INTERNATIONAL CIVIL AVIATION ORGANISATION

**AFI PLANNING AND IMPLEMENTATION REGIONAL GROUP
THIRTEENTH MEETING (APIRG/13)
(SAL, CAPE VERDE, 25-29 JUNE 2001)**

AGENDA ITEM 6:   HUMAN FACTORS AND PLANNING OF HUMAN RESOURCES

REGIONAL TRAINING PLANNING PROCESS MODEL

(Presented by the Secretariat)

SUMMARY

This information paper provides samples of tables that could be used to facilitate regional training planning. The paper also outlines a proposed approach towards the use of the tables and provides a sample format for the resulting regional training plan. This plan could be integrated into the AFI Regional Air Navigation Plan.

1.   **Introduction**

1.1   The steps that could form the basis of a regional or sub-regional training planning process were introduced during the Third Caribbean/South American Regional Air Navigation Meeting (CAR/SAM/3, Argentina, 1999). The meeting agreed that a quantitative approach to training planning would help to ensure that the training needed is available. This approach would provide a means to accurately determine the minimum number of training centres within a region or sub-region that are needed to provide specialized types of training that individual States cannot justify based on their national training needs alone. At the same time this approach could help to distribute regional training activities among more training centres. It was also agreed that the process would need to be refined by Planning and Implementation Regional Group.

I.   **Discussion**

2.1   The following four steps are constitute a model developed by the Secretariat that could form the basis for the establishment of a regional training planning process in the AFI Region:
The Secretariat has developed a four-step model on which the establishment of a regional training planning process in the AFI Region could be based.

        a)   **Step 1: Identify Training Needs**

        The types of training needed would be identified based on commitments made by States to implement facilities and services as specified in the AFI Regional Air Navigation Plan. Initially the ICAO Air Navigation Bureau would assist in this process. It is envisioned that individual States, assisted by the Regional Offices, as required, would be able to determine training needs in the future, based on guidance in this area being developed through the Regional Human Resource Planning and Training Needs Task established by the Air Navigation Commission (PEL-9601).

b)   **Step 2: Gather Information through Human Resource Planning Questionnaires**

Each State would identify the numbers of personnel needing specific types of training, based upon their national implementation plans. To obtain consistent and appropriate data from States, ICAO developed a questionnaire which includes a summary of the types of training needed to support the Regional Air Navigation Plan (Step 1 refers). ICAO would conduct regional human resource planning workshops for those States that may wish assistance in identifying the numbers of personnel required. States with well established human resource planning processes would be encouraged to participate in these workshops and contribute to the process through an exchange of ideas and experience.

c)   **Step 3: Determine the Requirement for Regional Training Capabilities**

States would complete the questionnaire (paragraph b) above refers) and forward it to the ICAO Regional Office accredited to them. The Regional Offices would prepare summaries of the training needs within the regions based on the questionnaires. The summaries would then be transmitted to an appropriate regional training planning body that would be tasked with analysing the aggregate of the regions' human resource development needs. This regional training planning body would also determine the minimum requirements for regional training capabilities based on both the overall training demand within a region and the characteristics of each type of training required.

d)   **Step 4: Formulate a Plan for Establishment of Specific Regional Courses**

APIRG would then use a State-to-State consultative process to formulate a plan for the establishment of regional courses within specific civil aviation training centres. The plan would not limit the number of training centres offering specific types of training. However, it would ensure that the human resource development capabilities within the Regions are sufficient to meet the training demand resulting from the AFI Regional Air Navigation Plan.

2.3   Appendix A, provides an example of the level of detail that could be used to communicate the major types of training needed to implement a Regional Air Navigation Plan (Step 1 refers). The major types of training needed to implement existing and future air navigation facilities and services are listed in this inventory. The types of training required are broken down in classifications. These are described below.

a)   *Foundation Training*. This type of training is required when the target population does not possess the underlying knowledge and/or skills needed to enter job-oriented training. For example, it may be necessary to provide foundation training in basic electricity to staff who will maintain airport lighting, if they do not already have basic electrical maintenance skills. Foundation training is frequently required in aviation as entry level personnel may not have previous exposure or knowledge of the aviation field.

b)   *Initial Training*. Initial training is the first job specific training that personnel receive to qualify for a specific aviation job within a category of jobs as defined by the ICAO job category numbers (see column two of Appendix A). For example, once a newly hired AIS staff member has completed foundation

training, the subsequent training required to qualify as an Aerodrome Officer would be considered initial training.

    c)   *Transition Training*. This type of training is required to prepare a staff member to perform another job within a given category of jobs (i.e. ICAO job categories). For example, training a procedural approach controller to become a radar approach controller would be considered transition training.

    d)   *Conversion Training.* This type of training is required for a qualified staff member in a specific job to obtain the skills required to use new procedures and/or technologies such as ICAO CNS/ATM systems.

    e)   *Refresher Training*. Regular refresher training is provided to ensure that personnel maintain a skill and knowledge level needed to perform their jobs safely and in compliance with all established performance standards. Refresher and conversion training are sometimes combined to introduce new procedures and/or technologies.

2.3   The inventory of training needs shown in Appendix A is intended to illustrate the level of detail suggested to communicate the major types of training required to implement a Regional Air Navigation Plan. As such, the training needs indicated in Appendix A are examples and should not be considered the actual training requirements associated with the implementation of a specific Regional Air Navigation Plan.

2.4   Once the major types of training needed to implement a Regional Air Navigation Plan are identified (Step 1), this information would be incorporated into a questionnaire and forwarded to States (Step 2). A sample of the Projected Training Demand Questionnaire is at Appendix B to this working paper. The aim of the questionnaire would be to gather information from States concerning the projected number of trainees in specific types of training, based on their human resource plans, and then to compile this information into a report that would reflect the aggregate training needs of States within a region.

2.5   Column 4 of the table at Appendix B, Human Resource Planning Factors, is intended to advise States of any specific factors that may affect their human resource planning process and subsequent training demand. For example, the introduction of some new types of air navigation systems technologies may require old and new systems to operate in parallel for period of time.

2.6   A Planning and Implementation Regional Group would then consider the demand for regional training capabilities and agree to the establishment of regional courses within specific civil aviation training centres (Step 3 and 4). The results of the deliberations would constitute a Regional Training Plan. A potential format for a Regional Training Plan is at Appendix C.

3.   **CONCLUSIONS**

3.1   The attached Inventory of Training Needs, Projected Training Demand Questionnaire and Regional Training Plan are provided to illustrate a potential framework and format for integrating a training planning component into the regional air navigation planning process. Further development of this process would be needed to ensure that it meets the specific needs of the AFI Region.

ID Number	ICAO Category	Job Category and Type of Training
1	2	3
1	020	AIS Officer (Headquarters)
1.01		Foundation Training
1.02		Initial Training
1.03		Refresher Training
1.04		Computer Fundamentals
1.05		Conversion Training: AIS Automation
1.06		Conversion Training: Automated AIP
2	020	Aeronautical Cartographer
2.01		Foundation Training
2.02		Initial Training
2.03		Transition Training
2.04		Refresher Training
2.05		Computer Fundamentals
2.06		Conversion Training: Automation Training
3	020	Electronic Processing , AIS Data
3.01		Initial Training
3.02		Refresher Training
3.03		Transition Training
		Conversion Training: Computer Database Applications for AIS
3.04		Conversion Training: AIS Automation
3.05		Conversion Training: ATN Applications
4	020	International NOTAM Officer
4.01		Foundation Training
4.02		Initial Training
4.03		Transition Training
4.04		Refresher Training
4.05		Computer Fundamentals
4.06		Conversion Training: ATN Applications
5	020	AIS Officer - Aerodrome Units
5.01		Initial Training
5.02		Transition Training
5.03		Refresher Training
5.04		Computer Fundamentals
5.05		Conversion Training: ATN Applications

ID Number	ICAO Category	Job Category and Type of Training
1	2	3
5.06		Conversion Training: AIS Automation
6	030	Meteorological Assistant (WMO Class IV)
6.01		Foundation Training
6.02		Initial Training
6.03		Refresher Training
6.04		Computer Fundamentals
6.05		Conversion Training: ATN Applications
7	030	Meteorological Assistant/Briefing Office (WMO Class III)
7.01		Initial Training
7.02		Refresher Training
7.03		Computer Fundamentals
7.04		Conversion Training: ATN Applications
8	030	Meteorological Officer - Forecaster (WMO Class II)
8.01		Initial Training
8.02		Refresher Training
8.03		Computer Fundamentals
8.04		Conversion Training: ATN Applications
9	050	Air Traffic Control Assistant
9.01		Foundation Training
9.02		Initial Training
9.03		Refresher Training
9.04		Conversion Training: Data Link and Message Formatting
10	050	Aerodrome Controller
10.01		Foundation Training
10.02		Initial Training
10.03		Transition Training
10.04		Refresher Training
10.05		Conversion Training: Data Link and Message Formatting
11	050	Approach Controller - Non-Radar
11.01		Foundation Training
11.02		Initial Training
11.03		Transition Training
11.04		Refresher Training
11.05		Conversion Training: Data Link and Message Formatting
11.06		Conversion Training GNSS Approach Procedures
ID Number	ICAO Category	Job Category and Type of Training
1	2	3

ID Number	ICAO Category	Job Category and Type of Training
1	2	3
12	**050**	**Approach Controller - Radar**
12.01		Foundation Training
12.02		Initial Training
12.03		Transition Training
12.04		Refresher Training
12.05		Conversion Training: Data Link and Message Formatting
12.06		Conversion Training GNSS Approach Procedures
12.07		Conversion training - ADS Surveillance and Separation Procedures
12.08		Conversion Training: Automation Procedures
12.09		Conversion Training: RNP Procedures
13	**050**	**Area Controller - Radar**
13.01		Foundation Training
13.02		Initial Training
13.03		Transition Training
13.04		Refresher Training
13.05		Conversion Training: Data Link and Message Formatting
13.06		Conversion Training: GNSS Enroute
13.07		Conversion Training GNSS Approach Procedures
13.08		Conversion training - ADS Surveillance and Separation Procedures
13.09		Conversion Training Automation Procedures
13.10		Conversion Training: RNP Procedures
14	**050**	**Area Controller - Non-Radar**
14.01		Initial Training
14.02		Transition Training
14.03		Refresher Training
14.04		Conversion Training: Data Link and Message Formatting
14.05		Conversion Training: GNSS Enroute
14.06		Conversion Training GNSS Approach Procedures
14.07		Conversion training: ADS Surveillance and Separation Procedures
14.08		Conversion Training: Automation Procedures
ID Number	**ICAO Category**	**Job Category and Type of Training**
1	2	3
14.09		Conversion Training: Separation Procedures
14.10		Conversion Training: RNP Procedures
15	**050**	**Airspace Planning**
15.01		Transition Training
15.02		Conversion Training: Automation Training
15.03		Conversion Training: RNP Airspace
15.04		Conversion Training: GNSS
15.05		Conversion Training: RNAV
16	**050**	**Search and Rescue Coordinator**
16.01		Foundation Training
16.02		Initial Training
16.03		Transition Training
16.04		Refresher Training
16.05		Conversion Training: AMSS, GNSS and ADS
17	**050**	**Air Traffic Control Automation**
17.01		Foundation Training
17.02		Initial Training
17.03		Transition Training
17.04		Refresher Training
17.05		Conversion Training: Data Communications
17.06		Conversion Training: LAN/WAN
17.07		Conversion Training: ATM Automation and Algorithm Development
17.08		Conversion Training: Software Design, Development and Testing
18	**050**	**Air Traffic Control Supervisor**
18.01		Transition Training
18.02		Refresher Training
18.03		Conversion Training: Data Link and Message Formatting
18.04		Conversion Training: GNSS Enroute Procedures
18.05		Conversion Training GNSS Approach Procedures
18.06		Conversion training: ADS Surveillance and Separation Procedures
18.07		Conversion Training Automation Procedures
ID Number	**ICAO Category**	**Job Category and Type of Training**
1	2	3
18.08		Conversion Training: RNAV and RNP Procedures
19	**050**	**Senior Manager**
19.01		Transition Training
19.02		Conversion Training: Operational Planning for CNS/ATM Systems
20	**050**	**Facility Management and Planning**
20.01		Initial Training
20.02		Transition Training
20.03		Technical Planning for CNS/ATM System
21	**050**	**Data processing and Display**

ID Number	ICAO Category	Job Category and Type of Training
1	**2**	**3**
21.01		Initial Training
21.02		Conversion Training: Software Design, Development and Testing
21.03		Conversion Training: Automated Flight Strips
21.04		Conversion Training: ADS Processing
21.05		Conversion Training: Data Communications (LAN/WAN)
21.06		Conversion Training: Data Link Communications
22	**050**	**Human/Computer Interface**
22.01		Initial Training
22.02		Conversion Training: Human Factors and Automation Design
22.03		Conversion Training: Software Design, Development and Evaluation
23	**100**	**Airport Maintenance - Electrical**
23.01		Foundation Training
23.02		General Maintenance
23.03		Airport Lighting
23.04		Power Generation
24	**100**	**Airport Maintenance - Mechanical**
24.01		Foundation Training
24.02		General Maintenance
24.03		Airconditioning
25	**100**	**Airport Maintenance - Pavement**
25.01		Maintenance and Repair
25.02		Testing
ID Number	**ICAO Category**	**Job Category and Type of Training**
1	**2**	**3**
26	**100**	**Material Procurement & Stock Control**
26.01		Foundation Training
26.02		Initial Training
26.03		Computer Database Applications
26.04		Computer Messaging
27	**110**	**Airport Fire Fighter - Basic**
27.01		Foundation training
27.02		Initial Training
27.03		Refresher Training
28	**110**	**Airport Fire Officer - Junior**
28.01		Initial Training
28.02		Transition Training
28.03		Refresher Training
28.04		Conversion Training: Application of GNSS
28.05		Computer Messaging
29	**110**	**Airport Fire Officer - Senior**
29.01		Transition training
29.02		Refresher Training

ID Number	ICAO Category	Job Category and Type of Training
1	**2**	**3**
29.03		Conversion Training: Application of GNSS
29.04		Conversion Training: Computer Messaging
30	**120**	**Airport Management - Administration**
30.01		Initial Training
30.02		Commercial Management
30.03		Computer Applications
30.04		Conversion Training: Computer Messaging
31	**120**	**Airport Management - Technical**
31.01		Initial Training
31.02		Airport Safety
31.03		Airport Operations and Inspection
31.04		Airport Noise Control
31.05		Airport Emergency Planning
32	**160**	**Communications Maintenance - HF/VHF**
32.01		Foundation training
32.02		VHF Equipment Specific Training
32.03		HF Equipment Specific Training
32.04		*Note: The following rows should indicate the specific equipment training requirements*
ID Number	**ICAO Category**	**Job Category and Type of Training**
1	**2**	**3**
33	**160**	**Communications Maintenance - Fixed Links**
33.01		Foundation training
33.02		Equipment Specific Training (UHF, HF, VHF, microwave/V-Sat)
33.03		*Note: The following rows should indicate the specific equipment training requirements*
34	**160**	**Communications Maintenance - AFTN/CIDIN Centre**
34.01		Foundation training
34.02		Computer Fundamentals
34.03		Computer and Switching Technology
34.04		Data Communications
34.05		*Note: The following rows should indicate the specific equipment training requirements*
35	**160**	**Navigation Aids Maintenance - NDB/VOR/ILS/DME**
35.01		Foundation training
35.02		Equipment Specific Training
35.03		*Note: The following rows should indicate the specific equipment*

ID Number	ICAO Category	Job Category and Type of Training
1	2	3
		training requirements
35.04		Conversion Training: Equipment Specific Training (GNSS, LAAS and WAAS)
35.05		*Note: The following rows should indicate the specific equipment training requirements*
36	**160**	**CNS Planner/ Installation Manager**
36.01		Planning and Installation Initial Training
36.02		Conversion Training for CNS/ATM Systems
37	**160**	**Surveillance Maintenance**
37.01		Foundation training
37.02		Equipment Specific Training (Primary and Secondary Radar)
37.03		*Note: The following rows should indicate the specific equipment training requirements*
ID Number	**ICAO Category**	**Job Category and Type of Training**
1	2	3
37.04		*Conversion Training: Equipment Specific Training (ADS)*
37.05		*Note: The following rows should indicate the specific equipment training requirements*
38	**160**	**Com/NavAids/ Surveillance- Support Spare Stock Control**
38.01		Foundation training
38.02		Computer Database Applications
38.03		Computer Messaging
39	**160**	**CNS - Maintenance Supervisor**
39.01		Transition training
39.02		OJT Instructor Training
40	**170**	**Communication Operations - Aeronautical Station Operator (Mobile)**
40.01		Foundation training
40.02		Initial Training
41	**170**	**Communication Operations - Fixed Service Operator**
41.01		Foundation training
41.02		*Note: The following rows should indicate the specific equipment training requirements*
41.03		Conversion Training: Computer Fundamentals
41.04		Conversion Training: ATN Applications
41.05		Computer Applications: Data Communications and Computer Messaging
41.06		*Conversion Training: Equipment Specific Training (ATN)*
41.07		*Note: The following rows should indicate the specific equipment training requirements*
42	**170**	**Communication Operations - Supervisor**
42.01		Transition Training
42.02		Conversion Training: Computer Fundamentals
42.03		Conversion Training: ATN Applications
ID Number	**ICAO Category**	**Job Category and Type of Training**
1	2	3
42.04		Computer Applications: Data Communications and Computer Messaging
42.05		*Conversion Training: Equipment Specific Training (ATN)*
42.06		*Note: The following rows should indicate the specific equipment training requirements*
		Conversion Training: See Description of New Jobs
43	**170**	**Communication Operations - Management**
43.01		Transition Training
43.02		Conversion Training: Computer Fundamentals
43.03		Conversion Training: ATN Applications
43.04		Computer Applications: Data Communications and Computer Messaging
43.05		*Conversion Training: Equipment Specific Training (ATN)*
43.06		*Note: The following rows should indicate the specific equipment training requirements*
43.07		*Conversion Training: See Description of New Jobs*
44	**170**	**ATN Technician (AFTN/ATN Gateway, IS and ES)**
		Initial Training
		Pre-requisite training:
		Computer Workstation Maintenance
		Installation and troubleshooting of Ethernet type LANS

ID Number	ICAO Category	Job Category and Type of Training
		Computer Messaging
45	170	**ATN Network Administrator**
		Initial Training
		Pre-requisite training:
		Operating and Configuring Computer Workstations, Operating Systems and LANS
1	**2**	**3**
		LAN planning and administration
		Managing User Accounts and Electronic Mail
46	170	**ATN Systems Engineer**
		Initial Training
		Pre-requisite training:
		Planning/ Configuring Computer Workstation Environment
		Planning and Implementation of a LAN
		Planning and Implementation of a WAN
		Planning and Implementation of a Router/gateway system