

行政院所屬各機關因公出國人員出國報告書

(出國類別：實習)

A340 飛機維修訓練出國報告書

服務機關：民用航空局飛航標準組

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目 錄

壹、前言	page4
貳、訓練課程：	page 4-10
一、訓練目的	page 4
二、訓練參考教材	page 4
三、訓練輔助器材	page4-5
四、訓練方式	page5
五、課程內容	page5-7
六、課程範例	page7-10
參、訓練心得	page10-11
肆、檢討與建議	page11
伍、附圖和附錄	page12
附圖一	page13
附圖二	page14
附圖三	page15
附圖四	page16
附錄一 訓練教材（VCD） 略	

附錄二 ACRM Maintenance Trainee's Booklet

附錄三 訓練課程表

壹、前言：

近年來我國民航事業快速發展，民航業者為了增強競爭力和提升服務品質，紛紛購買新飛機以便淘汰老舊飛機。中華航空公司購買新機型中包括 A340-300 客機。為了配合該型飛機維修工作，中華航空公司派遣三批人員赴法國空中巴士公司受訓。本局航空安全檢查員於督導航空公司維修工作時，必需了解飛機維修專業知識，故派員一人隨同前往受訓。本訓練的目的是提供飛機維修人員有關 A340 飛機機體、發動機、航空電子（airframe、power plant、avionics）等維修工作之專業知識。

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一、訓練目的：

提供飛機維修人員有關 A340 飛機機體、發動機、航空電子（airframe、power plant、avionics）等維修工作之專業知識，使得維修人員能正確維護飛機，以確保飛航安全。

二、訓練參考教材：

- 1 A340 Maintenance Course (VCD)
- 2 Airbus Abbreviations Dictionary
- 3 ACRM Maintenance Trainee's Booklet

三、訓練輔助器材：

1. Video And Computer Based Instruction (VACBI)
VACBI 系統包括一台 Pentium 166MHz PC 和 Videodisk
2. Maintenance Training Simulator (MTS)
MTS 是固定式模擬機，模擬飛機駕駛艙內部系統的操作和故障排除之練習。
3. Field Trip

Field Trip 是到 Airbus 飛機生產線了解組件(component)位置和系統的操作。

4. Iron Bird (Test Bench For Flight Control)

Iron Bird 是 Airbus 的飛行操控系統測試台，主要是讓學生了解飛行操控組件(component)位置和系統的操作。

5. APU Mock-up

APU Mock-up 是 Airbus 的輔助動力引擎 (Auxiliary Power Unit) 模型，主要是讓學生了解輔助動力引擎組件的位置。

6. Cabin And Door Trainer

Cabin And Door Trainer 是 Airbus 的客艙和門的模型，主要是讓學生了解客艙組件的位置和客艙門的操作練習。

四、訓練方式：

此課程共計八星期，依據課程安排的二十四單元內容多寡，每單元上課 1~4 天，依照下列六步驟執行：

第一步：教師先以簡報方式介紹每單元。

第二步：學生配合 VACBI 電腦教學自我學習，可隨時提出問題與教師討論。
電腦內容分 VCD 和 DVD；VCD 包含每單元互動式教學教材，DVD 是播放系統操作實體攝影影片。當學生以電腦自我學習時，教師在教室內個別指導學生並隨時回答學生問題。

第三步：四位學生一組，由一位教師進行駕駛艙模擬機教學。

第四步：參觀生產線的飛機，進行飛機組件位置和功能介紹。

第五步：教師總結每單元重點。

第六步：考試。以選擇題方式出題。

五、課程內容：分為二十四項單元。

1. 飛機簡介 (Aircraft Presentation)：介紹飛機基本尺寸和架構。
2. 文件 (Documentation)：介紹飛機維修所使用之文件。
3. 空調系統 (ATA 21 Air Condition)：介紹客艙空調和貨艙通風。

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4. 自動飛行系統 (ATA 22 Auto-flight)：介紹自動飛行理論和操作
5. 通訊系統 (ATA 23 Communications)：介紹 VHF, HF, SATCOM, CVR 等通訊裝備和通話記錄器(Cockpit Voice Recorder)。
6. 電力系統 (ATA 24 Electrical Power)：介紹飛機 AC/DC 電力裝備。
7. 裝備系統 (ATA 25 Equipment/Furnishing)：介紹客艙椅子，救生滑梯，緊急裝備和貨艙載貨系統。
8. 防火系統 (ATA 26 Fire Protection)：介紹發動機和輔助動力引擎的火警和滅火系統，廁所和貨艙的火警系統。
9. 飛行操控系統 (ATA 27 Flight Control)：介紹飛行線控理論和操控裝備。
10. 燃油系統 (ATA 28 Fuel)：介紹燃油箱，傳油和加油系統。
11. 液壓系統 (ATA 29 Hydraulic Power)：介紹綠、黃、藍三套液壓系統。
12. 防冰防雨系統 (ATA 30 Ice and Rain Protection)：介紹駕駛艙窗戶防冰防雨方法和發動機、機翼、探測器防冰方法。
13. 儀表指示系統 (ATA 31 Indication)：介紹電子儀表系統和飛航記錄器。
14. 起落架系統 (ATA 32 Landing Gear)：介紹起落架、煞車盤、鼻輪轉向裝備。
15. 燈光系統 (ATA 33 Lights)：介紹駕駛艙、客艙、貨艙燈光和飛機外部燈光。
16. 導航系統 (ATA 34 Navigation)：介紹 ATC、TCAS、ILS、VOR、DME、ADF、GPS 等導航裝備。
17. 氧氣系統 (ATA 35 Oxygeon)：介紹飛行員和旅客的氧氣裝備。
18. 壓縮空氣系統 (ATA 36 Pneumatic)：介紹發動機、輔助動力、地面裝備等供應的壓縮空氣。
19. 水和廢棄物系統 (ATA 38 Water and Waste)：介紹飲用水和廁所裝備。
20. 機上維護系統 (ATA 45 On Board Maintenance System)：介紹 Central Maintenance System 和 Multi-purpose Control Display Unit 等系統。
21. 輔助動力引擎 (ATA 49 Auxiliary Power Unit)：介紹 Model GTCP 331-350 輔助動力引擎。
22. 艙門系統 (ATA 52 Doors)：介紹客艙艙門、貨艙艙門、電子艙艙門等

開關制動裝備。

23. 發動機系統 (ATA 70 Power Plant)：介紹 Model CFM56-5C4 雙軸渦輪引擎。
24. 人員資源管理 (Crew Resource Management)：介紹維修人員的人為因素 (Human Factor) 與飛航安全的關係。

六、課程範例：本範例介紹飛行操控 (Flight Control) 系統的基本概念。

(一) 飛行操控系統介紹：

1. 介紹

飛行操控面包括 Slats、Flaps、Spoiler、Ailerons、Rudder、Elevator、Trimmable Horizontal Stabilizer 【參考附圖一】，除了 Slats 材質是鋁合金外，其他飛行操控面均是複合材料。飛行操控面均是電氣控制 (Electrically Controlled)，液壓油操作 (Hydraulically operated)，另外 Rudder、Trimmable Horizontal Stabilizer 有一套機械備用裝備，以為電氣控制失效時緊急使用。

2. 俯仰 (Pitch)

飛機俯仰是經由兩個 Elevator 和一個 Trimmable Horizontal Stabilizer 控制，Elevator 是用於短時間的控制，Trimmable Horizontal Stabilizer 是用於長時間的控制。

3. 滾動 (Roll)

飛機滾動是經由每邊機翼兩個 Ailerons 和五個 Spoilers 控制，配合 Rudder 以確保轉彎和 dutch roll damping 的時候，滾動和左右轉向互相協調。

4. 左右轉向 (Yaw)

飛機左右轉向是經由 Rudder 控制。假如轉彎是經由 Rudder 踏板開始，Aileron 和 Spoiler 會配合以避產生引導滾動 (Induced Roll)。

5. Speed Brake & Ground Spoiler

Speed Brake 的功能是減速時，增加飛機阻力。

Ground Spoiler 的功能是降落或放棄起飛時降低飛機升力。

6. Aileron Droop

當 Flap 伸展時，Aileron Droop 配合向下偏向，其功能是增加飛機機翼升力。

7. Maneuver Load Alleviation (MLA)

當飛機 high G maneuver 時，MLA 的功能是使 Ailerons、Spoiler 向上偏向，降低飛機速度，以減輕機翼負荷。

8. High Lift

每邊機翼兩個 Flaps 和七個 Slats 可以在飛機起飛或降落時增加飛機升力。

9. 電腦

飛機上至少安排一具電腦永遠控制和監視飛行操控面，並且記錄故障原因。三具主要飛行操控電腦和二具次要飛行操控電腦控制飛機 roll、yaw、pitch 等三軸的操作。但是在部份電腦故障時，只要一具飛行操控主要電腦或次要電腦就可以控制飛機在三軸的操作。二具 Flaps 和 Slats 電腦控制飛機 Flaps 和 Slats 的操作。

10. 亂流的減弱 (Turbulence Damping)

主要飛行操控電腦根據飛機垂直加速和側面加速資料，計算出抵抗垂直和側面亂流的指令並傳達給 elevator servo-controls 和 yaw damper system。

(二) 線控飛行 (Fly By Wire) 原理【參考附圖二】

1. 通則

所有飛行操控面均是電氣控制 (Electrically Controlled)，液壓油操作 (Hydraulically operated)，此即線控飛行。另外 Rudder、Stabilizer 有一套機械液壓備用控制裝備，以為電氣控制失效時緊急使用。

線控飛行與傳統飛行比較，其主要優點是備用裝備、處理品質和性能的改良。

2. 方向盤 (Control Column)

側桿 (Side Stick) 控制取代傳統的方向盤。

3. 機械連桿

電線和電腦控制 servo-actuators 取代傳統的機械連桿。

電腦依據飛行操控規則使得飛機飛行操控最佳化。

4. 自動駕駛伺服器 (Autopilot Servo)

自動駕駛指令直接傳達給電腦。

5. 人造的感覺 (Artificial Feel)

側桿的中心彈簧取代傳統的方向盤模擬人造的感覺。

6. 伺服制動器 (Servo Actuator)

電氣回饋 (feedback) 信號取代傳統伺服制動器的機械回饋信號。

7. Control Wheel Steering (CWS) Function

電腦具有 Control Wheel Steering 功能，使得飛機能維持飛行姿態。

(三) 系統控制和儀表指示【參考附圖三、四】

1. 側桿(Side Sticks)

在駕駛座旁之側桿用來手動控制俯仰和滾動。側桿信號經由飛行操控電腦控制飛行操控面。側桿的手握柄上有兩個開關，一個開關用來解除自動駕駛，另一個用來控制 Very High Frequency (VHF)、High Frequency (HF) 等 Radio 通訊。

2. Speed Brake Lever

Speed Brake Lever 控制 Speed Brake 操控面和 Ground Spoiler。當 Lever 在 Arm 的位置或油門選擇反推力，且飛機降落或放棄起飛時，Spoilers 會自動伸展。

假如 Speed Brake 伸展時發動機不在 Idle 的位置，則會出現「SPEED BRAKE CONFIG」警告。

3. Trimmable Horizontal Stabilizer 的機械控制

駕駛座內側兩個 Pitch Trim Wheel 提供機械控制 Trimmable Horizontal Stabilizer。

當電氣自動控制失效時，一定要使用 Pitch Trim Wheel 控制 Trimmable Horizontal Stabilizer。

4. Rudder Pedals

兩組腳踏板 (Pedal) 可控制 Rudder。

每組腳踏板可供飛行員依據體型調整腳踏板位置。

5. Slat/Flap Control Lever

Slat/Flap Control Lever 的位置，經由電氣信號傳送至 Flaps 和 Slats 的電腦。Slat/Flap Control Lever 同時控制 Flaps 和 Slats，Slat/Flap Control Lever 共有五個位置對應到操控面的五個位置。

6. Rudder Trim

Rudder Trim 指令經由次要飛行操控電腦傳送至 Trim 制動器。駕駛員經由 Rudder Trim Reset Pushbutton 可以將 Trim 位置歸零。

駕駛員經由 Rudder Trim Control Switch 控制 Rudder Trim 制動器。

Rudder Trim Indicator 顯示 Rudder Trim 的位置。

7. 飛行操控面板-電腦按鈕

電腦按鈕用來開啟、關閉、重新啟動三具主要飛行操控電腦和二具次要飛行操控電腦。

8. 飛行操控面板-側桿優先燈號

紅色箭頭燈號代表失去優先權。綠色「CAPT」或「F/O」燈號代表有優先權。

9. ECAM (Electronic Centralized Aircraft Monitoring) Pages
Flight Control ECAM Page 和 Wheel ECAM Page 可以顯示主要飛行操控面的位置。

10. ECAM Pages-Engine Warning

Engine Warning Display 可以顯示 Flaps 和 Slats 的位置。

以上只是飛行操控系統基本介紹，該系統進一步介紹 Electrical Flight Control System 和 Slats And Flaps System，請參考附錄一之訓練教材 (VCD)。

參、訓練心得：

- 一、Airbus 訓練課程，理論和實務並重。上課時每人一台桌上型電腦，每人可依自己程度控制學習進度，下課期間 Airbus 借給每位學生一台筆記型電腦 (Laptop)，方便學生帶回家學習。如此良好學習環境，國內無法匹配。電腦教學有方便重複學習和教學品質提升的優點，未來電腦輔助教學是必然趨勢。

- 二、每單元隨堂考試；學生在考試壓力下，每天回家均會復習功課，使得學習成效良好。因此給予學生適當的考試壓力，有其正面的效果。
- 三、不同的訓練課程，Airbus 指派不同的專業教師。教師的敬業態度和表達能力，影響學生的學習興趣，因此教師的品質是課程的關鍵。
- 四、本次訓練發現教材多處錯誤，訓練教材應該即時的修訂才能保持資料正確性。(最後 Airbus 問卷調查，筆者曾經以實際範例”A340 新機型 Hydraulic System 並未裝 Booster Pump，但是教材仍引用錯誤的資料顯示 A340 裝置 Booster Pump。”要求 Airbus 應該儘速修訂訓練教材。)

肆、檢討與建議

- 一、我國航空公司使用的飛機主要是進口自歐美地區，不論是維修或飛行相關資料和訓練教材均使用英文，因此英文程度的高低會影響學習的成效以及日後工作的落實，甚至飛航安全。建議在民航執照考試時增加英文測驗以提昇航空人員學習能力。
- 二、空中巴士 A340 飛機有許多設計理念與波音飛機不同，如 A340 飛機的油門把手於自動飛行時，不會像波音飛機隨著自動油門的變化而移動。另外 A340 飛機手動駕駛時是使用側桿(Side Stick)控制，若側桿鬆手，飛機姿態會自動維持在放手時飛機的位置，這也是和波音 747 或 767 飛機不同。故參加新型飛機訓練時，可了解該飛機與其他飛機設計理念的異同，對檢查工作大有幫助。
- 三、本局航空安全檢查員為了督導航空公司，必需了解飛機相關的專業知識。因此若經費和人力容許之下，應該派員參加新型飛機訓練，以符合工作的資格。
- 四、電腦輔助教學是未來趨勢，其優點是可隨時隨地自我學習，可依個人程度重複聽課。故航空公司訓練單位或本局訓練所可考慮往此方向發展，以方便學生學習。

伍、附圖和附錄

附圖一

附圖二

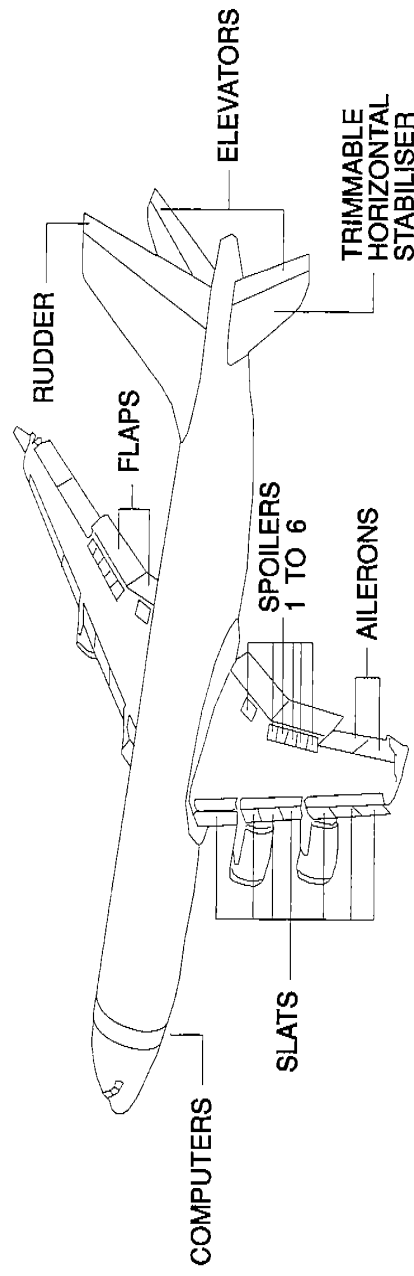
附圖三

附圖四

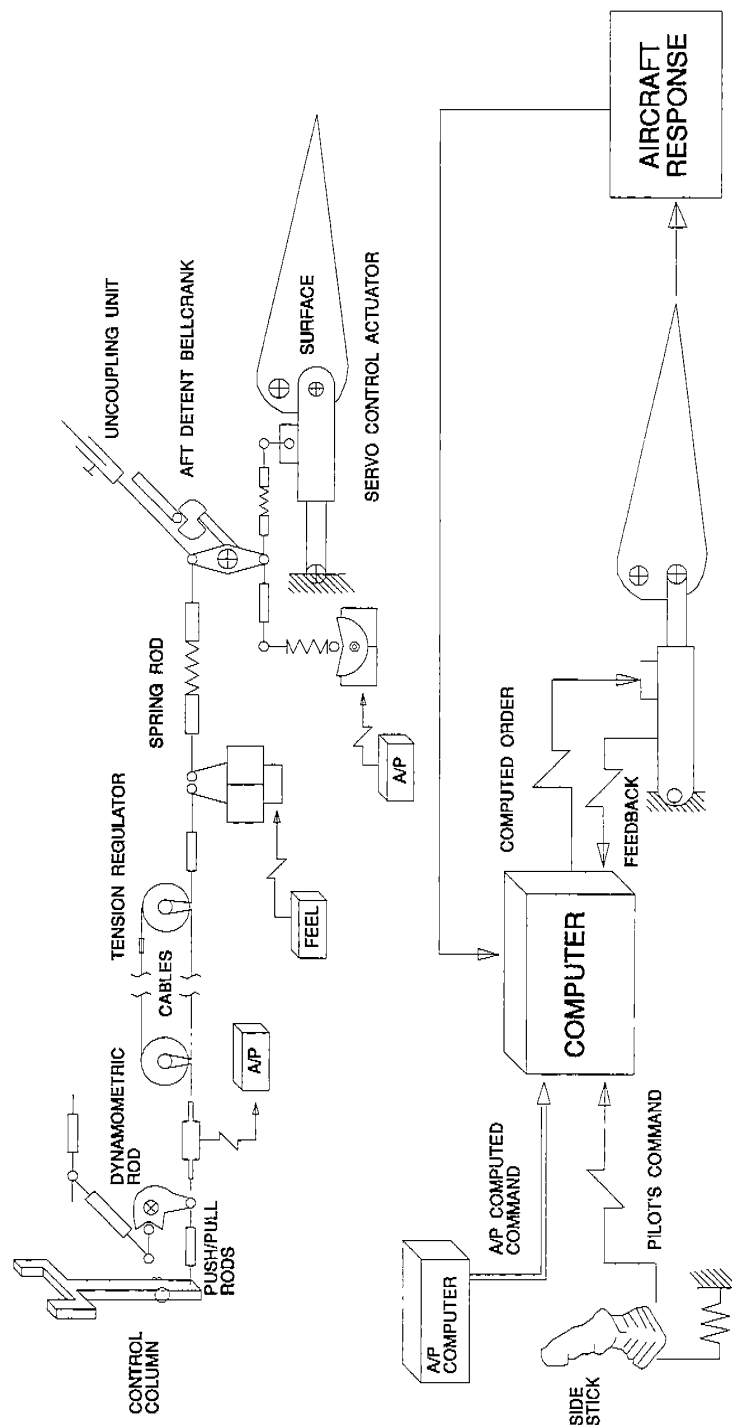
附錄一 訓練教材（VCD）略

附錄二 ACRM Maintenance Trainee's Booklet

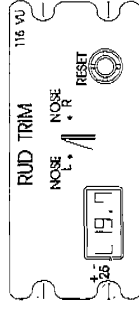
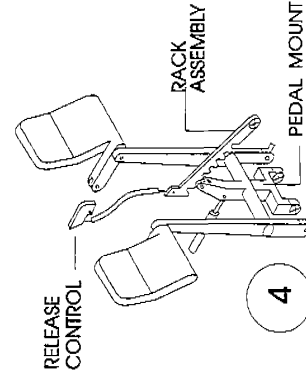
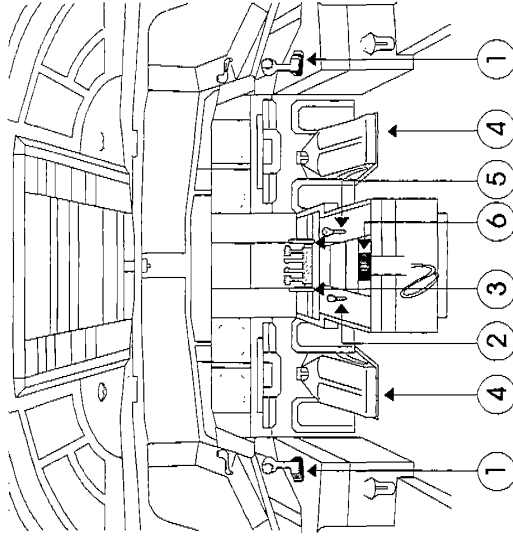
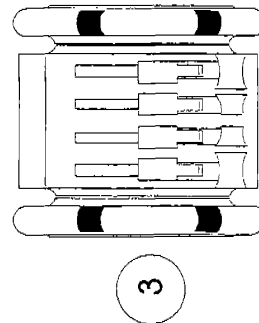
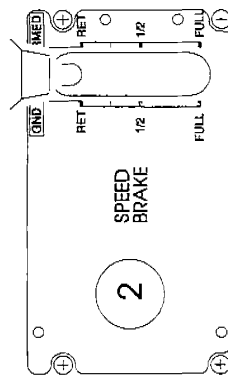
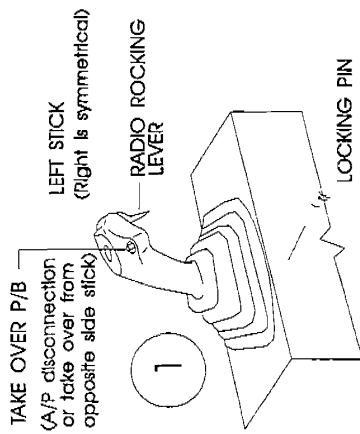
附錄三 訓練課程表



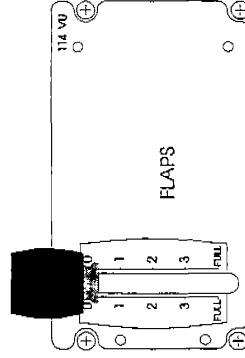
F584200 CFM US



F584200 CFM US



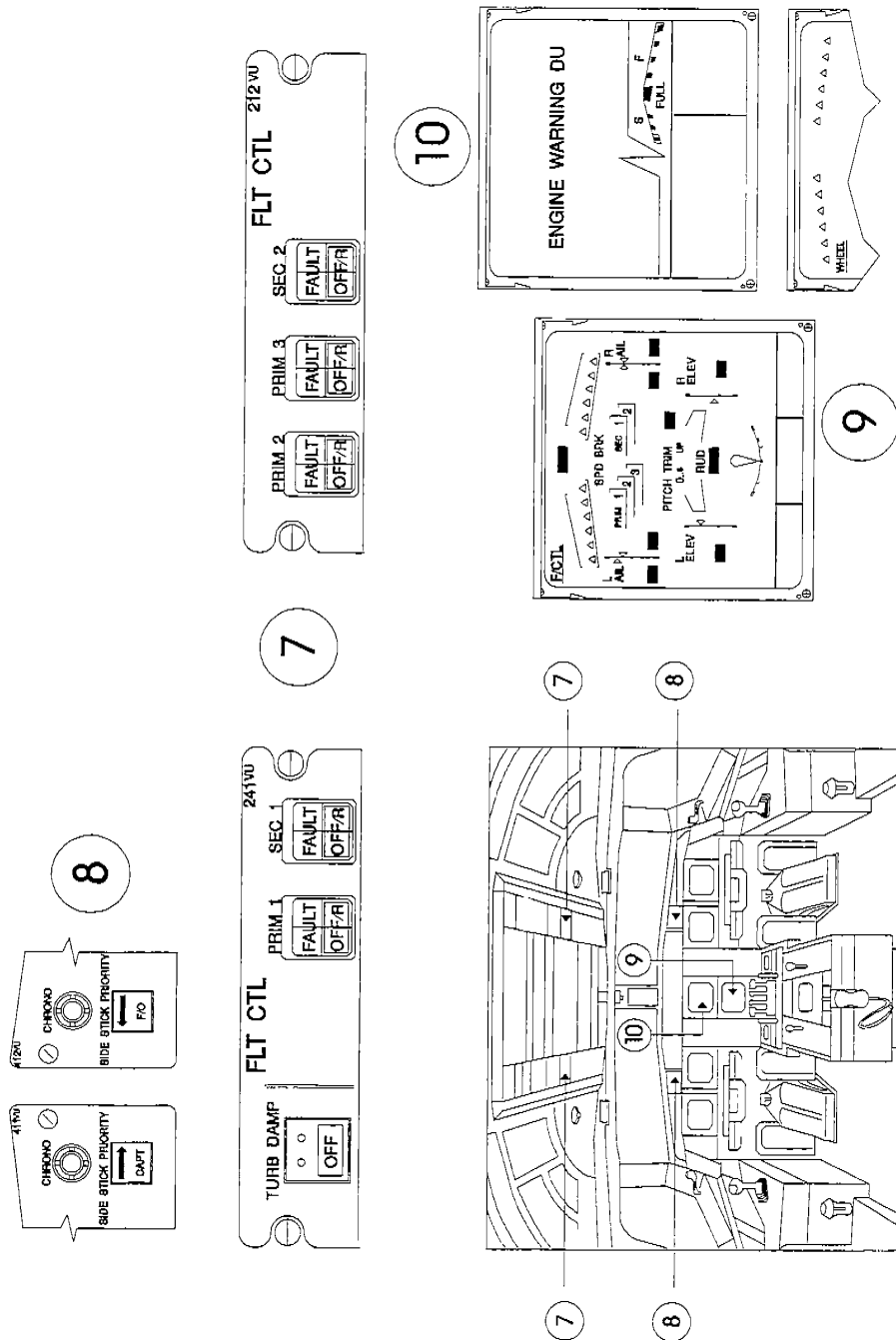
6



5

LEVER POSITION	FLIGHT PHASE
0	CRUISE
1	HOLD
1+F	TAKE OFF
2	T/O APPROACH
3	T/O APPR LDG
FULL	LANDING

FS84200 CFM US



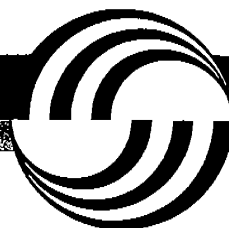
F584200 CFM US

TRAINING

ACRM Maintenance Trainee's booklet

附錄二 ACRM Maintenance Trainee's Booklet

AIRBUS INDUSTRIE
TRAINING & FLIGHT OPERATIONS SUPPORT DIVISION





ACRM Maintenance Trainee's booklet



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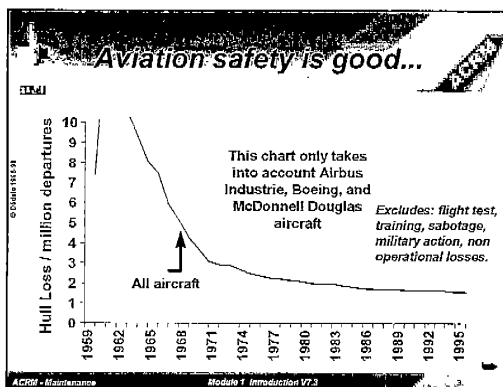


Trainee's HANDBOOK - Maintenance

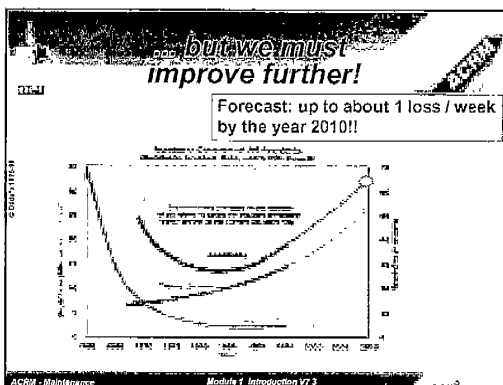
1. Human Factors and Flight Safety

Safety is one of the most important parts of your job. It involves more than just the aircraft. It also involves pilots, cabin crew, ATC, dispatchers as well as maintenance personnel. This CRM course focuses mainly on the human dimension of safety, with due reference to the technical dimension.

Why is such a course needed?



The sharp safety improvements in the early 60's can be attributed to the introduction of jets and to better safety equipment, more structured procedures, better technical training of pilots especially thanks to flight simulators, etc. Since the mid 70's however, the accident rate has not significantly decreased. Is this acceptable?

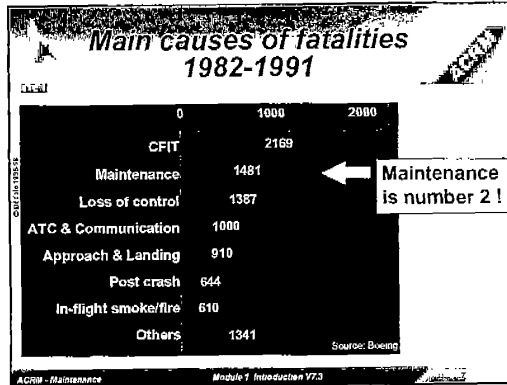


The above figure indicates that if the same accident rate was maintained over the years, the forecast increase in traffic would result in one or more accidents per week by the year 2010. Further progress must be made!

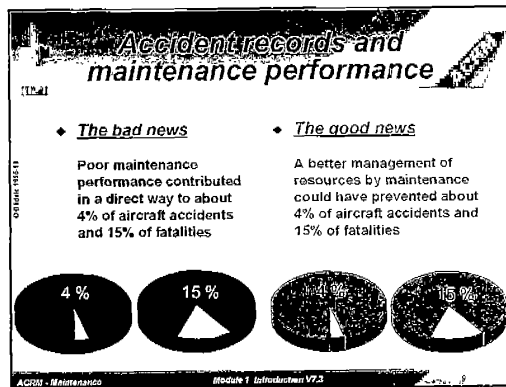
Let's look at safety more closely. We can look at it differently. Looking at the number of fatalities, maintenance represents the number 2 cause, as you can see below.



Personal Notes



Looking at safety in terms of accidents, about 15 to 20 percent of them are attributed to maintenance.



Two ways to look at these figures. A non constructive way is to say that maintenance is the cause of 15 percent of fatalities. A more constructive way points out the potential there is to improve safety through maintenance.

The purpose of the CRM course is to tackle these accident statistics and consider ways of reducing them. This is achievable through a better management of the available resources. How to do that is the object of the course. Five main topics are addressed:

- . Error, Performance and safety
- . Factors affecting performance
- . Communication
- . Procedures and practices
- . Team performance



Personal Notes



2. Error, Performance, and Safety

This topic is highly controversial in aviation. The relation between human error, performance and safety is not so simple... To begin, some definitions :

Errors: A definition

- ♦ You make an error when your action deviates from your intention, or when your intention is inappropriate
- ♦ An error is not intentional

ACRM - Maintenance Module 2 Error, performance and safety V1.3

Violations

- ♦ You commit a violation when you intentionally deviate from a regulation or from a procedure
- ♦ A violation is originally intentional but can become routine

ACRM - Maintenance Module 2 Error, performance and safety V1.3

An error is never intentional. This has to be distinguished from a violation, which is an intentional deviation from a regulation or a procedure. Warning: many violations come from a slow drifting process, and can become routine. Most violations are a threat to safety!

Main maintenance errors

1. Incorrect installation of components
2. Fitting of wrong parts
3. Electrical wiring discrepancies
4. Loose objects left in the aircraft
5. Inadequate lubrication
6. Cowlings, access panels, fairings not secured
7. Fuel/oil caps and refuel panels not secured
8. Landing gear ground lock pins not removed before departure

Source: Flight Safety Occurrence Digest (UK CAA, 1992)

ACRM - Maintenance Module 2 Error, performance and safety V1.3

Here are the most common maintenance errors



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Error management philosophy

- ◆ We must accept error as a normal component of human behavior
- ◆ But we must not give errors the time to threaten safety



ACRM - Maintenance Module 2 Error, performance and safety V1.3

Errors, performance and safety Summary

- ◆ Error is human ...
 - ◆ Even skilled maintenance personnel make errors
 - ◆ We learn from errors and adapt our performance
- ◆ Errors must be managed:
 - ◆ Prevention
 - ◆ Monitoring
 - ◆ Detection
 - ◆ Recovery

... at the individual and team level

ACRM - Maintenance Module 2 Error, performance and safety V1.3

Error Management requires us to accept that human performance has limitations and that error is inevitable. But we must use error management tools and techniques to stop errors before they impact safety.



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Trainee's HANDBOOK - Maintenance

3. Factors affecting performance

The working conditions of the maintenance personnel are not always conducive to safety.

Maintenance working conditions

- ◆ Shift work (shift change, night shift)
- ◆ Environment
 - ◆ Light, Noise
 - ◆ Temperature and weather conditions
- ◆ Time pressure
- ◆ Parts availability
- ◆ Lack of training
- ◆ Multiquification
- ◆ Economic pressure
- ◆ Work conflict,...
- ◆ ...

But this aircraft must leave within one hour!

ACRM - Maintenance Module 3 Factors Affecting Performance V1.3

All these conditions can result in sleep deprivation, fatigue, stress, and conflicts.

Fatigue effects

Fatigue downgrades:

- ◆ Muscular strength and coordination
- ◆ Vision and perception
- ◆ Memory
- ◆ Error monitoring
- ◆ Decision making
- ◆ Motivation, attitudes
- ◆ Communication
- ◆ Ability to cooperate
- ◆ ...

ACRM - Maintenance Module 3 Factors Affecting Performance V1.3

Sleep deprivation and fatigue are often the results of a shift work environment common to maintenance personnel. Here are some common symptoms of fatigue

Fatigue management at the individual level

- ◆ Respect your sleep needs
- ◆ Regular physical activity
- ◆ Balanced meals
- ◆ Drink water, tea, coffee
- ◆ ...
- ◆ Do Not use self-prescribed medication!

ACRM - Maintenance Module 3 Factors Affecting Performance V1.3

Here is some advice on how to cope with fatigue, sleep deprivation, stress and conflict



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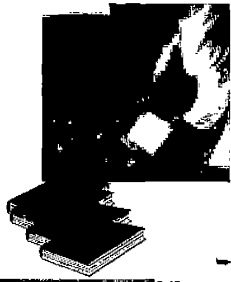


Trainee's HANDBOOK - Maintenance

Coping with stress

11-41

- ◆ Accept the situation
- ◆ Go back to basics, prioritize, make it simple
- ◆ Adhere to documented procedures!
- ◆ Use all available resources, buy time
- ◆ Communicate, refer to the team
- ◆ Keep the team alive
- ◆ ...



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ACRRI - Maintenance
Module 3 Factors Affecting Performance V7.3
Page 11-41

A few rules for conflict management

11-42

- ◆ Listen and Understand the others' constraints
- ◆ Show respect
- ◆ Address what is right, not who is right
- ◆ Don't take it personally!
- ◆ Refer to procedures
- ◆ Suggest solutions
- ◆ Refer to the team and to the supervisor



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Module 3 Factors Affecting Performance V7.3
Page 11-42



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4. Communication

Communication is the main tool to ensure co-ordination. Communication takes place between people (fellow shift workers, flight crews, management, etc) and between people and machines.

Communication is not only verbal. Gestures, body language, voice tone, and gaze also convey meaning. There can also be an emotional component to the message.

The effect of the context

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A check

- ◆ With different contexts the same message can have very different meanings
- ◆ What you understand from a message depends on your expectation

Transit

ACRI - Maintenance Module 4 Communication VT.3

Implicit communication

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When a task is performed, the person performing it often communicates implicitly with others. This communication is often implicit and context-sensitive. It is not always verbal. It can be a gesture, a look, or a tone of voice. It is often a way of saying 'I am working on this' or 'I need help'.

ACRI - Maintenance Module 4 Communication VT.3

Communication is context-sensitive, driven by expectations, and often implicit. It has to be properly managed. To increase communication reliability, use communication protections. Protect your task ; allow interruptions only when you are ready ; interrupt others with care ; help them resume their task.

Barriers to communication

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- ◆ Different 'mother tongue' and language
- ◆ Stress
- ◆ Time pressure
- ◆ Conflict
- ◆ Pre-conceived ideas
- ◆ Authority and hierarchy
- ◆ Personality and attitudes
- ◆ Environment
- ◆ Technical terminology and abbreviations
- ◆ ...

ACRI - Maintenance Module 4 Communication VT.3

Besides this complexity, there are some elements or situations that can impair good communication. Here are some examples of such barriers.



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Trainee's HANDBOOK - Maintenance

Briefings and de-briefings

- ♦ Briefings are methods to share common objectives and organise activity
- ♦ They should define *who does what, when and how*
- ♦ Use briefings
 - ♦ during shift handover
 - ♦ before a task that is seldom performed
- ♦ De-briefings allow reports about work performed or remaining

ACRM - Maintenance Module 4 Communication V7.3

Briefings, job cards, and maintenance records all act as support for communication

Job cards

Job cards describe:

- ♦ the reason for the job
- ♦ equipment and material
- ♦ what has to be done
- ♦ Check that the required job conditions are met!
- ♦ Be sure to resume the task at the proper step!

JOB INSTRUCTION CARD		JIC No. : 32-61- TITLE : MLG ME	
Effectivity		Maintenance Engineering Approval	
1	2	3	4

- Reason for the job
Check of MLG mechanic
- Equipment and Material

ACRM - Maintenance Module 4 Communication V7.3

Maintenance records

- ♦ They describe the overall history of the work performed
- ♦ They allow understanding of what remains to be done
- ♦ They facilitate troubleshooting
- ♦ They allow legal traceability
- ♦ Fill them in carefully!
- ♦ Make sure you have signed off only for the work accomplished!!!

ACRM - Maintenance Module 4 Communication V7.3

The introduction of new generation aircraft has had several consequences on communication. To communicate with the machine some rules need to be followed. Communication with the machine should not replace communication with people. Here are some recommendations.

Human-machine communication requires respecting rules

- ♦ Check that all initial conditions are satisfied!
- ♦ Think before acting!
- ♦ Respect the code and format
- ♦ Use feed-back, check and cross-check!

ACRM - Maintenance Module 4 Communication V7.3

Communication Summary

- ♦ Prepare your message, be unambiguous
- ♦ Manage interruptions:
 - ♦ respect the receiver's task
 - ♦ protect your own task
 - ♦ resume the task properly
- ♦ Listen
- ♦ Check that you understand and that you have been understood
- ♦ Use briefings and de-briefings, job cards, and maintenance records

ACRM - Maintenance Module 4 Communication V7.3

In summary, communication is vital to safety but it is fragile. Follow the rules given and use the standard communication tools at your disposal.



Personal Notes



Trainee's HANDBOOK - Maintenance

5. Procedures and practices

Procedures and practices

Procedure: "motor the engine and check for oil leaks"	Practice: ◆ motoring for how long? ◆ which tools/equipment should be used? ◆ under which conditions? ◆ how do you define a leak? ◆ ...
An Instruction	An Action

ACRM - Maintenance Module 5 Procedures and Practices V1.3 11

The procedure is an instruction, the practice is the typical action. The more we understand the reason for the procedure, and the consequences of implementing or failing to implement the procedure, the more likely we are to implement the procedure correctly.

When could practice differ from procedure?

- ◆ Improper training
- ◆ Changing habits, environment
- ◆ Stress, time pressure
- ◆ Night duty and shift turnover
- ◆ Poor environment, boredom
- ◆ Using non applicable procedures
- ◆ Over reliance on memory
- ◆ Using personal short cuts
- ◆ Complacency, norms
- ◆ New technology
- ◆ Language barrier
- ◆ ...

ACRM - Maintenance Module 5 Procedures and Practices V1.3 17

Why does practice deviate from procedures ? It is tempting to modify the procedure during execution, using personal short cuts or expert tricks. Such a practice is absolutely not safe!

Maintenance has been based on procedures for a long time. This is even more the case today with the new generation aircraft. The complexity of these new aircraft makes the interaction with the machine more difficult to understand. It has become difficult to foresee all the consequences of an action. Therefore procedures give you the correct course of action and protect against unforeseen (and unintended) consequences.

New technology

- ◆ New technology is more complex, more opaque
- ◆ You can't interact with new technology as you did with the old
- ⇒ Procedures are here to help: you must respect them!
- ⇒ Respecting procedures allows new technology to become easy-to-use



ACRM - Maintenance Module 5 Procedures and Practices V1.3 18

Procedure modifications?

- ◆ Never try to change a procedure whilst performing the task
 - If in doubt, ask!
 - If unsure, check!
- ⇒ Report any possible implementation failures
- ⇒ Report any proposal for modification to your airline:
 - to your Management
 - to the Engineering or Technical Department
 - ...

ACRM - Maintenance Module 5 Procedures and Practices V1.3 20



Personal Notes



Trainee's HANDBOOK - Maintenance

**Procedures and practices
Summary**

- ◆ Protect yourself against errors and violations
- ◆ Procedures are the only way to interact safely with new technology aircraft
- ◆ Make sure you are using the applicable procedure, never short cut or modify it
- ◆ Check, double-check and cross-check
- ◆ Synchronize your actions with the rest of the team

AC700 - Maintenance Module 5 Procedures and Practices V7.3 23

Procedures do not substitute for basic knowledge and skills. Maintenance staff need to be properly trained in order to execute the procedure safely.

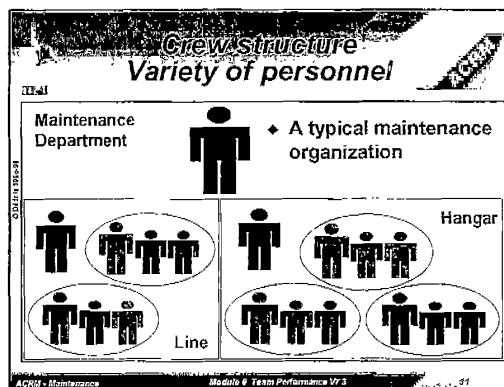


Personal Notes

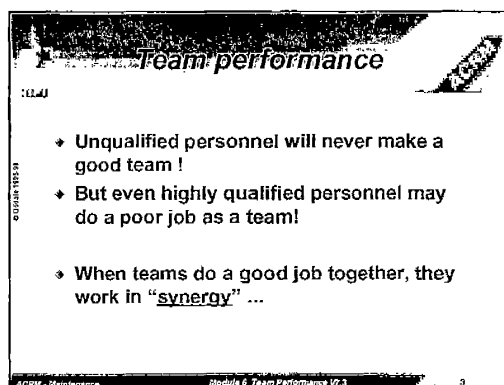


6. Team performance

Previous modules mainly addressed the individual. However, maintenance personnel do not work on their own. Each one of them is part of a team.

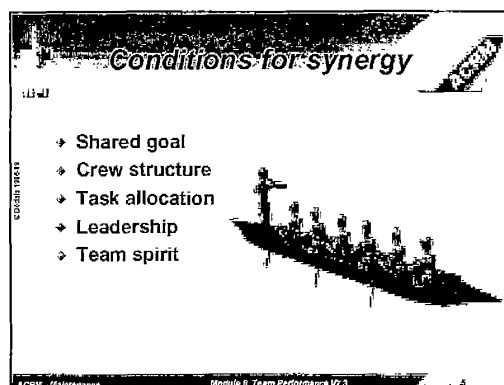


The concept of team in the maintenance environment corresponds to different things. It can be seen as a group of technicians of the same trade or a group of technicians of complementary trades (e.g., electrician, airframe & powerplant, avionics, etc.). At a larger scale, the team can correspond to line maintenance or hangar maintenance, all of these teams being part of the maintenance department which is also a team.



The best team does not necessarily include the best players. Something more is needed, that is "**synergy**". The performance of a team working in synergy is higher than the sum of its member's individual performances. In this case we can say that $1 + 1$ is more than 2.

It is easy to identify what can negatively affect team performance. But what makes a team a good one?



For synergy to exist, each member of the team needs to know what he/she has to do. This can be found in procedures and regulations as well as within the team organization, which defines task and role allocation and hierarchy. Hierarchy requires a leader.



Personal Notes



Trainee's HANDBOOK - Maintenance

The leader's role

You work with John on the refueling problem...

The leader's role is to:

- define the task
- build the team
- set the tone
- make decisions
- allocate tasks
- motivate team members



ACRM - Maintenance Module 6 Team Performance V7.3 16

Team spirit

- Wearing the same jersey, working for the same goal
- A friendly and professional atmosphere
- Motivation to work together
- Motivation to follow the leader, but not 'blindly'
 - Ask questions
 - Reformulate if you are not understood



ACRM - Maintenance Module 6 Team Performance V7.3 21

A good team needs a good leader *and* good followers. The leader must manage workload, manage time, motivate the team members and give praise for a job well-done. In return, team members must be willing to work together and follow the leader. This sense of belonging to the same team, of "wearing the same jersey", is called team spirit.

Conclusion

- Resource management skills are not a substitute for technical proficiency
- But high technical proficiency itself cannot guarantee safety
- Main expected benefits of ACRM are:
 - improved flight safety
 - less personnel injuries
 - better aircraft availability
 - higher motivation

ACRM - Maintenance Module 7 Conclusion V7.3 1

This course has focused on Crew Resource Management and its relationship to safety. These skills can never be a substitute for technical proficiency, however, a good, safe team requires more than simply good players - it requires synergy, communication and cooperation.

First we must understand our own limitations and vulnerabilities to error, then we must take active measures to protect ourselves and our fellow crewmembers from error and its consequences. We want you to practice the different safety principles and recommendations that have been presented throughout this ACRM workshop. Think of them as tools that can be used in all your training and maintenance work.



Personal Notes

* MAINTENANCE COURSE *

* FM42 *

COURSE : 007011 FROM : 03 OCT 2000 TO : 28 NOV 2000
LOCATION : TLS

* AIRLINE * /SV * CAL *

* AIRCRAFT * A340 * A340 *

* MTS * F311A * F311A *

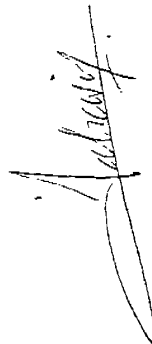
* TEST * 80% CL * 80% CL *

* INSTRUCTORS LIST *

* ADC DA COSTA *
* ADR ANDRES *
* ALI ALIGE *
* CHR CHRISTOPHE *
* DDE DELCASSO *
* FL LUDMANN *
* GSM GEMON SAINTEMARIE *
* HMG GRUBER *
* HR HANSFORD *
* JCD DEILLES *
* JHH HARVEY *
* JK KOESTER *
* JYP PINET *
* KD KOFFEL *
* MG GALLET *
* PLE LEON *
* PRO ROY *
* PSM SCHMITT *
* SC STICKNEY *
* TA TALBOT *
* TBA BARBUT *
* WPC CLARK *

PLANNING

MAINTENANCE TRAINING DIRECTOR



COURSE PROGRAM

Course number 007011

Course type FM42 LINE/BASE MECHANICS ELECTRICS/AVIONICS

From 03 OCT 2000 To 28 NOV 2000 Aircraft A340

Customer / Conf /SY F311A
CAL F311A

Location TIS

Day	Hours	Group-Crew	Designation	Chapter	Equipt	Instructors Name	Positio:
TUE 03Oct2000							
08.30	09.30	A B C D	RECEPTION	RECEPT	1303	ANTHONY TALBOT	ATA 01.31.45
09.30	11.30	A B C D	WELCOME BRIEFING	WELC.	1303	DENIS KOFFEL	
12.30	16.30	A B C D	A/C PRESENTATION	A/C/PR	1303	DENIS KOFFEL	
WED 04Oct2000							
08.30	12.00	A B C D	ATA 31.EIS/CFDS	31.E	1303	DENIS KOFFEL	
13.00	15.30	A B C D	ATA 31.EIS/CFDS	31.E	1303	DENIS KOFFEL	
15.30	16.30	A B C D	DOCUMENTATION	DOC.	1303	DENIS KOFFEL	
THU 05Oct2000							
08.30	10.00	A B C D	DOCUMENTATION	DOC.	1303	DENIS KOFFEL	
10.00	12.00	A B C D	FT INTRO	F. INTR	FTFAS	DENIS KOFFEL	
13.00	16.30	A B C D	ONBOARD MAINTENANCE S	45.	1303	JEAN YVES PINET	
						DENIS KOFFEL	
FRI 06Oct2000							
07.00	08.30	D	MTS COCKPIT FAM	S. INTR	C10	COLIN STICKNEY	
08.30	10.00	B	ONBOARD MAINTENANCE S	45.	1303	DENIS KOFFEL	
08.30	10.00	A	MTS COCKPIT FAM	S. INTR	C10	COLIN STICKNEY	
08.30	11.30	C D	ONBOARD MAINTENANCE S	45.	1303	DENIS KOFFEL	
10.00	11.30	B	MTS COCKPIT FAM	S. INTR	C10	JURGEN KOESTER	
10.00	13.00	A	ONBOARD MAINTENANCE S	45.	1303	DENIS KOFFEL	
11.30	13.00	B	ONBOARD MAINTENANCE S	45.	1303	DENIS KOFFEL	
11.30	13.00	C	MTS COCKPIT FAM	S. INTR	C10	JURGEN KOESTER	
14.00	15.30	A B C D	ONBOARD MAINTENANCE S	45.	1303	DENIS KOFFEL	
15.30	16.30	A B C D	ELECTRICAL POWER	24.	1303	JURGEN KOESTER	
MON 09Oct2000							
08.30	12.00	A B C D	ELECTRICAL POWER	24.	1303	JURGEN KOESTER	
13.00	16.30	A B C D	ELECTRICAL POWER	24.	1303	JURGEN KOESTER	

AIRBUS TRAINING CENTRE

COURSE PROGRAM

Course number 007011

Course type M42 LINE/BASE MECHANICS ELECTRICS/AVIONICS

From 03 OCT 2000 To 28 NOV 2000 Aircra A340

Customer / Conf /SY /F311A
CAL F311A

Location TLS

Day	Hours	Group-Crew	Designation	Chapter	Equipt	Instructors Name	Positio
TUE 10Oct2000							
	07.00	08.30	A	S24/31	C10	THIERRY BARBUT	
	08.30	10.00	C	24.	1303	JURGEN KOESTER	
	08.30	10.00	B	S24/31	C10	THIERRY BARBUT	
	08.30	11.30	A D	24.	1303	JURGEN KOESTER	
	10.00	11.30	C	S24/31	C10	DENIS KOFFEL	
	10.00	13.00	B	24.	1303	JURGEN KOESTER	
	11.30	13.00	C	24.	1303	JURGEN KOESTER	
	11.30	13.00	D	S24/31	C10	DENIS KOFFEL	
	14.00	16.30	A B C D	24.	1303	JURGEN KOESTER	
WED 11Oct2000							
	08.30	09.00	A B C D	24.	1303	JURGEN KOESTER	
	09.00	11.00	A B C D	F24/31	FTFAS	DENIS KOFFEL	
	11.00	13.00	A B C D	T24/31	1303	JURGEN KOESTER	
	14.00	16.30	A B C D	DOC.TA	1303	JURGEN KOESTER	
THU 12Oct2000							
	08.30	12.30	A B C D	TS2431	1303	JURGEN KOESTER	
	13.30	16.30	A B C D	28.	1303	ANTONIO DA COSTA	
FRI 13Oct2000							
	08.30	12.00	A B C D	28.	1303	ANTONIO DA COSTA	
	13.00	14.30	D	28.	1303	ANTONIO DA COSTA	
	13.00	14.30	C	S28	C10	MICHEL CHRISTOPHE	
	13.00	15.00	A B	28.	1303	ANTONIO DA COSTA	
	14.30	16.00	D	S28	C10	MICHEL CHRISTOPHE	
	14.30	16.30	C	28.	1303	ANTONIO DA COSTA	
	16.00	16.30	D	28.	1303	ANTONIO DA COSTA	
	16.00	17.30	A	S28	C10	PIERRE SCHMITT	
	17.30	19.00	B	S28	C10	PIERRE SCHMITT	
MON 16Oct2000							
	08.30	13.15	A B C D	28.	1303	ANTONIO DA COSTA	
	14.00	16.30	A B C D	26.	1303	ANTONIO DA COSTA	

2

COURSE PROGRAM

Course number 007011

Course type FM42 LINE/BASE MECHANICS ELECTRICS/AVIONICS

From 03 OCT 2000 To 28 NOV 2000 Aircraft A340

Customer / Conf /SY F311A
CAL F311A

Location TLS

Day	Hours	Group-Crew	Designation	Chapter	Equipt	Instructors Name	Positio
WED 17 Oct 2000							
08.30	12.00	A B C D	FIRE PROTECTION	26.	1303	ANTONIO DA COSTA	
13.00	15.00	A B C D	FT 26/28/49	F26/28	FTFAS	ANTONIO DA COSTA FRANCIS LUDMANN	
15.00	16.30	A B C D	TEST 28	T.28	1303	ANTONIO DA COSTA	
WED 18 Oct 2000							
08.30	10.00	C D	AUXILIARY POWER UNIT	49.	1303	ANTONIO DA COSTA	
08.30	11.00	A B	AUXILIARY POWER UNIT	49.	1303	ANTONIO DA COSTA	
10.00	11.00	C D	APU MOCK UP	49.MK	MK49F	FRANCIS LUDMANN	
11.00	12.00	C D	AUXILIARY POWER UNIT	49.	1303	ANTONIO DA COSTA	
11.00	12.00	A B	APU MOCK UP	49.MK	MK49F	FRANCIS LUDMANN	
13.00	14.30	A	AUXILIARY POWER UNIT	49.	1303	ANTONIO DA COSTA	
13.00	14.30	D	SIM 26/49	S26.49	C10	FRANCIS LUDMANN	
13.00	15.00	B C	AUXILIARY POWER UNIT	49.	1303	ANTONIO DA COSTA	
14.30	16.00	A	SIM 26/49	S26.49	C10	FRANCIS LUDMANN	
14.30	16.30	D	AUXILIARY POWER UNIT	49.	1303	ANTONIO DA COSTA	
16.00	16.30	A	AUXILIARY POWER UNIT	49.	1303	ANTONIO DA COSTA	
16.00	17.30	B	SIM 26/49	S26.49	C10	MICHEL CHRISTOPHE	
17.30	19.00	C	SIM 26/49	S26.49	C10	MICHEL CHRISTOPHE	
THU 19 Oct 2000							
08.30	09.30	A B C D	TEST 26/49	T26.49	1303	ANTONIO DA COSTA	
09.30	12.00	A B C D	POWER PLANT	70.	1303	FRANCIS LUDMANN	
13.00	16.30	A B C D	POWER PLANT	70.	1303	FRANCIS LUDMANN	
FRI 20 Oct 2000							
08.30	13.00	A B C D	POWER PLANT	70.	1303	FRANCIS LUDMANN	
14.00	16.30	A B C D	FT 70	F.70	FTSIN	PASCAL ROY ROBERT HANSFORD	

**AIRBUS TRAINING CENTRE**Thu, 28 Sep 2000 06:48
Page 4**COURSE PROGRAM**

Course number 007011

Course type FM42 LINE/BASE MECHANICS ELECTRICS/AVIONICS

From 03 OCT 2000 To 28 NOV 2000 Aircra A340

Location TLS

Customer / Conf / SY / CAL
F311A
F311A

Day	Hours	Group-Crew	Designation	Chapter	Equipt	Instructors Name	Positio.
MON 23 Oct 2000							
	08.30	11.30	A B C D	POWER PLANT	70.	1303	FRANCIS LUDMANN
	12.30	13.00	A B C D	PNEUMATIC	36.	1303	FRANCIS LUDMANN
	13.00	14.30	B	PNEUMATIC	36.	1303	FRANCIS LUDMANN
	13.00	14.30	A	SIM 70	S.70	C10	ROBERT HANSFORD
	13.00	15.00	C D	PNEUMATIC	36.	1303	FRANCIS LUDMANN
	14.30	16.00	B	SIM 70	S.70	C10	ROBERT HANSFORD
	14.30	16.30	A	PNEUMATIC	36.	1303	FRANCIS LUDMANN
	16.00	16.30	B	PNEUMATIC	36.	1303	FRANCIS LUDMANN
	16.00	17.30	C	SIM 70	S.70	C10	MARTINE GALLET
	17.30	19.00	D	SIM 70	S.70	C10	MARTINE GALLET
TUE 24 Oct 2000							
	08.30	12.00	A B C D	PNEUMATIC	36.	1303	FRANCIS LUDMANN
	13.00	14.00	A B C D	TEST 36/70	T36.70	1303	FRANCIS LUDMANN
	14.00	16.30	A B C D	AIR CONDITIONING	21.	1303	JEAN CLAUDE DEILLES
WED 25 Oct 2000							
	08.30	12.00	A B C D	AIR CONDITIONING	21.	1303	JEAN CLAUDE DEILLES
	13.00	16.30	A B C D	AIR CONDITIONING	21.	1303	JEAN CLAUDE DEILLES
THU 26 Oct 2000							
	08.30	12.00	A B C D	AIR CONDITIONING	21.	1303	JEAN CLAUDE DEILLES
	13.00	14.30	C	AIR CONDITIONING	21.	1303	JEAN CLAUDE DEILLES
	13.00	14.30	B	SIM 21/36	S21.36	C10	ANTONIO DA COSTA
	13.00	15.00	A D	AIR CONDITIONING	21.	1303	JEAN CLAUDE DEILLES
	14.30	16.00	C	SIM 21/36	S21.36	C10	ANTONIO DA COSTA
	14.30	16.30	B	AIR CONDITIONING	21.	1303	JEAN CLAUDE DEILLES
	16.00	16.30	C	AIR CONDITIONING	21.	1303	JEAN CLAUDE DEILLES
	16.00	17.30	D	SIM 21/36	S21.36	C10	DIDIER DELCASSO
	17.30	19.00	A	SIM 21/36	S21.36	C10	DIDIER DELCASSO

AIRBUS TRAINING CENTRE

COURSE PROGRAM

Course number 007011

Course type M42 LINE/BASE MECHANICS ELECTRICS/AVIONICS

From 03 OCT 2000 To 28 NOV 2000 Aircra A340

Customer / Conf /SY F311A
CAL F311A

Location TLS

Day	Hours	Group-Crew	Designation	Chapter	Equipt	Instructors Name	Positio
RI 27Oct2000							
	08.30	12.00	ICE AND RAIN	30.	1303	JEAN CLAUDE DEILLES	
	13.00	14.30	ICE AND RAIN	30.	1303	JEAN CLAUDE DEILLES	
	13.00	14.30	SIM 21/30	S21.30	C10	DIDIER DELCASSO	
	13.00	15.00	ICE AND RAIN	30.	1303	JEAN CLAUDE DEILLES	
	14.30	16.00	SIM 21/30	S21.30	C10	DIDIER DELCASSO	
	14.30	16.30	ICE AND RAIN	30.	1303	JEAN CLAUDE DEILLES	
	16.00	16.30	ICE AND RAIN	30.	1303	JEAN CLAUDE DEILLES	
	16.00	17.30	SIM 21/30	S21.30	C10	FRANCIS LUDMANN	
	17.30	19.00	SIM 21/30	S21.30	C10	FRANCIS LUDMANN	
4							
MON 30Oct2000							
	08.30	10.30	FT 21/30/36	F21/36	F21/36	ANTONIO DA COSTA	
	10.30	11.30	TEST 21/30	T21.30	1303	JEAN CLAUDE DEILLES	
	13.00	16.30	TS 26/28/49/70/36/21/	TS2170	1303	JEAN CLAUDE DEILLES	
TUE 31Oct2000							
	08.30	12.00	HYDRAULIC	29.	1303	DETLEF ANDRES	
	13.00	16.30	HYDRAULIC	29.	1303	DETLEF ANDRES	
WED 01Nov2000							
	08.30	09.00	HYDRAULIC	29.	1303	DETLEF ANDRES	
	09.00	12.00	LANDING GEAR	32.	1303	DETLEF ANDRES	
	13.00	16.30	LANDING GEAR	32.	1303	DETLEF ANDRES	
THU 02Nov2000							
	08.30	12.00	LANDING GEAR	32.	1303	DETLEF ANDRES	
	13.00	14.30	LANDING GEAR	32.	1303	DETLEF ANDRES	
	13.00	14.30	SIM 29/32	S29.32	C10	MATHIAS GRUBER	
	13.00	15.00	LANDING GEAR	32.	1303	DETLEF ANDRES	
	13.00	15.00	LANDING GEAR	S29.32	C10	MATHIAS GRUBER	
	14.30	16.00	SIM 29/32	32.	1303	DETLEF ANDRES	
	14.30	16.30	LANDING GEAR	32.	1303	DETLEF ANDRES	
	16.00	16.30	LANDING GEAR	S29.32	C10	ANTHONY TALBOT	
	16.00	17.30	SIM 29/32	S29.32	C10	ANTHONY TALBOT	
	17.30	19.00	SIM 29/32	S29.32	C10	ANTHONY TALBOT	

3

**AIRBUS TRAINING CENTRE**Thu, 28 Sep 2000 06:48
Page 6**COURSE PROGRAM**

Course number 007011

Course type M42 LINE/BASE MECHANICS ELECTRICS/AVIONICS

From 03 OCT 2000 To 28 NOV 2000 Aircra A340

Location TLS

Customer / Conf /SY F311A
CAL F311A

Day	Hours	Group-Crew	Designation	Chapter	Equipt	Instructors Name	Positio
FRI 03Nov2000							
	08.30	12.00	A B C D	LANDING GEAR	32.	1303	DETLEF ANDRES
	13.00	15.00	A B C D	FT 29/32	F29.32	FTFAS	DETLEF ANDRES MATHIAS GRUBER
	15.00	16.30	A B C D	TEST 29/32	T29.32	1303	DETLEF ANDRES
MON 06Nov2000							
	08.30	12.00	A B C D	FLIGHT CONTROLS	27.	1303	DETLEF ANDRES
	13.00	16.30	A B C D	FLIGHT CONTROLS	27.	1303	DETLEF ANDRES
TUE 07Nov2000							
	08.30	12.00	A B C D	FLIGHT CONTROLS	27.	1303	DETLEF ANDRES
	13.00	14.30	B	FLIGHT CONTROLS	27.	1303	DETLEF ANDRES
	13.00	14.30	A	SIM 27	S.27	C10	JAMES HARVEY
	13.00	15.00	C D	FLIGHT CONTROLS	27.	1303	DETLEF ANDRES
	14.30	16.00	B	SIM 27	S.27	C10	JAMES HARVEY
	14.30	16.30	A	FLIGHT CONTROLS	27.	1303	DETLEF ANDRES
	16.00	16.30	B	FLIGHT CONTROLS	27.	1303	DETLEF ANDRES
	16.00	17.30	C	SIM 27	S.27	C10	PATRICK LEON
	17.30	19.00	D	SIM 27	S.27	C10	PATRICK LEON
WED 08Nov2000							
	08.30	11.00	A B C D	FLIGHT CONTROLS	27.	1303	DETLEF ANDRES
	11.00	13.00	A B C D	FT ATA 27/29	F.27	FTFAS	DETLEF ANDRES
	14.00	15.30	A B C D	IRON BIRD	I.B	BENCH	PATRICK LEON
	15.30	16.30	A B C D	TEST 27/29	T.27	1303	DETLEF ANDRES
THU 09Nov2000							
	08.30	12.00	A B C D	DOORS	52.	1303	DETLEF ANDRES
	13.00	16.30	A B C D	EQUIPMENT FURNISHING	25.	1303	DETLEF ANDRES

COURSE PROGRAM

Course number 007011

Course type FM42 LINE/BASE MECHANICS ELECTRICS/AVIONICS

From 03 OCT 2000 To 28 NOV 2000 AircraA340

Customer / Conf /SY F311A
CAL F311A

Location TLS

Day	Hours	Group-Crew	Designation	Chapter	Equipt	Instructors Name	Positio
FRI 10Nov2000							
	08.30	09.30	A B	EQUIPMENT FURNISHING	25.	1303	DETLEF ANDRES
	08.30	09.30	C D	ATA 25/52 MOCK UP	2552MK	CEETP	JAMES HARVEY
	09.30	10.30	C D	EQUIPMENT FURNISHING	25.	1303	DETLEF ANDRES
	09.30	10.30	A B	ATA 25/52 MOCK UP	2552MK	CEETP	JAMES HARVEY
	10.30	12.00	A B C D	OXYGEN SYSTEM	35.	1303	DETLEF ANDRES
	13.00	15.00	A B C D	OXYGEN SYSTEM	35.	1303	DETLEF ANDRES
	15.00	16.30	A B C D	WATER/WASTE	38.	1303	DETLEF ANDRES
MON 13Nov2000							
	08.30	10.00	A B C D	WATER/WASTE	38.	1303	DETLEF ANDRES
	10.00	12.00	A B C D	FT 25/35/38/52	F25/52	FTFAS	DETLEF ANDRES
	13.00	14.00	A B C D	TEST 25/35/38/52	T.AF	1303	MATHIAS GRUBER
	14.00	16.30	A B C D	TS 29/32/27/52/25/35/	TS2538	1303	DETLEF ANDRES
TUE 14Nov2000							
	08.30	12.00	A B C D	AIRBUS CREW RESOURCE	ACRM	EUR1	GISELE GEMON SAINTEMARIE
	13.00	16.30	A B C D	AIRBUS CREW RESOURCE	ACRM	EUR1	GISELE GEMON SAINTEMARIE
WED 15Nov2000							
	08.30	12.00	A B C D	NAVIGATION	34.	1303	THIERRY BARBUT
	13.00	16.30	A B C D	NAVIGATION	34.	1303	THIERRY BARBUT
THU 16Nov2000							
	07.00	08.30	A	SIM 34	S.34	C10	COLIN STICKNEY
	08.30	10.00	C	NAVIGATION	34.	1303	THIERRY BARBUT
	08.30	10.00	B	SIM 34	S.34	C10	COLIN STICKNEY
	08.30	11.30	A D	NAVIGATION	34.	1303	THIERRY BARBUT
	10.00	11.30	C	SIM 34	S.34	C10	GISELE GEMON SAINTEMARIE
	10.00	13.00	B	NAVIGATION	34.	1303	THIERRY BARBUT
	11.30	13.00	C	NAVIGATION	34.	1303	THIERRY BARBUT
	11.30	13.00	D	SIM 34	S.34	C10	GISELE GEMON SAINTEMARIE
	14.00	16.00	A B C D	NAVIGATION	34.	1303	THIERRY BARBUT
	16.00	16.30	A B C D	AUTO FLIGHT	22.	1303	THIERRY BARBUT



COURSE PROGRAM

Course number 007011

Course type M42 LINE/BASE MECHANICS ELECTRICS/AVIONICS

From 03 OCT 2000 To 28 NOV 2000 AircraA340

Customer / Conf /SY F311A
CAL F311A

Location TLS

Day	Hours	Group-Crew	Designation	Chapter	Equipt	Instructors Name	Positio
FRI 17Nov2000							
	07.00	08.30	B	SIM 34	S.34	C10	GISELE GEMON SAINTEMARIE
	08.30	10.00	D	AUTO FLIGHT	22.	1303	THIERRY BARBUT
	08.30	10.00	C	SIM 34	S.34	C10	GISELE GEMON SAINTEMARIE
	08.30	11.30	A B	AUTO FLIGHT	22.	1303	THIERRY BARBUT
	10.00	11.30	D	SIM 34	S.34	C10	WILLIAM CLARK
	10.00	13.00	C	AUTO FLIGHT	22.	1303	THIERRY BARBUT
	11.30	13.00	D	AUTO FLIGHT	22.	1303	THIERRY BARBUT
	11.30	13.00	A	SIM 34	S.34	C10	WILLIAM CLARK
	14.00	16.30	A B C D	AUTO FLIGHT	22.	1303	THIERRY BARBUT
MON 20Nov2000							
	08.30	12.00	A B C D	AUTO FLIGHT	22.	1303	JEAN YVES PINET
	13.00	14.30	A	AUTO FLIGHT	22.	1303	JEAN YVES PINET
	13.00	14.30	D	SIM 22	S.22	C10	GISELE GEMON SAINTEMARIE
	13.00	15.00	B C	AUTO FLIGHT	22.	1303	JEAN YVES PINET
	14.30	16.00	A	SIM 22	S.22	C10	GISELE GEMON SAINTEMARIE
	14.30	16.30	D	AUTO FLIGHT	22.	1303	JEAN YVES PINET
	16.00	16.30	A	AUTO FLIGHT	22.	1303	JEAN YVES PINET
	16.00	17.30	B	SIM 22	S.22	C10	PASCAL ALIGE
	17.30	19.00	C	SIM 22	S.22	C10	PASCAL ALIGE
TUE 21Nov2000							
	10.00	12.00	A B C D	AUTO FLIGHT	22.	1303	JEAN YVES PINET
	13.00	14.30	B	AUTO FLIGHT	22.	1303	JEAN YVES PINET
	13.00	14.30	A	SIM 22	S.22	C10	PASCAL ALIGE
	13.00	15.00	C D	AUTO FLIGHT	22.	1303	JEAN YVES PINET
	14.30	16.00	B	SIM 22	S.22	C10	PASCAL ALIGE
	14.30	16.30	A	AUTO FLIGHT	22.	1303	JEAN YVES PINET
	16.00	16.30	B	AUTO FLIGHT	22.	1303	JEAN YVES PINET
	16.00	17.30	C	SIM 22	S.22	C10	GISELE GEMON SAINTEMARIE
	17.30	19.00	D	SIM 22	S.22	C10	GISELE GEMON SAINTEMARIE
WED 22Nov2000							
	08.30	10.30	A B C D	TEST 22/34	T22.34	1303	THIERRY BARBUT
	10.30	12.00	A B C D	COMMUNICATIONS	23.	1303	THIERRY BARBUT
	13.00	16.30	A B C D	COMMUNICATIONS	23.	1303	THIERRY BARBUT



AIRBUS TRAINING CENTRE

COURSE PROGRAM

Thu, 28 Sep 2000 06:48
Page 9

Class Yeom 1303 - PM 42

Course number 007011

Course type M42 LINE/BASE MECHANICS ELECTRICS/AVIONICS

From 03 OCT 2000 To 28 NOV 2000 Aircraft A340

Customer / Conf / SY / CAL F311A
F311A

Location TLS

Anthony

(Tony)

ext 32543

Room No 1217

Day	Hours	Group-Crew	Designation	Chapter	Equipt	Instructors Name	Positio
THU 23 Nov 2000							
	08.30	12.00	A B C D	23.	1303	THIERRY BARBUT	
	13.00	16.30	A B C D	23.	1303	THIERRY BARBUT	
FRI 24 Nov 2000							
	08.30	13.00	A B C D	33.	1303	DENIS KOFFEL	
	14.00	16.00	A B C D	F.AV	FTFAS	DENIS KOFFEL	
						PASCAL ALIGE	
	16.00	16.30	A B C D	31.R	1303	DENIS KOFFEL	
MON 27 Nov 2000							
	07.00	08.30	A	S23/31	C10	PASCAL ALIGE	
	08.30	10.00	C	31.R	1303	DENIS KOFFEL	
	08.30	10.00	B	S23/31	C10	PASCAL ALIGE	
	08.30	11.30	A D	31.R	1303	DENIS KOFFEL	
	10.00	11.30	C	S23/31	C10	JEAN YVES PINET	
	10.00	13.00	B	31.R	1303	DENIS KOFFEL	
	11.30	13.00	C	31.R	1303	DENIS KOFFEL	
	11.30	13.00	D	S23/31	C10	JEAN YVES PINET	
	14.00	15.30	A B C D	T23/31	1303	DENIS KOFFEL	
	15.30	16.30	A B C D	DEB.	1303	ANTHONY TALBOT	
TUE 28 Nov 2000							
	08.30	11.30	A B C D	TS2234	1303	DENIS KOFFEL	
	12.30	16.30	A B C D	T.FIN	1303	DENIS KOFFEL	

9

THE CHIEF INSTRUCTOR

TRAINEE'S OFFICE