutdown Checklist
Debriefing





Team Work

- 飛航任務是一個團隊合作的工作
 - 飛航組員
 - 客艙組員
- 組員資源管理

落地之標準作業程序

SITUATION	PF	PNF
Non precision APP		
Over FAF		FAF/Point name / or DME.....ft
	Set arm altitude ft	
Approaching level off altitude	Checked	Altitude set 200 to level off 100 to level off
	Set minimums altitude	#Set.....ft
1000ft AGL	#Checked	1000ft instrument
Approaching MDA		normal
At the missed	Checked	200 to minimums
Approach point		100 to minimums
	Check Set Miss	minimums
	APP Altitude /	Miss APP Altitude /
	Heading	Heading Set
	RWY in sight	
	Land or not in Sight G/A	100.50.40.30.20.10 ft

執行查核表之問題

- 3 Airlines, 60 flights

Deviations Observed on 60 Line Flights		
Category	Deviation	Number
Checklists	Flow-check as read-do	48
	Responded without looking	43
	Item omitted/incomplete/incorrect	42
	Poor timing	31
	Performed from memory	17
	Not initiated	13
	Total	194
Monitoring	Callout late or omitted	211
	Not monitoring aircraft state or position	67
	Verification omitted	113
	Total	391

我們必須了解

- Pilots face interruptions and concurrent task demands during actual line operations, and idealized SOPs do not take these factors into account.
- Pilots cope with operating procedures and equipment designs that sometimes are poorly matched to the ways the human mind processes information.
- Pilots may slips into rushing through procedures when they are under the time pressure.

因此

- Simply admonishing pilots to follow procedures as written is unlikely to improve performance.
- Analyze actual operations through line observation, revise procedures and practices as needed, provide training to help pilots understand the cognitive nature of vulnerability to error, and provide specific techniques to reduce that vulnerability.
- Pilots, flight managers, procedures designers, equipment designers and scientists should work together in this effort.

