

出國報告（出國類別：受訓）

「美國航電技工班」
完訓返國報告

服務機關：陸軍航空特戰指揮部

姓名職稱：士官長李庭榮

派赴國家：美國

出國期間：自 108 年 7 月 23 日至 109 年 1 月 11 日

報告日期：109 年 2 月 11 日

摘要

本次受訓班隊為航電技工班，受訓地點為美國陸軍運輸後勤訓練基地，位於美國東部維吉尼亞州的尤斯帝斯堡。課程內容為 CH-47F、UH-60A/L、UH-60M 此三種直升機機型，其航電儀表系統相關功能介紹、技令書刊使用、各項組件操作檢查、測試裝備介紹及實作使用、系統故障排除方式的說明與實作。全部課程共計為期 25 週的訓練，於訓練課程中，指導教官著重強調技令的重要性，並且無論是學科介紹導讀，亦或是術科實作，均依技令規範實施。透過後勤戰力的培養，達到提升建軍備戰、戰備整備之效能。

目次

壹、目的.....	3
貳、過程.....	4
參、心得.....	9
肆、建議.....	10
伍、附件.....	11

壹、目的

為提升航電修護技能，此航電技工班受訓地點為美國陸軍運輸後勤訓練基地 Fort Eustis，此課程目的為指導學員熟悉 CH-47F、UH-60A/L、UH-60M 此三種直升機機型之航電系統修護技術，了解其系統相互關係，各重要組件功能，能使用技令書刊及三用電表量測線路，並加以故障排除，使直升機維持功能正常，以達建軍備戰之效能。

貳、過程

本班隊訓練期程共計 25 週，各週課程分述如次：

第一週：

以簡報告知學員，了解學校對學生的各項要求及規定，帶領學生辦理身份 ID 卡，申請美國銀行帳戶，及到醫療中心建立學生身份檔案，簡介上課環境跟生活設施，並實施落地考 ECL 測驗。

第二週：

針對各種國內外可能面臨的作戰環境，及對部隊可能造成影響的安全議題進行研討，技令航保手冊 DA PAM 738-751 介紹手冊內容，如何使用在飛機維保表格，具體使用時機，相關人員核准權責及方式，及航保手冊實作測考。

第三週：

講解航空保修技令 TM1-1500-204-23-1 如何查詢使用，Aviation Unit Maintenance (AVUM)和 Aviation Intermediate Maintenance (AVIM)在保修層級上的權責差異，各式保修工具功能講解說明，使用時機及方式，精密量測工具其送校時機及規定，及術科保險實作。

第四週：

講解基本電學—直流電原理，電壓，電流及電阻之間的相互關係，三用電表的使用方式。搭地的效果，基本電學安全規定，介定基本電學的術語，各種單位說明，及各式符號講解。

第五週：

講解基本電學—交流電原理，感應線圈，變壓器，二極體，整流器，電晶體作用原

理。導體，半導體，及絕緣體的差異性，靜電效應產生及防護。說明抵抗電流如何改變感應線圈。說明電壓，電流及電阻計算公式。

第六週：

本週課程為戰場線束修護，依技令規範，教官教導學生使用正確的制式工具，線束相關綑綁限制，長度及其鬆緊度控制，如何正確且快速修復破損線束，教導學生如何使用工具壓接端子實作練習，並實施測考。

第七週：

本週課程為戰場線束修護，依技令規範，教官教導學生焊接工具使用方法，使用焊接工具注意事項，教官指導學生如何使用焊接工具修復機內通話開關和線束，進行實作練習，並實施測考。

第八週：

UH-60A/L 電子技令 IETM 導讀，各章節代表意義，飛機功能章節說明，飛機故障排除章節說明，飛機各組件保修，組件拆除步驟，組件安裝程序，說明保修權責區分 MAC 表中的標準人工時，修護來源代碼講解。

第九週：

ULLS-A(E)美軍保修系統使用介紹，SS1-6 各式電子表格說明操作方式及如何填寫，各欄位代碼代表意義，進行實作練習，並實施測考。地面動力裝備 AGPU 使用介紹，操作限制，注意事項，對學生實施實作練習，並實施測考。

第十週：

CH-47F、UH-60A/L、UH-60M 此三種直升機機型的改良式資料數據機 Improved Data Modem (IDM)，多功能顯示器 Multi-Funtion Display (MFD)，控制顯示單元 Control Display Unit (CDU)系統說明介紹，操作檢查，故障排除，及實作測考。

第十一週：

CH-47F、UH-60A/L、UH-60M 此三種直升機機型的資料傳輸模組 Data Transfer Set (DTS)，機內通話系統 Inter Communication System (ICS)系統說明介紹，操作檢查，故障排除，使用電子技令查詢，注意事項，對學生實施實作練習，並實施測考。

第十二週：

機內通話系統 Inter Communication System (ICS)中的單頻地空無線電系統 SINCGARS，超高頻無線電 VHF(AN/ARC-210D)說明介紹，操作檢查，故障排除，使用電子技令查詢，注意事項，對學生實施實作練習，並實施測考。

第十三週：

機內通話系統 Inter Communication System (ICS)中的極高頻無線電 UHF(AN/ARC-164)，多頻段無線電系統(AN/ARC-231)說明介紹，操作檢查，故障排除，使用電子技令查詢，注意事項，對學生實施實作練習，並實施測考。

第十四週：

機內通話系統 Inter Communication System (ICS)中的高頻無線電 HF(AN/ARC-220)，大氣資料電腦 Air Data Computer (ADC)說明介紹，操作檢查，故障排除，使用電子技令查詢，注意事項，對學生實施實作練習，並實施測考。

第十五週：

CH-47F、UH-60A/L、UH-60M 此三種直升機機型的自動飛行控制系統 Auto Flight Control System (AFCS)說明，相關組件介紹，操作檢查，故障排除，使用電子技令查詢，注意事項，對學生實施實作練習，並實施測考。

第十六週：

水平安定舵 Stabilator Unit 說明介紹，操作檢查，教官指導學生如何使用測試裝備進行故障排除，使用電子技令查詢，注意事項，對學生實施實作練習，並實施測考。

第十七週：

雙水平安定舵控制器 Dual Stabilator Controller 說明介紹，操作檢查，教官指導學生如何使用測試裝備進行故障排除，使用電子技令查詢，注意事項，對學生實施實作練習，並實施測考。

第十八週：

指揮儀器組件 Command Instrument Set 說明介紹，操作檢查，故障排除，使用電子技令查詢，注意事項，對學生實施實作練習，並實施測考。

第十九週：

飛行導航導向 Flight Director，大氣資料電腦組件 Air Data Computer Set 各組件說明介紹，相關系統操作檢查，故障排除，使用電子技令查詢，注意事項，對學生實施實作練習，並實施測考。

第二十週：

自動尋標儀 Auto Direction Finder LF/ADF(AN/ARN149V)，民用導航 Civil Navigation(AN/ARN147V)，雷達高度表 Radar Altimeter，戰術空中導航 TACAN 各組件說明介紹，相關系統操作檢查，故障排除，使用電子技令查詢，注意事項，對學生實施實作練習，並實施測考。

第二十一週：

內嵌式全球定位系統及慣性導航 EGI，天氣觀測器 Storm Scope(WX-500)，電子式備用儀器系統 Electronic Standby Instrument System (ESIS)各組件說明介紹，相關系統操作檢查，故障排除，使用電子技令查詢，注意事項，對學生實施實作練習，並實施測考。

第二十二週：

抬頭顯示器 Head-Up Display (HUD)功能說明介紹，操作檢查，故障排除，使用電子技令查詢，注意事項，對學生實施實作練習，並實施測考。

第二十三週及第二十四週：
學校停課。

第二十五週：

訊號資料轉換器 Signal Data Converter (SDC)，陀螺磁羅盤 Gyro Magnetic Compass GMS(AN/ASN-43)說明介紹，操作檢查，故障排除，使用電子技令查詢，注意事項，對學生實施實作練習，並實施測考。

參、心得

美軍在基本班隊要求十分紮實，前兩個月的課堂訓練內容雖然很無趣，幾乎都是基本原理講解，連教官也自我解嘲說，這根本就是在上大學的電學課程，但是他也沒有因此就跳過，或是簡化任何步驟，務求學生都能理解內容。在考試時，強調各位學生要有榮譽心，可以考不及格再補考，但絕不允許任何作弊行為。並且嚴格執行監考督考，而且也未曾聽聞有學生作弊情事。

在後續的各機型航電系統介紹中，教官也很風趣的分享他在阿富汗經歷過的一些趣事，讓課堂上充滿笑聲，不同的視野，也增進了我對國際情勢的了解。

在訓練課程中，個人最為欣羨的就是美軍的後勤資源豐富，不僅有足量足夠的保修工具，設備，線材，耗材等等可供練習使用，每位學生都能使用模擬機來實習機上保修，故障排除，及功能測試。確保學生在派任到單位前，就能具備基本程度的保修執行能力。可以說只要給他一本技令，他就能上場執行飛機修護任務了。

另外發現美國陸軍就算在受訓時，也分成三班制進行，有日班，夜班，及大夜班，一方面使學員在受訓時，就已經開始逐步適應戰場所需，另一方面也是讓現有硬體設施處於極佳的週轉，可說是達到為戰而訓的精神。

肆、建議

- 一、美軍基地之中，每個軍事人員，僱員，或是眷屬，均會辦理一張軍事人員晶片卡，而且能以此卡享有美國軍人各項禮遇，並能以此進出各基地。實在十分方便，建議各營區也能建置身份辦理系統，使人員無需再辦理另一張識別證，另外若卡片設計得宜，亦能提高國軍人員的認同感及自信心。
- 二、美軍基地在學員上課區域，均建立無線網路，供軍事人員上網處理公務，建議國軍各營區也能建立無線網路系統，供軍事使用，以利各項智慧公務處理系統，能真正在線上執行。

伍、附件

一、生活花絮



參訪威斯康辛號



參訪航太中心



參訪博物館



參訪國會大廈



參訪甘迺迪紀念館



參訪首都華盛頓

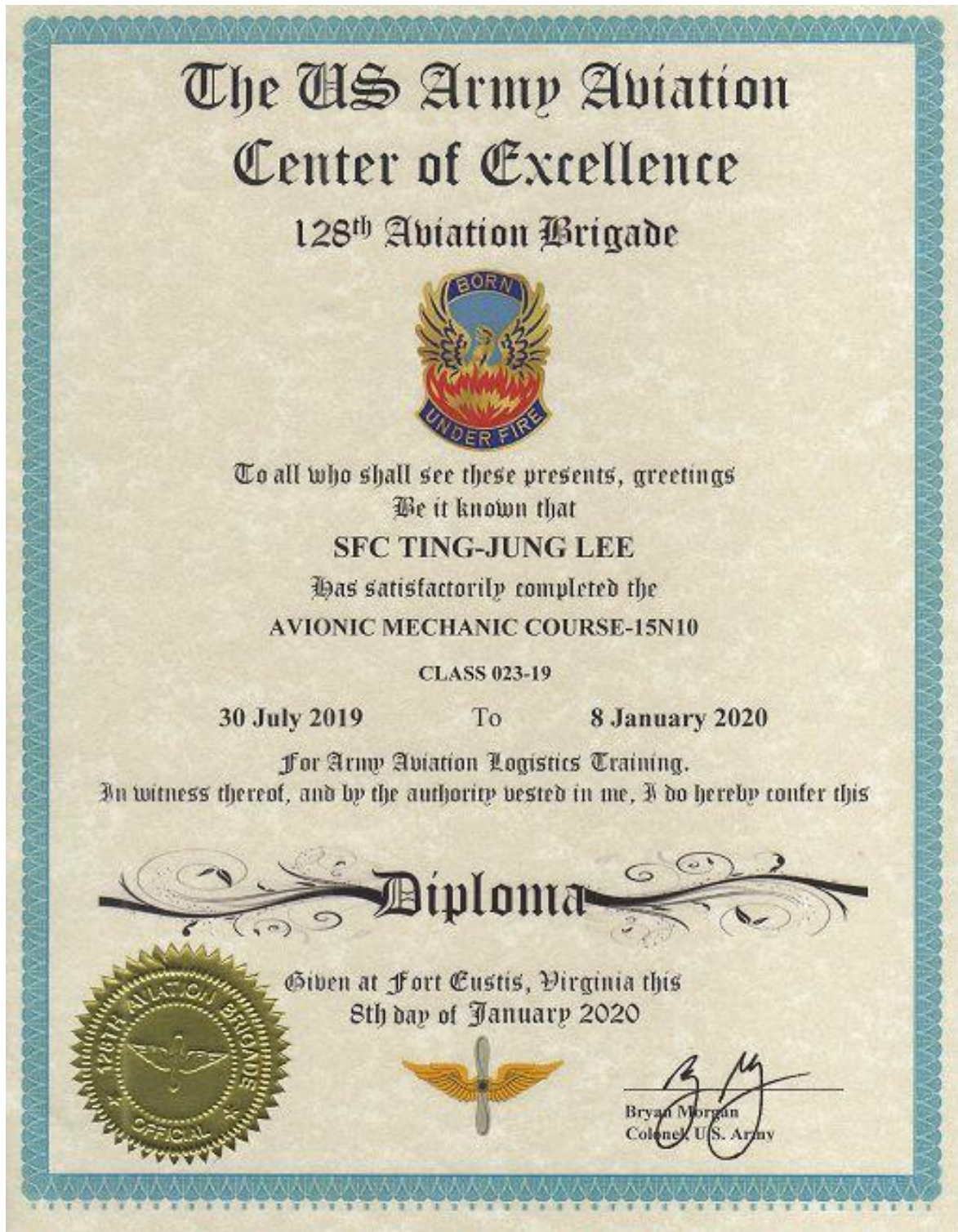


參訪詹姆士鎮紀念區



參訪詹姆士鎮紀念區

二、結訓證書



三、旅行命令(ITO)

ORIGINAL

Invitational Travel Order (ITO) for International Military Student (IMS)

1. ITO Number: TW0EQ0017071 2. Country/Organization: Taiwan 3. Date: 17-Jul-19

The U.S. Government hereby issues this ITO for the IMS herein named to attend the course(s) of instruction herein listed, subject to the terms and conditions contained herein, and as may be amended by competent authority. This ITO is the only document that will be used and is valid only for the IMS entering U.S. training under the Foreign Assistance Act of 1961, as amended, or the Arms Export Control Act.

Definitions of acronyms and abbreviations contained in this document, and instructions for completing this form are provided in the Joint Security Cooperation Education and Training Regulation, JSCETR / Joint Security Assistance Training Regulation, JSATR (SECNAVINST 4950.4A/AR 12-15/AFI 16-105). This computer generated, letter format ITO is authorized in accordance with the Security Assistance Management Manual (SAMM), DoD 5105.38-M.

4. Issuing Security Cooperation Organization (SCO),
a. Name of Organization: Security Cooperation Office (SCO), AIT/Taipei
b. Mailing Address: Department of State
4170 AIT Taipei Place
Security Cooperation Office (Training Branch)
Washington, DC 20521-4170
c. E-mail Address: pengkks@state.gov

5. Program Type: FMS: Foreign Military Sales TW-B-0EQ001

6. IMS Information:
a. Surname: Lee
First Name: Ting-jung
b. Sex: MALE
c. Country Service Rank: E-7
d. U.S. Equivalent Rank/Pay Grade: E7
e. Country Service: Army
f. Country Service Number: R122599487
g. Date of Birth: 06-May-79
h. Place of Birth: Tainan, Taiwan
i. Passport Number: 350248794
j. Country of Citizenship: Taiwan
k. Visa Number: N9690171
l. Visa Type: E-1
m. Military Unit/Organization: Army Aviation and Special Forces Command, TA
n. Mobile/Cell Phone:
o. Email Address:

7. Invitation.
The Secretary of Department of the Army invites the IMS listed in Item 6 of this order, to proceed from Taiwan to Fort Eustis, VA 23604, reporting on 23-Jul-19 for the purpose of commencing training listed in Item 8 of this order.

8. a. Authorized Training: No additional training to that specified in this order will be provided.

CASE: 0EQ001
a. WCN: 7071A 606949.1 MASL: 0137441 Title: AVIONIC MECHANIC
Military Service Course No: 102-15N10 School: AVIATION LOGISTICS SCHOOL
Location: Fort Eustis, VA 23604 Report Date: 23-Jul-19 End Date: 19-Dec-19
*****Last Line*****

9. Funding.
Fund Cite: 097 8242TWKTX A57xx 0EQ001B 21TD 7071Q 8TW0436008Y001 F.0006277.21.3 5068723036 001 4020957
7 021001

10. Language Prerequisites:
a. Highest Required ECL: 70
b. IMS completed in-country English language testing as follows:
ECL Exam No: 19L Date Completed: 08-May-19 Score: 75

11. Security and Student Screening:
a. Human Rights, Security, and Medical screening have been completed in accordance with SAMM Section C10.8., and JSCET paragraph 10-39 for IMS listed in item 6 of this order. The IMS was properly screened via Department of State (INVEST) and within DoD, Homeland Security and other required databases for records of Gross Violations of human rights, Human Rights abuses, drug trafficking, support of terrorist activity, corruption, criminal conduct, or other activities inconsistent with U.S. policy goals. This in and of itself does not permit the disclosure of classified U.S. information. Such disclosure must be specifically authorized by an officially delegated authority and U.S. foreign disclosure regulations or directives. The IMS may require a security clearance to gain computer access or building/site access associated with training.
1). The highest U.S. Classification level required for training is: Secret.
2). The U.S. equivalent security clearance level granted to the IMS by the home government is Secret.

12. Conditions:
a. Dependents: Dependents are not authorized by U.S. authority to accompany the IMS or join the IMS while in training.
b. Medical Services.
IMS:
IMS under FMS.
Non-NATO/PFP SOFA IMS-Case. Charges for DoD and civilian medical and emergency dental care are chargeable to the case and will be forwarded to the appropriate MILDEP for processing.
Mildep Billing Address: Army: HQ MEDCON ATTN:MCRM-F
2748 WORTH RD STE 9
JBSA Fort Sam Houston, TX 78234
Or items may be scanned and emailed to:
usarmy.jbsa.medcon.mbx.medcon-inst@mail.mil

SC-TWS generated ITO # TW0EQ0017071

Page 1 of 3

ORIGINAL

ORIGINAL

DD forms 7 and or 7A will be used for DOD reimbursements and SF 1034 for civilian reimbursements.

(d) Medical Examinations (before CONUS Arrival)
Medical examination, to include HIV Test, was completed on 20-May-19.

- c. Participation in Hazardous Duty.
IMS is authorized to participate in hazardous duty training.
- d. Physical Fitness Training.
Participation in physical fitness training is required. Check SC-TMS Course Description, International Notes, and Prerequisites for prerequisite physical fitness requirements.
- e. Leave.
Upon completion of training, IMS is not authorized leave, and will proceed immediately as directed to home country.
- f. Living Allowances.
Lodging is chargeable to the fund cite indicated in item 9, and in accordance with SAMM C10.13 policy. Meals and incidentals are the responsibility of the foreign government. See item 15, "Special Conditions/Remarks".
- g. Travel.
Travel cost (to/from home country and U.S.) is the responsibility of the foreign government.
- h. Travel by POV.
IMS is authorized to travel by POV.
- i. Baggage.

Allowances outlined below apply for the portion of the travel costs payable from U.S. appropriated funds. Baggage sizes and dimensions are to conform to carrier stipulations.

1. No baggage will be transported at U.S. government expense.

NOTE: If the airlines will not accommodate the authorized baggage cited above, the IMS should ship the unaccommodated, but authorized, baggage the most economical way (e.g., FEDEX, UPS, USPS), and seek reimbursement for that cost. Schoolhouse IMSOs should monitor the baggage policies and latest surcharge costs for the carriers used from their commonly-used airports for changes, and inform SCOS when additional authorizations are needed on the ITOS.

Unauthorized Baggage

Shipment of baggage in excess of the weight allowance is not authorized. Disposition of unauthorized baggage is made at the expense of the student or the IMS' government. Commanding officers of the training or administrative installation should ensure that unauthorized baggage is shipped at the student's expense prior to his/her departure from the installation. IMS reporting to ports of departure with unauthorized baggage are requested to forward the unauthorized baggage by commercial means at their expense. If lack of time prohibits this, the traffic representative takes unauthorized baggage into custody, and the IMS is given a receipt for the baggage. The IMS will travel on the scheduled flight or carrier. After departure, the traffic representative delivers the unauthorized baggage to the IMS' consulate.

13. Terms:

- a. Prior to departure from home country, the IMS and dependents listed herein are required to be medically examined and found physically acceptable in accordance with the health provisions of the Immigration and Nationality Act (8 USC 1182(A)(1)-(7)); Public Health Service, Department of Health and Human Services, 42 CFR Part 34, Medical Examination of Aliens, and 42 CFR Part 71, Foreign Quarantine; applicable U.S. MILDEP regulations; and other U.S. laws or DoD directives and regulations which may be enacted from time to time.
- b. The home country will ensure that the IMS has sufficient funds in United States dollar instruments to meet all expenses while en route to and to include living allowance for not less than the first 2 weeks and not more than 30 days of training, pending receipt of applicable pay and allowances by the IMS.
- c. The IMS and dependents listed are required to acquire and maintain healthcare insurance coverage through the duration of their training in the United States. The IMS will be responsible for custodial fees and personal debts incurred by self or family members. This includes accepting responsibility for reimbursing the providers of all emergency/ non-elective medical costs for the IMS and all authorized dependents during their stay in the United States. If the IMS permits his healthcare policy to lapse, is unable to meet these financial obligations and the home country government has not agreed to indemnify the costs, the IMS may be withdrawn from training and returned to home country. This will jeopardize future grant funding and training allocations for the country. Despite the lack of an indemnification letter from the foreign government, the IMS' government will still be expected to pay for all medical costs to treat an IMS and/or authorized dependents for any pre-existing condition, including, pregnancy coverage, high blood pressure and dialysis.
- d. The IMS will bring adequate uniforms and work clothing for field duty or technical work. U.S. fatigue uniforms and footwear will be purchased by the IMS in the event that the country work uniforms are inadequate, when flying training is involved, required special flight clothing and individual equipment will accompany the IMS, or provisions will be made by the home country or the IMS to obtain the use of all necessary equipment prior to start of training. The IMS will also possess adequate civilian clothing for off-duty wear.
- e. The government of the United States is responsible for IMS travel which is part of the training program and for which costs are part of the course tuition.
- f. The IMS will comply with all applicable U.S. Military service regulations.
- g. The United States may cancel training and return to country IMSs who violate U.S. law or Military service regulation or who are found otherwise unsatisfactory. The IMS government will be alerted to such action in accordance with U.S. MILDEP regulations.
- h. The government of the United States disclaims any liability or financial responsibility for injuries received by the IMS listed herein while in transit to and from the training installation, while undergoing training or while in leave status, and any liability or financial responsibility for personal injury claims or property damage claims resulting from the IMS action.
- i. The IMS will participate in flights of U.S. military aircraft as required for scheduled

ORIGINAL

ORIGINAL

course(s) or as specified in U.S. MILDEP regulations.
j. The acceptance of this order by the host country constitutes agreement that an IMET funded student will be utilized, upon return to the host country, in the skills for which he was trained for a period of time sufficient to warrant the expense to the U.S. government, in accordance with the SAMM, chapter 10.

14. Implementing Authority:
a. MILDEP AUTHORIZATION: 0795761
b. Date: 16-Jul-19

15. Special Remarks:
This training case allows for local area billeting or housing costs (max \$110 per night) for on-post/base or off-post/base billeting or housing when on-post/base billeting or housing is not available. US military installation billeting facilities or Housing Authorities who accommodate, or who arrange local area billeting, lodging or housing, can utilize the fund cite offered in para 9 of this ITO to direct bill the US Army DFAS. IHS required to utilize off-post/base area housing (i.e., local apartment) with no capability of direct DFAS billing, are responsible for all contracts and will work with local IMSO for reimbursement from US Army DFAS. IHS is not authorized case funding to support any travel, messing or incidentals.

Retainable instructional materials should be shipped to:
TA Liaison Officer
c/o Training Branch
Security Cooperation Office
4170 AET Taipei Place
Washington, DC 20521-4170

16. Distribution:
AVIATION LOGISTICS SCHEDL
Fort Eustis, VA 23604
1-SATFA
1-AIT/T (Attn: COM)
1-TECRO/W
3-individual

17. ITO Authorization:
a. Signature of U.S. Authority Authenticating Orders: *Joe Goodrich*
// SIGNED // Joe Goodrich
Deputy Chief, SCO
b. Title: