



ICAO

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Agenda Item 4: Planning, Design, Construction and Operation of Aerodromes

INITIATIVES IN DEVELOPING SKILLED WORK FORCE AT AIRPORTS

(Presented by INDIA)

SUMMARY

This paper presents the need of developing skilled work force at Airports. Aviation sector has always faced the challenge of skilled work force due to its specialized fields. With the increase of number of Airports and the future expansion, this problem turns to be more complex, especially to take care of the criticality of the safety & security involved in each activity. Aeronautical Ground Lighting (AGL) system is one such field and getting skilled manpower is quite a challenge. In this regard, Bangalore International Airport has developed AGL training and Experience centre to develop AGL professionals at all levels. The information paper outlines the objectives, operational framework and training methodology of the centre and examines its role in enhancing the system's performance. This also provide the basic structure for a training centre and how this could improve the thought process of the staff in building a safe and efficient Airport.

1. INTRODUCTION

1.1. Aeronautical Ground Lighting (AGL) system is a specialized system in the Engineering section of the Aviation sector. The technical understanding of the system and its relationship with the different streams of engineering makes the subject more complex. The nominal thinking that the AGL system can be handled by an "Electrical Engineer" to the need of an "AGL Engineer" is the change needed in this context. Although market produces electrical engineers and diploma certified candidates, the industry has not completely succeeded in making them understand the importance of the AGL system, its criticality and their role in ensuring their performance and safety to the required levels.

1.2. *"The majority of accidents (57%) occurred during the approach and landing phase of flight. Incidents occurred most frequently while taxiing (54%) and during approach and landing (36%)"* (Source: Aircraft Accidents and Incidents Associated with Visual Disturbances from Bright Lights During Nighttime Flight Operations). Although several aspects would be the contributing factor of an Aircraft incident or accident, always, AGL system would be reviewed for its efficacy during the incident or accident. This states the importance of the AGL system for its compliance and performance which when maintained to the requirements will have its positive impact towards safe operations at Airports.

1.3. For the AGL field usually, no professional courses are available in the market and the staff especially at ground levels are sometimes from the basic electrical experience background such as maintenance of transformers, generators, LT panels, UPS systems, Motors and other domestic lighting. While for the maintenance of AGL field, although above experience is the basic requirement, its skill set is completely different. This requires training for the teams to achieve the desired quality of work and ensure their performance to optimum level.

1.4. The AGL engineers and the team working at different levels shall understand the technical and safety concepts of AGL. The concepts regarding the design, installation, concepts of maintenance, photometry, maintenance cycle and assessing the frequency of maintenance, etc. shall be made to understand for the team to enhance their performance.

1.5. The regulations also laid stress on assessment and imparting the training of the staff working at the Airports.

2. DISCUSSION

2.1 To impart the training concepts of the AGL system at Bangalore International Airport, it has developed “AGL Experience and Training Centre”. The training centre features all the facilities of training the professionals intended to work with the AGL system.



2.2 The training on AGL system usually requires the ability to understand the maintenance needs and its procedures as per OEM recommendations. Concepts such as:

- Calibrations of the critical equipment
- Ensuring photometric measurement compliance
- Fault rectification techniques
- Maintenance of critical infrastructure such as inset fixture maintenance
- Insulation resistance value improvement
- Understanding of the regulations & design principles
- Serviceability standards
- Establishing maintenance frequency, etc.

The above are few of the concepts which an engineer needs to fully understand being an AGL engineer.


2.3 As part of the training centre requirements, a complete runway with taxiway is developed which helps the trainees to:

- Understand the types of AGL system
- The configuration requirements
- Intensity settings
- Maintenance of AGL systems (practical approach)
- Calibration of critical AGL systems such as PAPI & Approach lighting (practical)
- AGL fault rectification (practical)
- Maintenance of transformer pits, etc.



Fig 1. Demo Runway with lightings provided at KIA- AGL training centre

2.4 Practical training can be conducted at the above facility which can assess staff competency prior to deployment at site. The trainee can work and experience on these systems as many times till the trainee is confident and declared as competent to work on real site.



TRAINING EVALUATION FORM

Name of the training	Ground calibration/ Angular setting of PAPI	Mode: Practical
Date:		
Evaluator:		Organization
Name of the trainee/team		AMA Pvt Ltd

Initial State:
PAPI unit which is set at random angle with major discrepancy in alignment

Inform the concerned for inspecting the **A/B/C/D** unit form the **North/south** runway

(PAPI 27L/PAPI 09R/PAPI 27R/PAPI 09L)

S.No	Check point	Marks	Remarks
1	Ensure all required tools are available. (7) Clinometer <input type="checkbox"/> Spirit level <input type="checkbox"/> Allen key set <input type="checkbox"/> Cleaning cloth <input type="checkbox"/> Spares(lamps, connectors, reflectors etc..) <input type="checkbox"/> Cutting tools <input type="checkbox"/> Cable tie <input type="checkbox"/> Wrench/Spanner set <input type="checkbox"/>		
2	Inspect the PAPI unit for any major misalignment in the first instance (3)		
3	Cut the cable tie , open the PAPI unit and position the clinometer as required.(3)		
4	Identify the deviation from the standard set angle with ref to angles set at KIA(5)		
5	Check for the lens, reflector and cleanliness of the PAPI unit (3) and clean these parts with proper cleaning materials.		
6	Check for the horizontal alignment (4) and correct, if found any change.		
7	Set the required vertical angle based on the instruction (10)		
8	Remove the clinometer and spirit level and position them properly back(2)		
9	Ensure the PAPI cover is positioned properly back(3)		
10	Check for serviceability including vegetation obstruction (5)		
11	Check for the level with the RCL level(5)		
12	Check for the transition check(5)		
13	Ensure cable tie is installed back and team vacated with all the tools, spares and consumables. (5)		

Name & Signature of Evaluator

Name & Signature of Trainee

Fig 2. Practical training- Evaluation form

2.5 Theoretical training is imparted on several topics based on the need for assessment. Some of the training courses have been identified as mandatory at all levels and some to the targeted professionals such as senior AGL engineers such as design concepts, etc. The training would be conducted every week by an experienced AGL professional within the team on a specific topic which could enhance the knowledge of the AGL team at Bangalore International Airport.

2.6 Standard training modules have been prepared for the teams to deliver the concept effectively.

Identified training for Engineers	Identified training for Technicians
Training in AGL special equipment (Photometric testing machines and other special systems)	AGL Safety Training
Operation of Torque management system	AGL Maintenance practices
Carrying out of PAPI ground calibration	AGL workshop maintenance procedures
Training on AGL Maintenance @ KIA	AGL fault rectification procedures
Monitoring and Operation of ALCMS	Maintenance of CCR's
Basic module for AGL System	LVOP Procedures at KIA
AGL standards and serviceability requirements	Training on AGL maintenance at KIA
System training on photometric bench tester and workshop procedure	Monitoring and operation of ALCMS

Identified training for Engineers	Identified training for Technicians
PAPI Design operation and maintenance module	Basics of AGL light lightings
Lighting system and functions of AGL System @ KIA	



Fig 3. Training classes for the staff - Theoretical

2.7

Other facilities in the training centre include:

- Display of different AGL fixtures which demonstrate the type of the light, model, etc.
- AGL 3D model – Fixtures and circuit display
- Demonstration of PAPI Working principle
- Individual components of AGL fixture

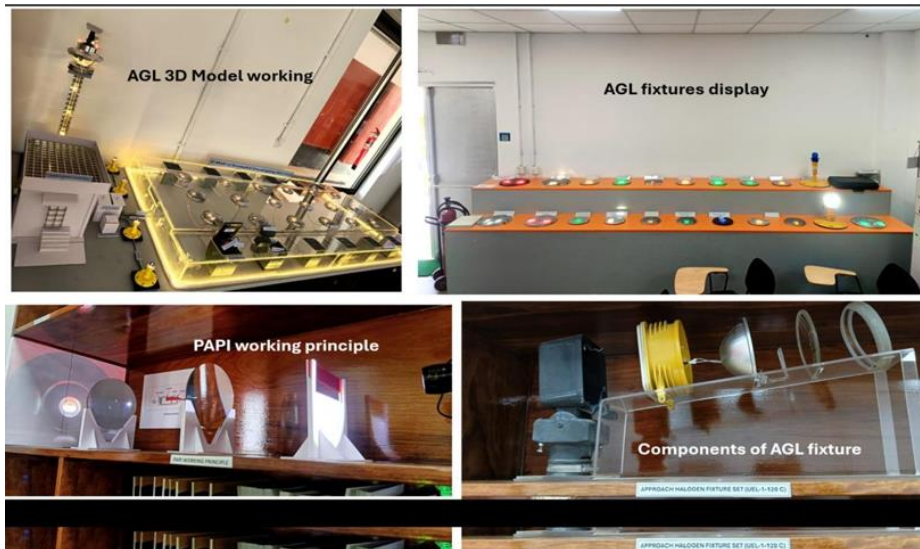


Fig 4. AGL facilities at Training centre

2.8 The other component of AGL training centre includes the AGL library which has the entire list of books related to AGL content and the OEM manuals. In addition to this, the individual component of AGL circuits and their common problems are displayed to make the staff understand the point of replacement or identification of fault.



Fig 5. AGL facilities at Training centre

2.9 All the new joiners need to undergo mandatory training and well verse with the equipment and maintenance procedures at the Airport prior to actual deployment.

2.10 The training has helped in enhancing the knowledge of the field team and ensure proper maintenance procedures are always implemented.

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

- a) note the information contained in this paper; and
- b) discuss any relevant matters as appropriate.
