IFALPA
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Position
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MPL

Introduction

Worldwide, in 2014, there are more than 22 certified MPL training programmes graduating new co-pilots who have earned the Multi-Crew Pilot License (MPL). These pilots have undergone training which relies significantly more on simulator time, less on flight time; reduces solo flight experience; reduces actual landings; emphasizes flight management skills and automation to the detriment of basic flying skills, and provides limited training in airmanship, CRM, and complex air traffic control environments.

Based on reports from Captains on MPL pilot performance out on the line, IFALPA conducted a workshop in May, 2013 to gain insight to the current performance of MPL training programmes. Pilots and other experts convened from around the world, many with considerable first-hand experience flying with MPL graduates, and working within various MPL programmes. In addition to Captains' feedback, further information was considered from MPL advisory board findings, as well as onsite visits to ATO's currently conducting MPL training.

MPL Workshop Conclusions

The experts concluded that even in well managed MPL training programmes, several key areas of pilot professional development need increased focus and improvement. Specifically, they are: Basic Flying Skills, Airmanship, CRM, and ATC situational awareness.

Basic Flying Skills

The MPL trainee enters the system with no basic flying skills. A significant portion of MPL training emphasizes the development of FMS and autopilot flying skills, but there is an observed need to improve basic flying skills in MPL graduates. Industry stakeholders have concluded that there is a system-wide decrease in the basic flying skills of experienced pilots attributed to the over-reliance on automation to fly airplanes. Further, they suggest that to maintain a professional level of basic flying skills, even highly experienced pilots need to hand-fly the aircraft in various phases of flight on a frequent basis. The basic flying skill development of the MPL trainee must be improved.

Airmanship

Airmanship represents a combination of skills, experience, awareness, judgment and more. MPL programmes rely on simulator devices for the majority of time-in-training, and while simulators are adequate for most skill development, they are inadequate for providing real world exposure, or building the situational awareness and experience necessary for sound judgment and decision making - the key building blocks of airmanship.

- Airmanship should be emphasized at this early stage and beyond the MPL training programme.
- Considering the present implementation status of MPL, and the massive transfer of training time to a virtual/simulated environment, IFALPA proposes the following areas to be emphasized to improve the development of airmanship in MPL trainees:
- Situational awareness
- Judgment and decision making
- Assessment of own skill capability / aircraft capability

Airmanship cannot be trained but educated by airmen and thus requires time to develop adequately.

CRM

Highly developed CRM skills are critical to flying airplanes safely in today's complex aviation environment. The challenge in keeping up with the airplane's automation during flight requires clear communication and task sharing between the crew in order for each pilot to have a correct understanding of the situation at all times. CRM instruction of new cadets must be provided by well-trained instructors first and these instructors have to be pilots, as they will have to share their flight experience with the cadets as from day 1. The basic understanding of CRM will be delivered in the classroom but will continuously be built throughout the

complete training program, including during simulator rides and real world flying. Students will only be able to absorb, provide feedback and improve through mistakes if the CRM training is delivered in a non-punitive environment.

ATC Awareness/Interaction with ATC

Phraseology should be applied according to existing standards:

- Basic Knowledge (Doc 4444)
- English Language Proficiency to at least ICAO Level 4

However, quality of communication also depends on the pilot's capacity of interacting appropriately. There is no relevant simulated ATC environment available to date.

Proper ATC interaction in a normal operational context, including busy airspace, task interruption management and changes in the workload can only be delivered through real world exposure.

Furthermore, additional classroom and simulator training has to be provided in order to prepare for abnormal operations, including worst case scenarios, and ATC threat and error management.

ATC TEM requires the pilot to maintain three dimensional situational awareness and recognize potential ATC related conflicts while competently flying the airplane.

Six Additional Areas of Concern

Inadequate Oversight

The development, approval and implementation of an MPL training programme demands strong oversight by the CAA/Licensing Authority. This oversight requires significant CAA resources, to include, but not limited to, suitably trained MPL experts and dedicated inspectors who possess thorough knowledge of international standards, recommended practices, competency based training, and other appropriate material. Without proper oversight, MPL training should not be attempted.

Observations:

MPL training is a competency based training (CBT) programme, however, most approved syllabi are hours based.

The Competency Based Training (CBT) concept appears to be misunderstood or misinterpreted by some CAA/Licensing Authorities and Approved Training Organizations (ATO's).

Some ATO's have been approved for MPL without restrictions despite not having any previous experience with integrated training.

Some MPL programmes were approved for a reduction in required landings from 12 to 6 without the required justification described in ICAO Doc. 9868.

Most approved MPL syllabi have no peer-reviewed Task Analysis support.

Progressive Implementation

ICAO PANS Doc 9868, Appendix 3, Chapter 3 states in part:

2.2 *The general approach that is therefore suggested is to use the existing training programme (ab initio or equivalent) of the ATO as a reference and to progressively implement the new training programme allowed by the MPL, particularly the transfer from actual flight to simulated flight).*

2.3 *This transfer shall be made in a progressive manner whereby successive evolutions of the training programme progressively introduce a higher level of simulated flight and a reduction of actual flight. Change from one level to the next should only take place after enough experience has been gained and once its results, including the IOE, have been taken into account.*

IFALPA strongly agrees that an MPL training programme is best implemented progressively, particularly when adjusting the program's ratio of flight hours to simulator hours. Change should only take place when sufficient experience and data analysis support it.

Observations:

Some approved MPL programmes were implemented without a planned step-by-step progression. Immediate reductions to authorized minimums were put in place. Actual flight hours were reduced by 50%; PIC hours were reduced by 75%; and it appeared that MPL syllabi were constructed to the minimum 240 hours combined simulator/flight time.

Operator Responsibility /Accountability for MPL programme training standards

MPL training should be an airline driven program, not ATO driven. The operator must ensure that its corporate training standards are being met. In the case where an operator plans to hire pilots trained at an ATO, it must delineate its training standards and expectations to the ATO, and have strong oversight processes that include data feedback, so that programme deficiencies are identified and fixed. The operator must ultimately share responsibility for the professional competence achieved by the pilot it hires.

Comprehensive Feedback Loops

It is essential that a Training Management System (TMS that is based on SMS within a training program) be in place to ensure that all stakeholders (Operator's Training Department, ATO, instructors, trainees, and regulator) are involved.

In all cases, data must be gathered, de-identified as appropriate, exchanged with the proper stakeholders and analyzed. As a result, MPL programme performance is continually assessed by the CAA, Operator and ATO so that timely improvements can be made.

Additionally, by establishing extended feedback loops that include feedback from line pilots who fly with the new MPL co-pilot after completion of IOE, valuable information on MPL pilot performance could drive MPL training programme improvements. This data provides feedback on MPL pilot performance out on the line, in the operational world, and best reflects the strength of the training programme.

Instructor Selection, Training and Standardization

Instructor performance is critical to the success of MPL training programmes.

Instructors should be selected for their experience, desire and ability to create the appropriate learning atmosphere and efficiently accomplish training to the airline/operator standards.

If training is done by an ATO, a number of Line Pilots from the airline should be involved in the training at the ATO. This will enhance the training feedback loop from the ATO to the Airline (better training oversight/monitoring) allowing for syllabus adjustments ensuring it is oriented towards that airline's operations.

Pre-Selection and Preparation of Candidates for Captaincy

Training programs of most airlines select and train their candidates towards captaincy. Current MPL programs do not reflect this intended career path, nor do they provide the necessary tools for an evolution towards it. Current existing task analyses need to be reviewed to include captaincy. Feedback loops should be extended to enable the assessment of the initial selection and training programmes against captaincy standards. The existing bridging towards ATPL licenses has not been sufficiently experienced to ensure that the ATPL standard is fully met.

MPL training programmes should formally begin developing the command skills and attributes necessary for the MPL co-pilot to one day be captain. The shift from co-pilot to captain is a significant transition. This development should not be left to chance, when it could be instilled from the very beginning of the pilot's flying career. Doing so will better prepare MPL co-pilots for the eventual upgrade to Captain.

Conclusion

IFALPA supports enhancements to pilot training because a well-trained pilot enhances safety. However, training people with no flying experience to be second-in-command of a modern airliner requires all stakeholders (Regulator, Operator, ATO, and student pilot) to execute their responsibilities to the highest level. With the forecast need for new pilots at historic levels, the pressure to train such people as efficiently as possible will be intense. Despite this pressure, safety must remain the ultimate priority.

Appendix to MPL Position Paper – Workshop Results

The following material is expanded guidance on how to improve MPL pilot performance in the four areas identified during the workshop.

Basic Flying Skills

Civil Aviation Authorities, Airlines, Pilot Safety Organizations and other stakeholders have pointed to pilots' overreliance on cockpit automation as the key contributor to numerous Loss-of-Control accidents as well as a systemic decline of basic flying skills.

In 2012, IFALPA published the IFALPA Pilot Training Standards Manual (IPTS) which outlines the pilots' view on training and addresses the shortcomings in today's training syllabi. The manual states: *A pilot is expected to continuously maintain and improve his skill sets throughout his career and should therefore be offered a training environment that allows for career-long development.*

Generally, MPL co-pilots show a need for stronger basic flying skills.

It is IFALPA's position that emphasis must be made on the following aspects:

a) The relevant phases and devices for each shall be determined according to the MPL Task Analysis.

b) Whereas the final competency level is determined by the airline, the expertise of the ATO is required to determine the best training opportunities.

- Transition from Stick and Rudder to Trajectory & Energy (Pitch & Power) flying, according to Phase and Device.
- Energy Management in Aircraft and/or FFS
  For example: WX, Top of Descent, ATC, Fuel Efficiency, Short Cuts
- Instrument scan differences:
  PF& PM: VMC / IMC / Automated flight / Manual flight / Raw Data
- Upset recovery training (prevention, recognition and recovery)
  In Aircraft & Full Flight Simulator, G-Awareness Device recommended.
- Upside-down & Spin experience & recover from it, in Aircraft
- CDFA (continuous descent final approach) non precision approach,
- STAC (Stabilized Approach Concept)
  Training for a high performance transport aircraft, in aircraft & full flight simulator
- (Basic Jet or Turbo Prop Training).
  For example: associated aerodynamics and performance, rudder control, engine spool up time, low speed vs. high speed swept wing characteristics
- IFR flight
  In Aircraft
- Asymmetric IFR flight
  In Aircraft

What is Airmanship?

Airmanship represents a combination of skills, experience, awareness, judgment and more. Most attributes of airmanship cannot be trained. MPL programmes rely on simulator devices for the majority of time-in-training, and while simulators are adequate for most skill development, they are inadequate for providing real world exposure, or building the situational awareness and experience necessary for sound judgment and decision making - the key building blocks of airmanship.

Airmanship should be developed at this early stage and beyond the MPL training programme.

Considering the present implementation status of MPL, and the massive transfer of training time to a virtual/simulated environment, IFALPA proposes some areas to be emphasized to improve airmanship of pilots, and especially the MPL trainees:

- Situational awareness
- Judgment and decision making
- Assessment of own skill capability / aircraft capability

Elements of Airmanship

- effective flight planning
- professionalism
- motivation
- mentoring
- situational awareness
- aware of available resources
- environment
- judgment
- knowledge and transfer of knowledge into proper action
- non-normal
- know not to do
- think before acting
- use of all means at the right time
- apply competency in another context
- awareness of aircraft capabilities
- performance
- flight envelope
- upset recovery
- stalls
- at all altitudes
- awareness of pilot capability (define your own limits / margins)
- retaining and adapting knowledge

- self-criticism/critique acceptance/self-debriefing
- decision making
- when to say no
- lateral thinking
- stay ahead of aircraft ➜ anticipation ➜ proactive actions
- protect the available cognitive resources at all times
- prioritize (aviate, navigate, communicate)
- workload management
- dealing with the unexpected
- contingency planning (plan A, B, C….)
- flexibility - adaptability
- handling changing circumstances
- know and respect procedures

CRM ➜ “Human Dimension“

The following CRM principles are integral parts of successful training:

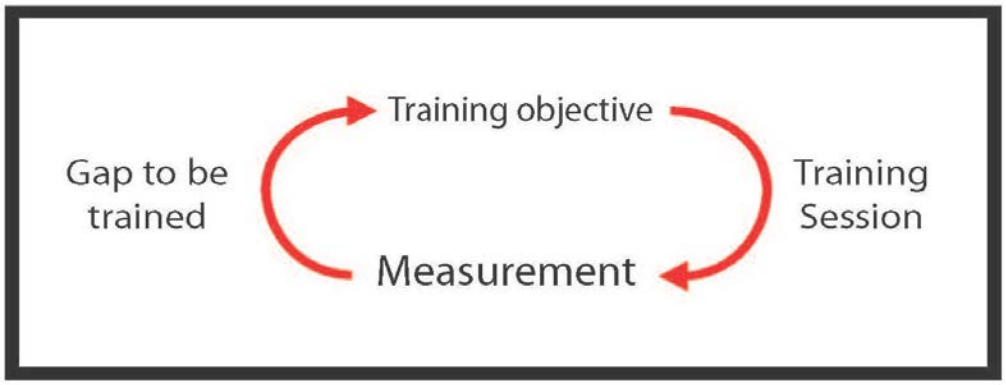
- Train Instructors First
- Basic Understanding is delivered in Classroom
- CRM / HF(Human Factors) is delivered throughout the entire course,
- Non-punitive environment, including the use of recorded sessions

As a general statement, training must be:

- Realistic (achievable)
- Systematic : one needs to go through the following phases :
  - Selection
  - Education : “Basic Theoretical Knowledge“
  - Training : “Application of Knowledge“

Training must rely on robust processes:

- FDM (flight data monitoring) etc...
- TMS (training management system)-Tailored instruction based on gap analysis / previous evaluation:



Interaction with ATC

Phraseology should be applied according to existing standards:

- Basic Knowledge (Doc 4444)
- Level 4 (ICAO)

However, quality of communication depends also on the pilot's ability to interact appropriately.

No relevant, sophisticated, simulated ATC training environment is available to date.

Proper ATC interaction in normal operational context, including busy airspace, task interruption management and changes in the workload can be delivered only through real world exposure.

Furthermore, additional classroom and simulator training has to be provided in order to prepare for abnormal operations, including worst case scenarios, and ATC threat and error management.

ATC TEM requires the pilot to maintain three dimensional situational awareness and recognized potential ATC related conflicts while competently flying the airplane.

Training Methodology:

Training the Trainers: (Instructors)

- A consistent training programme requires the Instructors and Check Airmen/Examiners to be trained to the airline standards.
- A number of Line Pilots from the airline shall be involved in the training at the ATO :
- To enhance the training feedback from the ATO to the Airline (better training oversight/monitoring)
- To improve the training syllabus and make it better oriented towards line operations.

Flying skills are developed through training. This means:

- Real life is full of training opportunities, and a proficient instructor should be able to use them.
- Just flying the line can provide good experience (knowledge consolidation, trainee self-esteem buildup, trainee workload/hassle management), and a proficient instructor should be able to recognize this need.

Additionally, Airmanship is acquired through education and mentorship:

- Training Instructors to also be educators
- Train the Instructors to be mentors

The following training methods and tools should be implemented:

1. Classroom training / education

- Peer-to-peer and airmen exchanges
- Case study analysis
- Threat and Error Management exercise
- Exercises in CRM training / class room training
- Knowledge of development of procedures

2. Simulator training missions

- Briefing / Debriefing
- Systematic threat recognition and error mitigation
- Exposure to unexpected situations
- Innovative training scenarios to promote lateral thinking
- Structured self-debriefing / crew centered debriefing
- Repetitive training up to skill level to train under a variety of conditions

3. Aircraft training missions

- Briefing / debriefing
- Systematic threat recognition and error mitigation
- Exposure to unexpected situations
- Innovative training scenarios to promote lateral thinking
- Observer flights on the line ops by the Airline in early phases of MPL training
- Team flights
- Structured self-debriefing / crew centered debriefing
- Repetitive training up to skill level to train under a variety of conditions

Training – Core Philosophy

The core philosophy of training can be summarized in the following statement, and should be promoted:

Train like you fly, in order to fly like you train.

Applying this philosophy to MPL training, IFALPA strongly recommends the following best practices:

- Threat + mitigation briefing (briefing, departure, approach...dispatch, flight planning)
- constant assessment of threats
- “Team Flights“ in the real world (core/basic)
- FFS is not the only “flight experience“. Real flight time is required, for actual risk exposure (fear factor) vs. virtual risk exposure (Nintendo world).
- exposure to the unexpected :
  - in the real Aircraft ➜ by nature and randomly (e.g. simulated engine failure)
  - in the simulator ➜ unknown scenarios (student, scripted for IP, gradual introduction)
- “Innovative“ simulator training scenarios

    - “Race around the Gibraltar Rock“➜ handling the A/C to its limits ➜ fun scenario!)
- personal mentoring (e.g. peer to peer)
- practical examples / case studies
    - Lateral thinking[1]
- early structured immersion in line operation :
    - gradually, e.g. line orientation,
    - other departments (e.g. dispatch, ground ops, safety dept., etc...)
    - pairing with recurrent line pilots for LOFT
- Glider flying
- structured self-debriefing ➜ crew centered debriefing
- knowledge of development of procedures; background logic
- repetitive training

Bridging the MPL towards captaincy

Training programs of most airlines select and train their candidates towards captaincy.

Current MPL programs do not reflect this natural career path, nor do they provide the necessary tools for an evolution towards it.

Current existing task analyses need to be reviewed to include captaincy.

Feedback loops need to be extended to enable the assessment of the initial selection and training programmes against captaincy standards.

The MPL pilot’s skill set development to achieve the competencies and attributes required of a captain should not be left to chance.

The existing bridging towards CPL licenses has not been sufficiently experienced to ensure that the CPL standard is fully met.

1 **Lateral thinking** is solving problems through an indirect and creative approach, using reasoning that is not immediately obvious and involving ideas that may not be obtainable by using only traditional step-by-step logic.