

ETF VIEWS ON REMOTE TOWERS



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**EUROPEAN TRANSPORT
WORKERS' FEDERATION**

FOREWORD

The Remote Tower technology is advancing rapidly. It is important that regulators, Air Navigation Service Providers and staff engage on the subject to ensure that where remote towers are deployed, they are done so in a way that is safe, measured and with the appropriate consideration for staff.



The technology has advanced ahead of proper regulation and a consistent and considered effort is now required by all stakeholders to ensure the appropriate regulatory environment is created. The social consequences need to

be properly considered and the arising issues must be addressed.

Whilst the ETF is generally supportive of the concept, provided it is deployed taking in to consideration the themes contained in this document, the ETF absolutely rejects the concept of simultaneous operations, i.e. the operation of more than one airport at the same time by one person.

The ETF will continue to engage with all stakeholders and take a leading role as Remote Tower technology becomes more widely introduced.

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INTRODUCTION



This position paper has been produced following the publication of EASA Executive Director (ED) Decision 2015/014R *Guidance Material on the implementation of the remote tower concept for single mode of operation* and ED Decision 2015/015R *Requirements on air traffic controller licensing regarding remote tower operations* published by EASA on 3rd July 2015. ETF played an active part in the rulemaking activity and the ideas developed within this document are based on the comments submitted by ETF to the Preliminary Regulatory Impact Assessment issued by EASA on 2nd June 2014, the ETF comments to the Notice of Proposed Amendment 2015/04 published by EASA on 3rd March 2015 and contributions provided by ETF affiliates. The ETF position on Remotely Operated Towers (ROT) concept is likely to evolve given that EASA will propose Rule Making Task 0624 on Technical Requirements for remote TWR operations included in the EASA Rule Making Programme.

Careful analysis of ROT identifies potential significant impact on workers. In our view, this approach to regulating remote tower activity is inadequate and does not provide a Europe-wide, fit for purpose, regulatory approach to the operation of remote towers. Furthermore this guidance is limited to single operations only. Whilst the guidance material does provide some relatively comprehensive suggestions for the operation of a remote tower, the fact that it is only guidance material does not provide a strong enough regulatory framework. EASA has consistently been striving to harmonise regulation across Europe and this effectively allows member states to proceed on their own initiative without a common approach, as guidance material is not mandatory. The guidance material could also result in ANSPs selectively choosing which areas they take cognisance of (if any at all) particularly if it is perceived to be too great a cost or an inconvenience to the commencement of operations. This will lead to inconsistencies in many areas including operation, training and regulatory approach resulting in a 'free for all' which is completely contrary to current European aviation policy and best practice. Furthermore the guidance issued is limited in its scope to a single operation. It is our firm position that EASA should revisit its ROT rulemaking task addressing future developments concerning the remote tower concept and aligning with future regulatory measures concerning ATS provision.

Finally we recommend that the impact on ATSEPs, as part of the ATM safety chain, should also be addressed, for completeness and coherence.

REMOTE TOWER SERVICE PROVISION

The Concept

Remotely Operated Tower (ROT) is a concept of providing air traffic control or air traffic information services from a location other than a traditional air traffic tower at an aerodrome. Using different surveillance technologies such as CCTV cameras, a tower view can be recreated virtually at a *Remote Tower Module (RTM)*, which is the workstation of an ATCO/FISO from which remote aerodrome services can be provided. It includes both the Controller Working Positions (CWPs), including the necessary ATS systems and the visual presentation display screens. One or more remote tower modules compose the *Remote Tower Centre (RTC)*, from which ATS can be provided to several aerodromes.

Types of operation

In broad terms, the concept of remote tower operations can be categorised into 4 different methods:

Single mode of operation

An air traffic service provision from a Remote Tower Module (RTM) for only one aerodrome at a time.

Multiple mode of operation

An air traffic control service provided to two or more aerodromes with only one aerodrome being provided with a service at any one time from a Remote Tower Module (RTM).

Simultaneous mode of operation

An air traffic control service provided to 2 or more aerodromes with a service being provided to more than one aerodrome simultaneously.

Contingency operation

An air traffic control service provided from a remote location to be used as a contingency in the event of a failure of the traditional facility.

Current regulatory requirements

The air traffic control service is provided by licensed air traffic controllers for the purpose of preventing collisions between aircraft on the manoeuvring area, aircraft and vehicles on the manoeuvring area and between aircraft and obstructions. Additionally, ATCOs are responsible for expediting and maintaining an orderly flow of air traffic.

The aerodrome flight information service (AFIS) is the term used to describe the provision of information useful for the safe and efficient conduct of aerodrome traffic. With regard to the aerodrome flight information service (AFIS), the aerodrome flight information officer (AFISO) is the person properly trained, competent and duly authorised to provide AFIS. Except in cases when relaying clearance from air traffic control, AFISOs shall only pass information and warnings to pilots. Pilots are therefore wholly responsible for maintaining proper spacing in conformity with the applicable rules of the air. The remote tower concept will also need to allow for an alerting service to be provided, and this is defined as the service provided to notify appropriate organisations regarding aircraft in need of search

and rescue aid, and assist such organisations as required. The increasing number of initiatives taken worldwide to provide remote aerodrome ATS have been recognised by ICAO, as per the ICAO Global Air Navigation Plan (Doc 9750) and in the Working Document for the 'Aviation System Block Upgrades' of 28 March 2013 (Section B1-RATS Remotely Operated Aerodrome Control).



The EASA ED Decision 2015/014R and ED Decision 2015/015R have been generated through a consultative process and it is apparent that the material is very much in its infancy – hence the status of “guidance” and “AMC”. Whilst the information contained in the document will doubtlessly be of use, it is worth considering the following excerpt: *“The remote tower concept, as a change to the functional system, does not require any specific safety assessment methodology.*

The available procedures, which are part of the SMS and their compliance with Commission Implementing Regulation (EU) No 1035/2011 has been demonstrated, may be used for the safety assessment. Nevertheless, the particularities of the remote tower concept, as technological change, may require the need to take into account some specific considerations in the application of such approved procedures. The objective of the developed GM is to provide ATS providers and competent authorities with such considerations. In order to facilitate the approval process, Appendix 1 summarises (in a non-exhaustive list which is to be considered as reference only) the overall elements deemed necessary for the implementation of the remote tower concept.”

Unfortunately it is extremely difficult to conclude anything from the above text. It is understandable that, given the lack of maturity in the implementation (and regulation) of remote towers, to set detailed prescriptive regulation will be extremely difficult. However this does introduce the potential for a fragmented approach to safety regulation of remote towers and the potential for an inequitable playing field which could undermine the implementation of the concept of remote towers.

Additionally, the Guidance document does not provide much information or guidance on the engineered technical system except to say that: *“The remote tower concept is, in principle, envisaged to be implemented at aerodromes of all sizes and conditions. Therefore, it seems reasonable to define those elements that would make an aerodrome suitable for the remote provision of ATS while maintaining at least the same level of safety as if the service was provided from a conventional tower. The idea is that these elements should be part of the safety assessment to be conducted prior to the introduction into service of the remote tower concept at an aerodrome, so that the particular conditions of that given aerodrome are taken into consideration.”* Whilst the techniques used are well understood, the difficult part of the analysis is the types of hazard that should be explored and this can only be fully analysed with experience of remote towers in given environments.

Operational context

The remote tower concept, even if in principle is envisaged to be implemented at aerodromes of all sizes and conditions, the results of the validation exercises available so far show that the single mode of operation for the remote provision of ATS may be applied to low-density aerodromes where low density is defined as being mostly a single movement, rarely exceeding two simultaneous movements (*movement means the operation of an aircraft for take-off or landing*). Furthermore, it is useful to report other operational characteristics as “*out-the-window view*” meaning a view of the areas of responsibility of the ATS unit from a conventional tower; “*direct visual observation*” through direct eyesight of objects situated within the line of sight of the observer, possibly enhanced by external elements (e.g. binoculars) and “*visual presentation*” which means:

- a view equivalent, in terms of visual coverage, to the one available at the corresponding conventional tower; or
- in the absence of a conventional tower, or when other locations are deemed more beneficial, an unobstructed view of all the areas of responsibility of the ATS unit.

It immediately appears evident as a new scenario defines the operational context of the remote provision of service to aerodromes with the obvious consequences for the professionals in charge to provide it. This new situation requires or could require to adapt current training, competence assessment, responsibility, procedures, phraseology, medical and licensing requirements and human factors for ATCOs, FISOs and ATSEPs; ATSEPs as the professionals operating and maintaining systems and equipment approved for operational use are properly positioned to manage risks to operations and assets.

In addition, security requirements shall be enhanced for remote centres/modules, for devices installed in remotely provided aerodromes and for technological tools connecting aerodromes and remote tower module/centre.

MAIN PRINCIPLES

Safety requirements

ETF is of the firm view that an equivalent level of safety must be maintained by any remote tower facility that would be found at a conventional tower. Any efficiency benefits derived from remote tower modules and/or centres must not be at the expense of safety.

Training and competence requirements



We view ROT as sufficiently different in the same way as the operation of the radar aerodrome service and as such, we feel it is entirely appropriate and necessary that a separate rating endorsement together with an associated unit endorsement be created. A separate remote towers rating endorsement training program should be required to ensure that the detailed technical and operational elements of remote towers are well understood. This could be a small conversion course from the ADI rating, or a full stand-

alone rating course. For each remote tower to be operated, a unit endorsement training plan would need to be followed detailing all of the normal procedures and practices associated with the specifics of that particular location. Training shall be harmonised by appropriate Common Core Content (CCC) training requirements, and related additions to unit training and competence plans, including OJTIs and Supervisors. Furthermore, ROT high level goals are highly dependent on a successfully adopted automation layer, and thus relaying greatly on system performance and resilience. ATSEPs as the professionals operating and maintaining systems and equipment approved for operational use are properly positioned to manage risks to operations and assets. The adoption of RTO will obviously impact on ATSEP activities and potentially harm their working conditions. Enhanced technology required to support remote operations (more sensors, more equipment, augmentation reality systems, and so on and so forth) shall imply improvements on training requirements and competence schemes so that new demand can be properly encompassed. Expertise on information and cyber security driven from the distributed architecture of the remote tower infrastructure and the use of shared resources, where security together with data integrity and availability is a must, will lead to new ATSEP roles and responsibilities, with associated impact on training and competence assessment schemes.

Licensing requirements

As specified in the ATCO Licence regulation 2015/340 there are rating endorsements for Aerodrome Control – namely ADI and ADV. Due to the specific nature of the technologies, human factor considerations and possible operating differences it is our view that, as is

common with other rating endorsements such as OCS and TCL, a specific rating endorsement should be created for remote tower operations. This would ensure that Air Traffic Controllers operating in a remote tower environment are properly trained in the specific nature of providing a service remotely. This is consistent with the approach for other rating endorsements in specific specialist areas such as OCS and TCL.

ATCO competence requirements shall also include the need for one specific unit endorsement for each of the aerodromes where ATS are planned to be remotely provided.

As regard to FISO competence, the possibility of including AFIS regulation including competence requirements in Part ATS shall be considered.

Finally, ETF strongly rejects any concept of Single Person Operation for any working position that provides services to different aerodromes at the same time, including ground based service provision such as clearance delivery. .

As stated in Recital (1) of Regulation 340/2015: "*Air traffic controllers and persons and organisations involved in their training, testing, checking and medical examination and assessment must comply with the relevant essential requirements set out in Annex Vb to Regulation (EC) No 216/2008. In particular, they are to be certified or licensed once they have demonstrated compliance with the essential requirements.*" The transition from the direct visual observation at the conventional tower to the visual presentation through the screen at the remote tower should have consequence on the visual system effectiveness affecting the medical fitness. ETF asks that appropriate medical provisions are incorporated in to the regulation to prevent any impact to the operation of a ROT service.

Technical requirements

The visual representation at the remote tower facility typically sees the compressing of the 360-degree view outside from a conventional tower cab to a smaller 270-degree view represented on monitors. This changes the perception of position, and also depth perception for the air traffic controller in question. This could have consequences also on stress and fatigue. It is likely that additional tools will need to be provided to compensate for this and to aid the monitoring of traffic. Equally when observing aircraft in the circuit on final approach or climb out, the visual representation is very different from the optical direct visual contact at a traditional tower. This results in a different level of ability to accurately observe the aircraft that will result in another means of surveillance being needed, such as radar. This could involve the requirement for a transponder or other equipment, which would have a potential cost implication to operators and the general aviation community.

Operating requirements

As experience of remote tower operations is still at a very low level, small incremental steps in size and complexity of operation must be taken to prove the concept. Detailed and independent Human Factors studies will be required to understand and mitigate the different operating techniques and impact of the technology on performing the air traffic function. It may be appropriate in time for an air traffic controller to hold the endorsement of more than one remote tower aerodrome, but ETF is firmly of the position that these must never be exercised simultaneously. Further appropriate studies need to be completed to determine the relevant responsibility free break time required between operating different remote towers. Weather could also be difficult to judge and situational awareness could

easily be lost due to the reduction of local knowledge of weather patterns. Confusion could also be introduced when operating multiple towers.

Human factor requirements



Appropriate human factors requirements and understanding is essential to the operation of remote towers. The physical remoteness from the operation will provide a different environment and could result in a perception of being disconnected to the airport to which the service is being provided. Proper human factors assessments and training will be imperative to the safe and efficient operation of the remote tower facility.

The technological solutions will need to be designed and procedures implemented which take in to account these issues, with particular focus on the new technological solutions and any alarms or alerting systems to ensure they are appropriate and fit for purpose without providing a high level of false alerts.

There are also concerns over screen pixilation and resolution with consequent problems involving depth perception and identifying runways and taxiways, particularly at night.

Human factors concerns exist in the operation of multiple towers and it is imperative that if different towers are operated in succession, or where an approach function is provided, adequate mitigation is put in place to ensure confusion of task and/or individual airport characteristics does not occur.

Furthermore deep analysis and continuous assessment shall be conducted to manage stress and fatigue occurring in the new environment taking in to account appropriate shift planning.

Reliability requirements

The physical installations providing data to the remote tower sensor must be appropriately maintained. Camera installations must have a responsive cleaning and maintenance program to ensure they are free from environmental contamination (rain, condensation, bird activity etc.)

All data will need to be secure and on dedicated transmission systems that are adequately protected from outside interference. The remote tower centre will need adequate fallback procedures and any evacuation of a centre could result in the cessation of services to multiple towers. This could have an impact to aircraft operations with respect not only to scheduled operations but also choice of diversion aerodromes etc.

Social impact

ETF only supports remote tower operations at airfields where a ROT service will deliver a tangible social benefit to the community served by that airport, in addition to any commercial and economic benefits gained. The term “social benefits” refers to the benefits a manned tower provides to the local community, for example increased access to air services, extended airport opening hours or greater service availability and increased access for medical/humanitarian flights. A ROT facility should continue to be able to provide this and also enhance the local community for example with the provision of improved communication links (i.e. the data connections and bandwidth required to be installed to support a ROT system at an airfield could also allow internet speeds for the local area to be improved at the same time.)

A proper consultation, and where required negotiation, on the working conditions of those professionals (ATCOs, FISOs, ATSEPs and Support Staff) changing role as they relocate, or are otherwise impacted by the introduction of a ROT installation, will be required. All available support must be given to both them and their families to ensure a smooth and seamless transition.

From a wider moral and community point of view, it is also imperative that the adverse impacts of losing an ATC community on the local area are identified and mitigated where possible (employment prospects, benefit to the local economy, investment etc.)

CONCLUSIONS

ETF accepts the significant development of Remotely Operated Towers. Its introduction into the aviation community must be evaluated, considered and regulated correctly. Moreover, it is essential that staff representatives are involved in all stages of development and implementation.

It is however essential to recognise that remote towers are not the silver bullet solution to low cost ATS. The implementation of the technology in remote tower functions is very much in its infancy. Additionally the true costs of implementing and operating remote towers are not fully understood and is thought to be very specific to its application. Safety must always be given priority over cost drivers in order to ensure the right focus.



We have concerns over the seemingly weak safety regulation of remote towers that leaves the door open to different EU Member States to take whatever approach that they see fit rather than having a more uniform regulatory approach. Given that the technology (integrated) is still in its infancy it is inevitably relatively expensive (including redundancy/diversity and significant safety case). Thus the expected cost benefits may not be significant in the

early implementation of the concept. ETF believes that remote towers will undoubtedly play a more significant role at airports in the medium to long term and it is essential that we do not get “left behind”. However, we must pay due diligence in order to ensure that the concept is applied in the right way and that the potential impact on staff is fully considered and addressed in conjunction with trade unions.

In the ETF's view, the following key areas must be addressed before remote tower technology is implemented:

- A comprehensive fit for purpose EU wide regulation for the implementation and operation of remote towers
- A complete prohibition of the concept of simultaneous operation, i.e. more than one tower being operated concurrently by one person.
- A remote tower licence endorsement to demonstrate appropriate training for ATCOs operating in a remote tower environment
- Adequate improvements on training requirements and competence schemes for ATSEP and maintenance staff so that new demand can be properly encompassed
- Appropriate social dialogue and recognition of workers in the implementation of the technology, involving all ATM workers

POSITION SUMMARY

Remote Tower Licensing Requirements

- Remote Tower Rating Endorsement
- Each aerodrome shall constitute its own Unit endorsement
- One Tower, same Conventional Tower Working Positions, One aerodrome at One Time.

Remote Tower Training / Procedures Requirements

- NO to the operation of multiple Remote Tower operations by a single ATCO simultaneously.
- The ETF is not opposed to the concept of Remote Tower centres with multiple single operations.
- No Single Person Operations
- ATCOs must be provided with the same level of surveillance as currently provided by visual operations. Any Human factors issues must be researched and mitigations implemented
- The requirement for new operational procedures to be based upon a robust safety case.
- Appropriate Airspace redesign will be developed as necessary. Weather data and knowledge of local environment must be provided.
- Training and competence assessment schemes for ATSEPs

Transition Requirements

- Introduction of remote operations shall be subject to full safety analysis

Contingency Requirements

- Robust contingency arrangements are in place and practised.

Security Requirements

- The appropriate procedures and safeguards are in place to provide system integrity.

Social issues and Employment conditions

- Terms and conditions shall be protected, including methods of operations, manning levels, hours and rosters
- Involvement of Staff representatives to mitigate potential social impact

Rulemaking process

- Issue Implementing Rules and related AMC and GM during the next Rulemaking Process planned for the RMT.0624 in the 2016.



European Transport Workers' Federation (ETF) is the pan-European trade union organisation embracing transport trade unions from the European Union, the European Economic Area and Central and Eastern European countries, representing more than 3.5 million workers from 41 European countries, 14,000 European Air Traffic Controllers and all other categories of Air Traffic Management staff in Europe.

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