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Agenda Item 2: **Timely and safe use of new technologies**
2.2: **Addressing safety risks related to evolving aviation technologies**

AIR TRAFFIC SAFETY ELECTRONICS PERSONNEL (ATSEPS) RECRUITMENT AND RETAINING

(Presented by International Federation Air Traffic Safety Electronics
Associations (IFATSEA))

EXECUTIVE SUMMARY

This paper presents an approach to recruitment and retaining proposal for air traffic safety electronics personnel (ATSEP).

The ATSEP profession's contribution is critical to the safety and efficiency of the world's air navigation system. The Communication, Navigation, Surveillance/Air Traffic Management (CNS/ATM) systems installed and maintained by ATSEP are the cornerstone for safe and efficient air traffic services.

By proactively addressing recruitment and retaining proposal rather than relying solely on reactive measures, air navigation services providers (ANSPs) can better safeguard the safety critical air navigation (ANS) systems. This proactive approach ensures scalability and resilience with the human factor as an enabler and as we navigate the ever-evolving landscape of the world's air navigation system.

1. **INTRODUCTION**

1.1   During and after the recent Covid-19 crisis, the total aviation system was faced with an unprecedented global economic sustainability challenge. Airlines, Air Navigation Services Providers (ANSPs), airports as well as all supporting services had to maintain financial resilience and survivability in a unimaginable hostile environment in terms of air traffic volatility. Many measures and initiatives were hastily invoked, one of which was to release from employment professionals from their related business areas. A massive amount of knowledge and skills disappeared from the aviation industry over night. Decades of investments on human capital were lost without a succession plan. This became a quick and easy formula towards releasing thousands of professionals and their well-established expertise. The short-sighted response did not plan, prepare, or consider the post Covid-19 crisis outcome in view of the quickly rising air traffic demand and the return of the well-established work force.

1.2   The ATM Cost-Effectiveness (ACE) 2020 Benchmarking Report with 2021-2024 Outlook is a glimpse in the European sector and the effect to the technical support staff.

1.3   The 2020 ACE Report states "2020 saw a -3.4 per cent reduction (-1.943 FTEs) in the total number of ATM/CNS staff, mainly reflecting decreases in the following staff categories:

- Other staff (-780 FTEs, or -20.1per cent)

- ATCOs in OPS (-477 FTEs, or -2.7 per cent)

- Technical support for operational maintenance (-376 FTEs, or -3.9 per cent)

- Administrative staff (-323 FTEs, or -3.3 per cent)

- Staff for ancillary services (-112 FTEs or -5.8 per cent)

1.4   Whereas in 2022 the ACE report stated "In 2021, the number of ATM/CNS staff fell by -1.5 per cent (-783 FTEs) compared to 2020 reflecting the impact of measures implemented by ANSPs to adapt to lower air traffic volumes.

1.5   The lower staff number observed for 2021 mainly reflects decreases in the following staff categories:

- Administrative staff (-306 FTEs, -3.4 per cent)

- ATCOs in OPS (-197 FTEs, or -1.2 per cent)

- Ab-initio trainees (126 FTEs, or -12.5 per cent)

- Technical support staff for planning/development (-102 FTEs, or -3.2 per cent)

2.   **DISCUSSION**

2.1   Having to hire new air traffic safety electronics personnel (ATSEP) to replace the older, experienced ones revealed the issue of a hidden, unanticipated cost of recruiting and training. Ensuring these new hires are attracted to the job and retained within the corporate entity after training, is crucial. Factors such as the learning curve for employees and the time required to reach maximum performance levels (similar to those who have left) must be taken into account in terms of impact the company's overall performance similar to the experienced ATSEP. Recruiting and retaining new ATSEP has become critical in the post COVID era. Air traffic has rebounded, increasing capacity, and passenger flow at airports.

2.2   Meanwhile, the world's aviation sector was transitioning toward greater digitalization, automation, and the modernization of legacy CNS/ATM systems an endeavour that is technologically intensive. Deploying new CNS/ATM systems, especially in some cases of a hybrid nature (space and ground-based), and integrating them with legacy systems requires expertise, deep understanding, and time resources for the engineering and technical personnel, the ATSEP. They must operate and maintain, these systems while also ensuring the continuity of operation of legacy or state-of-the-art CNS/ATM systems/services. When implementing state-of-the-art systems or beyond, ATSEPs must undergo training in new technologies and develop additional skills and competences. These new concepts and services will be integrated with the existing elements of the technical and operational aspects of the total ANS

2.3   Throughout aviation history, the competence, and skills of ATSEPs have been crucial for maintaining the safety and efficiency of the aviation industry. They ensure the availability, accuracy, integrity, and continuity of the ANS system and other critical technical and operational parameters as per ICAO Annex 10 — *Aeronautical Telecommunications*.

2.4   Additionally, due to increased digitalization and networking architectures of ANS systems there are new challenges concerning cybersecurity. The training adjustment to address failures and degraded modes of distributed ANS and systems needs to be made quickly and proactively. ATSEPs will require proper training to be on the front line of tactically combating cyberattacks.

2.5   The intricacies of technical and operational roles within ANSPs present both challenges and unique features. ANSPs operate around the clock to ensure safe and efficient air traffic management. Consequently, many technical and operational positions involve 24/7 shift work, including nights, weekends, and holidays a demanding job arrangement. While this continuous coverage is essential for aviation safety, it can be demanding for employees who must adapt to irregular schedules impacting ATSEP fatigue *(Ref. ICAO REGIONAL GUIDANCE MATERIAL FOR ADDRESSING HUMAN FACTOR ISSUES OF ATSEP)* and is counterattractive to prospective employees. ATSEP acquire specialized knowledge and skills. Their expertise is specifically tailored to the unique demands of aviation.

Recruitment

2.6   Attracting new Air Traffic Safety Electronics Personnel (ATSEP) to the aviation industry can be challenging, given the competition from other industries. IFATSEA has been informed about the difficulty in recruiting ATSEP in certain areas of the world e.g. EUROPE. This issue has been raised and discussed between IFATSEA and European Organisation for the Safety of Air Navigation (EUROCONTROL). The entry qualifications for ATSEP have been raised due to the digitalization and increased complexity of state-of-the-art ANS systems. However, other industries those that are non-safety critical and less demanding, with clearer career paths are more attractive. This attractiveness has led to a shortage of ATSEP.

2.7   To successfully attract talent, IFATSEA proposes the following strategies and advice for constituent ANSPs and organizations in the aviation industry:

- **Standardization of Job Requirements**: Collaborate on establishing standardized job requirements for ATSEP across the industry. Define the necessary qualifications, skills, and experience needed for different ATSEP roles. This standardization must be done with a vision to future requirements.
- **Regulation of the ATSEP job: "**The (ATSEP) Job and related functions are all qualified as safety-critical and therefore there might be a need to regulate some aspects of the job." EU Study D7: Final Report, 2013. The best approach to this is the formal ICAO approach of the inclusion of the ATSEP Profession in ICAO Annex 1 — *Personnel Licensing* like the Pilots, aircraft maintenance engineers and ATCO. This ensures consistency and clarity in attracting talent from other industries as well as enabling ATSEP mobility **and can contribute towards the establishment a high uniform level of safety in civil aviation.**
- **Indicate the Importance and Impact:** Emphasize the critical role ATSEP plays in ensuring the safety and efficiency of air navigation systems. Highlight the impact their work has on the aviation industry and the opportunity to contribute to a vital sector that connects people and drives economic growth.
- **Promotion of the Profession:** Jointly promote the ATSEP profession and its benefits to professionals in other industries. Engage in targeted marketing campaigns, organize industry events, and leverage digital platforms to create awareness about the unique opportunities and challenges that the ATSEP profession offers. Identify the counter argument towards selecting a non-safety critical job.
- **Career path Development and Advancement Opportunities:** Collaborate on the development of clear and structured career paths for ATSEP. Provide clear paths for career development and advancement within the organization. Offer training programs, certifications, and opportunities for skill enhancement to demonstrate a commitment to the professional growth of ATSEP. Define

competency frameworks, establish training programs, and provide guidance on career progression to attract professionals looking for long-term growth and development opportunities.

- **Skills Recognition and Transferability:** Establish mechanisms to recognize and transfer skills from other related industries. Create pathways and support programs that enable professionals from related fields such as IT, telecommunications, or electronic engineering to transition into the ATSEP profession and leverage their existing skills and knowledge

- **Technological Advancements:** Showcase the cutting-edge technologies and innovative projects that ATSEP will have the opportunity to work on. Highlight the industry's commitment to staying at the forefront of technological advancements, such as automation, artificial intelligence, and cybersecurity, to attract individuals interested in working with advanced systems.

- **Collaborate with Educational Institutions:** Establish partnerships with universities, technical schools, and training centers to promote the profession and offer internships or apprenticeships. Engage with students in related educational areas like technical colleges and universities early on to create awareness and attract talent to the aviation industry.

- **Work-Life Balance and Flexibility:** Recognize the importance of work-life balance and offer flexible work arrangements when possible. Highlight initiatives such as remote work options, flexible schedules, and employee well-being programs to appeal to individuals seeking a healthy work-life integration.

- **Networking and Collaboration:** Engage with professional associations, industry networks, and forums to build connections and collaborate with other organizations. Actively participate in events, conferences, and workshops to promote the organization and attract talent through networking opportunities.

Retention

2.8   To retain current ATSEP and ensure their skills align with the needs of the 21st-century aviation industry, firms and organizations can consider the following strategies:

- **Continuous Professional Development:** Offer ongoing training and development opportunities to ATSEP, enabling them to enhance their skills and stay up to date with industry advancements. Provide access to relevant courses, workshops, conferences, and certifications to support their professional growth.

- **Career Progression, job security and Advancement:** Create clear career progression paths for ATSEP, allowing them to see opportunities for growth within the organization. Offer mentorship programs, job rotations where possible and leadership development initiatives to nurture their career advancement. Emphasize the importance of continuous professional development for ATSEP. Encourage participation in training programs, conferences, workshops, and industry events to keep professionals up to date with the latest technological advancements and best practices.

- **Work-Life Balance:** Promote a healthy work-life balance by offering flexible work/ rostering arrangements, such as flexible schedules or remote work options when feasible. Encourage a supportive and inclusive work culture that values the well-being of employees.

- **Industry-wide Recognition and Advancement:** Advocate for industry-wide recognition and advancement opportunities for ATSEP. Work together to establish professional certifications, industry standards, and career advancement frameworks that support the growth and recognition of ATSEP professionals.

- **Technology and Innovation:** Invest in state-of-the-art technologies and tools that enhance the capabilities of ATSEP. Provide them with access to cutting-edge equipment and systems, enabling them to work efficiently and stay engaged in their roles.

- **Collaboration and Teamwork:** Foster a collaborative work environment that encourages teamwork and knowledge-sharing among ATSEP. Promote cross-functional collaboration, where they can learn from each other's experiences and collectively contribute to solving complex challenges.

- **Safety and Cybersecurity Culture**: Foster a strong safety and cybersecurity culture within the organization, emphasizing the importance of safety and security in air navigation services. Provide ATSEP with the necessary resources, training, tools, and support to prioritize safety in their work.

- **Psychological support:** As in any other safety critical job with extended working hours (24/7) the effects of fatigue and stress should be handled professionally. Also, in cases of incident or accidents implementing CISM principles will certainly improve job perception

3.   **CONCLUSION**

3.1   Careful staff planning exercises for each ANSP must be developed. Retirement rates and projected times must be integrated into staff planning exercises to identify any staffing problems and proactively address potential shortages. This involves considering the time required to train new staff, their average learning curve (translated into time), as well as on-the-job training before they take over full duties.

3.2   Recruitment and retention should be looked like an investment that positively impacts and sustainability of CNS/ATM systems and services availability and continuity that drives ANSP international interconnectivity. The proposition to include the ATSEP profession in ICAO Annex 1 would also improve job recognition, attractiveness and standardize the ATSEP profession globally and from a regulatory perspective, the regulation related to the ATSEP will establish a high uniform level of safety in civil aviation.

3.3   By implementing these strategies, ANSPs can enhance recruitment and retain current ATSEPs, and ensuring they have the necessary skills to advance the aviation industry in the 21st century. Providing continuous professional development, career progression opportunities, work-life balance, recognition, and a supportive work environment will contribute to the satisfaction and engagement of ATSEPs, fostering their commitment to the organization and the industry.

3.4   The work performed by ATSEPs is critical to the safety and efficiency of the world's air navigation systems/services. Air traffic controllers and pilots rely on the Communication, Navigation, Surveillance/Air Traffic Management (CNS/ATM) systems that ATSEPs install and maintain. Given the high-impact and high-consequence nature of their work, ATSEPs play a vital role in ensuring safety. The recruitment and retention of ATSEPs is essential to the sustainability of the world's air navigation system. The tasks ATSEP perform are life critical.

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