



NOTA DE ESTUDIO

DECIMOTERCERA CONFERENCIA DE NAVEGACIÓN AÉREA

Montreal, Canadá, 9 al 19 de octubre de 2018

COMITÉ A

Cuestión 5 del
orden del día:

Cuestiones emergentes

5.2: Operaciones por debajo de 1000 pies

GESTIÓN TÁCTICA DEL RIESGO DE INTRUSIONES DE UAV NO AUTORIZADOS

(Nota presentada por los Emiratos Árabes Unidos)

RESUMEN

En esta nota se presenta el modelo de evaluación táctica de riesgos implantado por los Emiratos Árabes Unidos para la gestión de sucesos en que aeronaves no autorizadas, como los sistemas de aeronaves no tripuladas (UAS), entran en un espacio aéreo controlado. La evaluación táctica de riesgos garantiza que las medidas adoptadas sean proporcionales a los riesgos planteados por las aeronaves intrusas y evita la creación de riesgos adicionales asociados con desviaciones masivas y restricciones del espacio aéreo.

Medidas propuestas a la Conferencia: Se invita a la Conferencia a:

- a) tomar nota del contenido de esta nota de estudio;
- b) remitir el modelo al Grupo de expertos sobre sistemas de aeronaves pilotadas a distancia (RPASP); al Grupo asesor sobre sistemas de aeronaves no tripuladas (UAS-AG), y al Grupo de expertos sobre operaciones de gestión del tránsito aéreo (ATMOPSP) para su ulterior examen como texto de orientación general; y
- c) considerar la adaptación de este modelo para incorporarlo en los reglamentos de los Estados.

1. INTRODUCCIÓN

1.1 Los Emiratos Árabes Unidos ocupan una posición de liderazgo en el desarrollo e innovación de sistemas de aeronaves no tripuladas (UAS). Actualmente se están llevando a cabo varios proyectos avanzados y, como resultado de considerables actividades de investigación y desarrollo, la Autoridad General de Aviación Civil (GCAA) ha establecido una política con un enfoque normativo flexible y basado en el riesgo que promueve el crecimiento y la innovación, manteniendo al mismo tiempo la seguridad operacional.

1.2 No obstante, aunque se mantiene un nivel de control sobre las operaciones comerciales y experimentales, la proliferación de pequeños UAS personales por parte del público en general ha sido motivo de gran preocupación. La intrusión de los UAS pequeños en el espacio aéreo controlado, especialmente cerca de los principales aeropuertos, junto con la falta de experiencia de control del tránsito aéreo para hacer frente a tales sucesos, dio lugar a múltiples casos en que se impusieron considerables restricciones del espacio aéreo o cierres de aeropuertos, que pudieron haber provocado otras situaciones peligrosas en el sistema.

2. ANÁLISIS

2.1 La penetración de una aeronave no autorizada en una porción del espacio aéreo controlado sin contar con autorización previa del proveedor de servicios de tránsito aéreo puede ocasionar múltiples problemas de seguridad operacional, eficiencia y riesgos para el medio ambiente y protección de la aviación. Dichas violaciones del espacio aéreo:

- a) constituyen un peligro para otros usuarios del espacio aéreo y pueden ocasionar rápidamente un aumento significativo de la carga de trabajo de los pilotos, los controladores de tránsito aéreo (ATCO) y los supervisores, creando la necesidad de coordinar, interrumpir una aproximación, cambiar la secuencia de aterrizaje de las aeronaves o aplicar otras medidas de contingencia, etc.;
- b) pueden aumentar los riesgos para la seguridad operacional de otras aeronaves debido a demoras inesperadas y prolongadas, desvíos y una mayor probabilidad de emergencias relacionadas con el combustible;
- c) pueden ocasionar costos inaceptables para la industria, debido a las numerosas demoras en el aire y desvíos ocasionados por los cierres o restricciones de los aeropuertos y del espacio aéreo;
- d) pueden plantear una amenaza importante para la seguridad nacional ya que los vuelos no autorizados no utilizarán las comunicaciones y la vigilancia normales o pueden tener repercusiones adversas en el medio ambiente debido al aumento de las emisiones causado por las demoras resultantes en el tránsito de otras aeronaves.

2.2 Por consiguiente, la elaboración y aplicación de amplias medidas de contingencia, que incluyan análisis y evaluaciones tácticas de los riesgos mediante procesos de toma de decisiones en colaboración entre los administradores de los ATC, los supervisores, los ATCO y otro personal e interesados pertinentes, deberían reducir los riesgos de seguridad operacional y protección de la aviación a un nivel aceptable, y minimizar las repercusiones de las aeronaves no autorizadas en las operaciones normales.

2.3 En noviembre de 2016, la GCAA de los Emiratos Árabes Unidos publicó la Decisión 2016-16 sobre seguridad operacional con el objeto de proporcionar un marco normativo y orientaciones a los ANSP sobre la manera de evaluar tácticamente los riesgos de intrusiones en el espacio aéreo controlado y adoptar medidas de mitigación, garantizando al mismo tiempo que esas medidas sean proporcionales al riesgo planteado por las aeronaves intrusas, y lograr que éstos ocasionen el mínimo estrés posible en el sistema. En respuesta a una solicitud de los ANSP, en julio de 2017 se revisó la Decisión sobre seguridad operacional con el fin de proporcionar mayor orientación, incorporándose un modelo nacional. Todo el proceso ha contribuido exitosamente a reducir las repercusiones negativas de las aeronaves intrusas manteniendo un nivel adecuado de seguridad operacional.

2.4 El proceso se resume en los siguientes párrafos:

2.4.1 Las dependencias de servicios de tránsito aéreo (ATSU) desarrollarán, establecerán, implementarán y mantendrán un sistema de gestión de la seguridad operacional (SMS) a fin de garantizar que:

- a) la identificación de peligros se lleve a cabo de forma proactiva para impedir la penetración en el espacio aéreo de una aeronave no autorizada [p. ej., un vehículo aéreo no tripulado (UAV)];

- b) las actividades de mitigación de riesgos se lleven a cabo de manera efectiva a fin de garantizar la continuidad de los servicios en condiciones de seguridad y la adaptabilidad de los mismos, si la situación lo hace necesario, con la implementación un plan de contingencia que incluya un proceso táctico de evaluación de riesgos en los casos en que aeronaves no autorizadas entren en el espacio aéreo. El plan de contingencia se activará o desactivará de manera oportuna; y
- c) se efectúe una coordinación adecuada y eficaz con los aeródromos conexos, las ATSU circundantes y adyacentes y las autoridades locales competentes, según proceda, durante la realización de las actividades especificadas en los apartados a) y b) anteriores.

2.4.2 La evaluación táctica de riesgos se documentará y se llevará a cabo con miras a determinar las medidas adecuadas que deben adoptarse en caso de una violación del espacio aéreo, e incluirá los siguientes requisitos:

- a) obtener la mayor cantidad de información de todas las posibles fuentes sobre el peligro que se observa;
- b) advertir a otras aeronaves del peligro observado transmitiéndoles información esencial relativa al tránsito; y
- c) determinar la necesidad de imponer restricciones en el espacio aéreo, las vías aéreas o los aeródromos tras la notificación u observación de la violación del espacio aéreo.

2.4.3 Los ANSP facilitarán a los supervisores y a los ATCO:

- a) información integral sobre los requisitos normativos federales promulgados por la GCAA que se aplican a las operaciones de aeronaves deportivas ligeras y a los UAS; y
- b) instrucciones adecuadas para asegurarse de que puedan:
 - 1) remitir debidamente a la GCAA las solicitudes de las operaciones previstas de UAS que inciden en su espacio aéreo;
 - 2) denegar el acceso a su espacio aéreo a las operaciones de los UAS, a menos que la persona u organización que los explote pueda proporcionar una copia de la aprobación expedida por la GCAA. Los requisitos normativos y/o las aprobaciones expedidas por otras autoridades de aviación se consideran insuficientes;
 - 3) referirse a mapas de zonas de vuelo publicadas por la GCAA (véase www.gcaa.gov.ae). La utilización de mapas de zonas de vuelo de los UAS o de publicaciones no emitidas por la GCAA se considera ilegal en virtud del Artículo 20 de la Ley de Aviación Civil de la Ley Federal 20 de 1991; e
 - 4) impartir capacitación, instrucciones y orientaciones adecuadas para el reconocimiento de interferencia ilícita con una aeronave mediante una evaluación táctica de riesgos y la gestión de las operaciones de aeronaves en su espacio aéreo.

2.4.4 Dichos procedimientos, instrucciones y orientaciones deberían garantizar la realización de evaluaciones adecuadas y tácticas de todos los peligros, riesgos y medidas de mitigación. Las decisiones pueden incluir medidas de seguridad que supongan restricciones de aeródromo y de espacio aéreo, así como la participación adecuada con la policía, el ejército y otras autoridades encargadas de la seguridad.

2.4.5 En cuanto las ATSU tengan conocimiento de la presencia de una aeronave no autorizada en su espacio aéreo, deberán proceder de inmediato como sigue:

- a) empezar a transmitir información relativa al tránsito a otras aeronaves, advirtiéndoles sobre el peligro que plantea la aeronave no autorizada, independientemente de que se disponga de poca información. Se continuará proporcionando esta información esencial sobre el tránsito durante un período no inferior a sesenta minutos, a menos que pueda confirmarse que la aeronave no autorizada ha abandonado el espacio aéreo antes de ese plazo;
- b) asegurarse de que su personal ATS ha realizado una evaluación táctica de los riesgos con el fin de determinar si es necesario establecer una zona peligrosa para proteger el tránsito de otras aeronaves;
- c) una vez determinado el alcance de la zona peligrosa, analizar la amenaza que representa para otras operaciones de aeronaves utilizando toda la información disponible en ese momento con el fin de determinar medidas de mitigación adecuadas. Dichas medidas de mitigación pueden incluir, entre otras, las siguientes:
 - 1) comunicarse con las aeronaves que se encuentren en las proximidades de la operación de la aeronave no autorizada, transmitiéndoles información esencial relativa al tránsito (según corresponda), y avisándoles que tomen medidas evasivas si fuera necesario;
 - 2) permitir que continúen las operaciones en las pistas activas:
 - con medidas de mitigación y con cautela tras un análisis cuidadoso de toda la información disponible, aún si se considera que la posición de la aeronave no autorizada está suficientemente alejada de la pista activa; y
 - si la información recibida ofrece garantías razonables de que la aeronave no autorizada no constituye una amenaza para otras aeronaves;
 - 3) considerar despejar la zona peligrosa identificada, creando un área estéril, salvo para las aeronaves policiales o militares encargadas de interceptar o seguir de cerca de la aeronave desconocida o no identificada; y
 - 4) considerar la posibilidad de cambiar la dirección en la pista o restringir las operaciones de pista si la aeronave no autorizada afecta a la zona de ascenso inicial para las salidas, la aproximación final para las llegadas o a otro tránsito en las proximidades del aeródromo;
- d) informar a las autoridades competentes, incluidas las autoridades policiales, militares y otras autoridades de seguridad, siguiendo los procedimientos acordados localmente; y

e) procurar identificar la aeronave mediante lo siguiente:

- 1) intentar establecer una comunicación bidireccional con la aeronave en cuestión u obtener información de otras aeronaves en la zona; y
- 2) solicitar a otras ATSU dentro de la región de información de vuelo (FIR) o a las ATSU que prestan servicios a las FIR adyacentes sobre la aeronave en cuestión y solicitar su asistencia para establecer comunicación bidireccional con ella.

— FIN —



SAFETY DECISION 2016-16

Issue 02

Date of Initial issue: 15th June 2016

Date of this Issue: 05th July 2017

SUBJECT:

CONTINGENCY MEASURES FOR UNAUTHORISED AIRCRAFT¹ WITHIN CONTROLLED AIRSPACE

REFERENCE PUBLICATIONS:

CAR PART II, Chapter 10

CAR PART II, Chapter 11

CAR Part IV (UAS)

CAR Part VIII, Subpart 4

CAR Part VIII, Subpart 10

GM-03 CONTINGENCY PLANNING FOR AIR TRAFFIC SERVICES

REASON:

The purpose of this Safety Decision is to:

- ensure civil aviation regulations are adhered to when unauthorised aircraft, either reported or observed, affect aircraft safety, security and efficiency in controlled airspace, and
- provide decisions, recommendations and guidance on contingency measures to be implemented by ATS Units to tactically manage the risk to safety to an acceptable level, while limiting restrictions to other air traffic.

In the context of this document, the term 'unauthorised aircraft' will be used as a generic term to encompass unknown or unidentified aircraft in controlled airspace, whether manned or unmanned, remotely piloted or autonomous.

The penetration by an unauthorised aircraft into a portion of controlled airspace without prior permission from the air traffic services provider may result in multiple safety, efficiency, environmental and security risk concerns. Such infringements:

- are hazardous to other airspace users;
- may immediately result in a significant increase in Pilot's, ATCO's and Supervisor's workload such as, coordination, the need to break-off an approach, change aircraft sequence for landing or implement other contingency measures, etc.;

¹ This term *encompasses unknown or unidentified aircraft in controlled airspace, whether manned or unmanned, remotely piloted or autonomous.*



- may increase the risk to operational safety of other aircraft through unexpected extended airborne delays, diversions and increased likelihood of fuel emergencies;
- may cause an unacceptable cost to industry, due to numerous delays and diversions incurred through closures of or restrictions placed on airports and airspace;
- may pose a significant threat to national security since such unauthorised flights will not be under normal communications and surveillance;
- may have adverse environmental impacts through increased emissions caused by resultant delays to other air traffic.

Consequently, the development and implementation of comprehensive contingency measures, where the risk is tactically analysed and assessed through collaborative decision-making processes between ATC Management, SUPs, ATCOs and other relevant personnel and stakeholders, should manage the safety and security risks to an acceptable level, while minimising the impact on normal operations by unauthorised aircraft.

Any deviation from GCAA regulatory requirements is considered a violation of UAE Civil Aviation Law and UAE National Civil Aviation Regulation with direct safety and security risk implications.

The reason of this issue 02 is to incorporate guidance material which has been developed in consultation with Air Navigation Service Providers (ANSPs). The guidance material is hereafter attached as Appendix A

REQUIREMENTS:

REQUIREMENT No. SD 2016-16(01):

ATSUs shall develop, establish, implement and maintain an SMS to ensure:

- hazard identification is pro-actively conducted to prevent from airspace penetration by an unauthorised aircraft (e.g. UAS); and*
- risk mitigation activities are effectively performed to assure safe continuity and adaptability of service provisions with, if the situation deems it necessary, the deployment of the contingency plan that includes a **tactical risk assessment process** when the airspace is in the presence of unauthorised aircraft. The contingency plan shall be activated or de-activated in a timely manner.*
- appropriate and effective coordination with associated Aerodrome(s), surrounding and adjacent ATSUs and local appropriate authorities, as applicable while carrying out activities specified in a) and b) above.*

REQUIREMENT No. SD 2016-16(02):

*The **tactical risk assessment process** required by paragraph 1)b) above shall be documented and implemented to determine the appropriate actions to be taken in the event of airspace infringement which shall include the following requirements:*

- obtain as much information as possible of the induced hazard from any source;*



- b) warn other aircraft of the induced hazard through the passing of essential traffic information; and
- c) determine if any restrictions are necessary within the airspace, airways or aerodromes following the report or observation of the airspace infringement.

GUIDANCE TO REQUIREMENT No. SD 2016-16(02)a):

The following “aide-memoire” may facilitate the collection of such information:

- a) An accurate position/location of the reported unauthorised aircraft is provided;
- b) Was the unauthorised aircraft stationary or moving? If moving, what was the observed direction and if possible provide an approximate speed?
- c) At what altitude was the unauthorised aircraft operating? Was it maintaining level flight, or climbing/descending?
- d) What is the type of aircraft? Is it manned, unmanned, fixed wing, quad copter, gyrocopter, etc.
- e) For an Unmanned Aircraft System (UAS), was the location of the UAS operator observed by the reporting source?
- f) Any other question relevant to the situation at that time, which may assist in assessing the risk to safety and or security.

REQUIREMENT No. SD 2016-16(03):

Compliance with paragraphs 1) a) and 1) b) shall, in particular, require ATSUs to provide SUPs and ATCOs with:

- a) solid knowledge of the federal regulatory requirements for Light Sport Aircraft and Unmanned Aircraft System (UAS) operations promulgated by the GCAA;
- b) adequate instructions to ensure they can:
 - 1) direct requests for intended UAS operations affecting their airspace to the GCAA;
 - 2) deny access to their airspace to any UAS operation unless the individual or organisation operating the UAS can provide a copy of the approval issued by the GCAA. Regulatory requirements and/or approvals established by other aviation authorities than GCAA are insufficient; and
 - 3) reference UAS flying zone maps published by GCAA (refer www.gcaa.gov.ae). The use of any UAS flying zone maps or publications not published by the GCAA is illegal according to Civil Aviation Law Article 20 of the Federal Act 20 of 1991; and
- c) adequate training, instructions and guidance for the recognition of unlawful interference with an aircraft through a tactical risk assessment and the management of unauthorised aircraft operations in their airspace.

GUIDANCE TO REQUIREMENT No SD 2016-16(03)c):

Such procedures, instructions and guidance should ensure that all hazards, risks and mitigations will be appropriately and tactically assessed. Decision may include any safety and security measures involving



aerodrome and airspace restrictions, and appropriate involvement with police, military and other security authorities.

REQUIREMENT No. SD 2016-16(04):

When ATSUs become aware of an unauthorised aircraft in their airspace, they shall immediately:

- a) commence providing traffic information to other aircraft about the hazard posed by the unauthorised aircraft irrespective of how little information may be known (CAR VIII Subpart 4, 4.2.7.(b).8 refers). This essential traffic information shall continue for a period of no less than 60 minutes, unless it can be confirmed the unauthorised aircraft has vacated the airspace before this time;*
- b) ensure that its ATS personnel has executed a tactical risk assessment with the aim to determine if a hazardous area needs to be established to protect other traffic;*
- c) once the extent of the hazardous area has been determined, analyse the threat to other aircraft operations using all information available at that point in time in order to determine appropriate mitigations. Such mitigations may include but are not limited to:*
 - 1) Advise aircraft in the vicinity of the unauthorised aircraft operation by passing essential traffic information (as appropriate) and advise aircraft to take avoiding action if necessary.*
 - 2) Allow operation of active runways to continue:*
 - i) with mitigation and caution after careful analysis of all available information even if the position of the unauthorised aircraft may be deemed sufficiently far from the active runway.*
 - ii) If information received provides reasonable assurance that the unauthorised aircraft is not a threat to other aircraft;*
 - 3) Consider sterilising the identified hazardous area, with the exception of the police or military aircraft which are tasked with intercepting or shadowing the unknown or unidentified aircraft.*
 - 4) Consider changing runway direction, or restricting runway operations if the unauthorised aircraft affects the departure climb-out area, final approach for arrivals or other traffic in the vicinity of the aerodrome;*
 - 5) Alert aircraft operating in Class G airspace if appropriate.*
- d) inform the appropriate authorities including police, military and other security authorities as per the locally agreed procedures. Those procedures must be reviewed and practiced (for effectiveness check) at least annually, through an exercise or live event which is subject to a documented debrief review;*
- e) endeavour to identify the aircraft by:*



- 1) attempting to establish two-way communication with the concerned aircraft or to obtain information from other aircraft in the area;
- 2) inquiring other ATSUs within the FIR or ATSUs serving the adjacent FIRs about the concerned aircraft and requesting their assistance in establishing two-way communication with it;
- f) promptly notify the GCAA Duty Investigator (Mobile: 050 641 4667); and
- g) submit a ROSI within 3 hours from the time of the occurrence.

GUIDANCE TO REQUIREMENT No. SD 2016-16(04)a):

In some circumstances an ATIS broadcast associated with the airspace concerned may be sufficient to provide traffic information.

GUIDANCE TO REQUIREMENT No. SD 2016-16(04)b):

The extent of this area should be based on information derived from the reporter, such as the aircraft type, size, speed, general performance characteristics and fuel source. It may be necessary to extend this area if the intruder cannot be identified for an extended period.

Based on the Table 1 below, as the common types of UAS normally operate within a localized area, within Line of Sight of the operator, a reasonable assumption may be made that the UAS operation will normally be contained within approximately a 1 nm radius of the reported position of the drone.

To assist SUPs and ATCOs in conducting the tactical risk assessment a list of common UAS/ Drone types and performance characteristics should be provided to assist decision makers in this process. Where used, this list should be kept updated by ATSUs to reflect current technology and known new types of UAS/ Drones available.



Table 1:

From sources available as of October 2016 the following table gives an example of UAS types commonly operated in UAE and their performance characteristics.

Manufacturer	Model	Type	Weight	Max Speed Knots	Max Service Ceiling Ft	Duration Min
DJI	Phantom	Quadcopter	1.2Kg	30	20,000	25
DJI	Phantom 4	Quadcopter	1.2Kg	40	20,000	30
DJI	Inspire 2	Quadcopter	1.9Kg	60	14,000	27
DJI	Mavic	Quadcopter	700g	35	16,000	27
DJI	Matrice	Hexacopter	4.0Kg	45	15,000	30
Parrot	Bebop	Quadcopter	1Kg	20	1,000	25
Parrot	Disco	Fixed Wing	1Kg	40	1,000	40
Parrot	AR Drone	Quadcopter	1Kg	20	4,000	15
Yuneec	Typhoon	Quadcopter	1.3 Kg	20	5,000	25
Aibotix	X6	Hexacopter	4 Kg	20	10,000	30
Sensefly	eBee	Fixed Wing	700g	48	4,000	50
Asctec	Falcon 8	Hexacopter	2 KG	30	3,000	22
Microdrones	MD4	Quadcopter	1.1 Kg	25	3,000	25
Aeryon	Skyranger	Quadcopter	2.4 Kg	20	500	10
Lockheed Martin	indago	Quadcopter	2 Kg	35	500	40



GUIDANCE TO REQUIREMENT No. SD 2016-16(04)c):

Based on the performance characteristics of common UAS types, as contained in Table 1, it can be expected that the average maximum flight duration of an UAS intruder may not exceed 30 minutes. Therefore, following a period of no less than 30 minutes from the last report of the unauthorised aircraft, restrictions relating to the identified hazardous area may be relaxed.

Note: If reports indicate that the unauthorised aircraft has a higher performance characteristic than usual, then the above time periods should be adjusted accordingly.

The attached Appendix A is to assist ATSU's in developing processes to achieve the intent of this SD. The template provided is for guidance only and should be adapted by local units to suit their circumstances.

CONTACT:

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APPENDIX A

Guidance Material for the Tactical Risk Assessment of Unauthorised Aircraft within Controlled Airspace

This tactical risk assessment template should be adapted by ANSPs to incorporate relevant local procedures, and be accompanied by supporting documentation as deemed appropriate.

Note:

In the context of this document, the term 'unauthorised aircraft' will be used as a generic term to encompass unknown or unidentified aircraft in controlled airspace, whether manned or unmanned, remotely piloted or autonomous.

No.	ACTIONS TAKEN	DONE	COMMENTS
	INITIAL ACTIONS		
1.	ATC to pass essential traffic information to other aircraft that may be affected by the Unauthorised Aircraft.		
2.	Confirm there is no approval for the intended operations affecting Name of the ATC Unit CTR/CTA.		
Note 1: Deny access to Name of the ATC Unit CTA/CTR to any UAS operation unless the individual or organisation operating UAV can provide a copy of the approval issued by GCAA.			
3.	REPORTED INFORMATION		
3.1	Identifier of the reporter (aircraft/person etc.)		
3.2	Time of initial report		
3.3	LOCATION		
3.3.1	Is an accurate position/location of the unauthorised aircraft provided/available?		
3.3.2	Was the unauthorised aircraft stationary or moving?		
3.3.3	Direction of flight		
3.3.4	Approximate speed		
3.3.5	Altitude		
3.3.6	Maintaining level flight/ Climbing/ Descending?		
3.4	AIRCRAFT/OBJECT DESCRIPTION		
3.4.1	What is the type?		
3.4.2a	➤ Is it manned?		
3.4.2b	➤ Is it unmanned?		
3.4.3	➤ Fixed Wing? Multi-rotor?		
3.4.4	➤ Gyrocopter?		
3.4.5	➤ Other?		
3.4.6	➤ Model (If known)		
3.4.7	➤ Size		



3.4.8	➤ Colour		
3.4.9	➤ Fuel Source		
3.5	For RPAS (drone) is the location of RPAS operator observed by reporting source?		
Note 2: Common types of RPAS normally operate within a localized area, within line of sight of the operator. A reasonable assumption may be made that the UAS operation will normally be contained within approx. a 1 NM Radius of the reported position. Note 3: Based on performance characteristics of common UAS types, it can be expected that the average maximum flight duration of an UAS may not exceed 30 minutes.			
4	Complete the local call out checklist		
5	Is airspace surrounding the Unauthorised Aircraft being sterilized? (if so, size of sterilisation area should be considered to be expanded with increased speed and/or unpredictable behaviour of Unauthorised Aircraft.)		
Note 4: - Consider suspending runway operations at Name of the ATC unit if the Unauthorised Aircraft is within an area banded XXXXXXXXXXXXXX. - Consider suspending departures if the Unauthorised Aircraft is within the XXXXXXX area. - Consider suspending arrivals if the Unauthorised Aircraft is located within XNM of the extended centreline on final approach and within X NM from touchdown for RWYXXXXXX and RWY XXXXXX. Note 5: Runway operations may continue if information received provides reasonable assurance that the Unauthorised Aircraft is not a threat to aircraft. Essential Traffic information shall be passed in all cases.			
6	➤ Notification list		
	➤ GCAA Duty Investigator		
7	Alert and inform appropriate Sectors and adjacent ATSU's if deemed appropriate		
8	Limit number of aircraft within name of the ATC unit CTA/CTR if deemed appropriate.		
9	Submit ROSI within 3 hours		

Additional Information Required:

1.	Who reported the Unauthorised Aircraft.	
	➤ Operator/Callsign/ Name	
	➤ Any additional information available (Contact details)	
	➤ Weather data	
2.	Was assistance provided by available police/military aircraft to assess the situation?	
3.	Inform all concerned when normal operations resume.	

[illegible]



SAFETY ALERT 04/2016

Issued: 29th June 2016

SUBJECT:

Contingency measures for unauthorised UAS operation or unknown/unidentified aircraft within controlled airspace.

REFERENCE PUBLICATION:

CAR PART II Chapter 10
CAR Part VIII, Subpart 4
CAR Part VIII, Subpart 10
GM 03 CONTINGENCY PLANNING FOR AIR TRAFFIC SERVICES

CATEGORY:

Attention and Recommendation

REASON:

The purpose of this Safety Alert is to:

- ensure civil aviation regulations are adhered to when unauthorised UAS operation or unknown/unidentified aircraft, either reported or observed, affect aircraft safety in controlled airspace, and
- provide recommendation and guidance on contingency measures to be implemented.

APPLICABILITY:

- UAE Air Traffic Services Units (ATSU)
- Air Traffic Controller Supervisors (SUP)
- Air Traffic Controllers (ATCOs)

DESCRIPTION:

The penetration by a manned or unmanned aircraft into a portion of controlled airspace without prior permission from the air traffic services provider may result in multiple safety, efficiency, environmental and security risk concerns. Such infringements:

- are potentially hazardous to other airspace users;
- may immediately result in a significant increase in ATCO's and Supervisor's workload such as coordination, the need to break-off an approach, change aircraft sequence for landing or implement other contingency measures, etc.;
- may cause an unacceptable cost to industry, incurred through closures of airports and airspace due to numerous delays and diversions; and
- may pose a significant threat to national security since such flights will not be under normal communications and surveillance.



Consequently, the development and implementation of comprehensive contingency measures, which as a minimum are analysed and assessed through collaborative decision-making processes between ATC Management, Supervisors, ATCOs and other relevant personnel, should minimise interference by unknown or unidentified aircraft operations with the normal operations.

Any deviation from GCAA regulatory requirements is considered a violation of UAE Civil Aviation Law and UAE National Civil Aviation Regulation with direct safety and security risk implications.

RECOMMENDATIONS:

Recommendation 1:

ATSUs should review contingency plans to ensure safe and orderly flow of traffic in the event of a disruption of an air traffic control service or a related support service due to airspace penetration by an unauthorised UAS operation or, an unknown or unidentified aircraft. The contingency plan should include the eventuality of closure or restrictions of airspace, airways or aerodromes following the report of such type of infringement.

Recommendation 2:

The ATSU should review current procedures for ATC Supervisors and ATCOs to ensure that they have been provided with adequate instructions, training (including awareness training of the GCAA regulatory requirements for Light Sport Aircraft and UAS Operations as per civil aviation regulations) and guidance for the management of authorised or unauthorised and unknown or unidentified aircraft operations and recognition of any indication of situations of unlawful interference with an aircraft. Such instructions and guidance should ensure that all hazards, risks and mitigations have been assessed appropriately and they may include any safety and security measures involving aerodrome and airspace availability, and appropriate involvement with police, military and other security authorities.

Procedures should ensure that as much information as possible is obtained from any reporting source. The following “aide-memoire” may facilitate the collection of such information:

- a) Ensure that exact position/location of the reported aircraft/UAS is provided;
- b) Was the aircraft/UAS stationary or moving? If moving, could this be best described as fast/slow or is it possible to provide an approximate speed?
- c) If moving, what was the observed direction of flight?
- d) At what altitude was the aircraft/UAS operating? Was it maintaining level flight, or climbing/descending?
- e) Are you able to identify the type?
- f) What size and colour was the aircraft/UAS? Was there any distinctive markings?
- g) What is the location of the UAS operator if observed by the reporting source?
- h) Any other question relevant to the situation at that time.



Recommendation 3:

An unauthorised UAS operation, or an unknown or unidentified aircraft which causes an unsafe situation is considered a serious incident with safety and security implications. ATSUs shall establish and implement a procedure to ensure:

- prompt notification to the GCAA Duty Investigator (Mobile: 050 641 4667); and
- a ROSI is submitted within 3 hours from the time of the occurrence.

Recommendation 4:

As soon as an ATSU becomes aware of an unauthorised UAS operation, or an unknown or unidentified aircraft in its airspace, the ATSU should endeavour to establish the identity of the aircraft whenever this is necessary for the provision of ATS or required by the appropriate military authorities in accordance with locally agreed procedures.

The following steps may assist an ATSU to identify the aircraft:

- a) attempt to establish two-way communication with the aircraft;
- b) inquire of other ATSUs within the FIR about the flight and request their assistance in establishing two-way communication with the aircraft;
- c) inquire of ATSUs serving the adjacent FIRs about the flight and request their assistance in establishing two-way communication with the aircraft;
- d) attempt to obtain information from other aircraft in the area.

Recommendation 5:

ATSUs should immediately inform, in accordance with locally agreed procedures, the appropriate authority including police, military and other security authorities, if an unauthorised UAS operation or an unknown or unidentified aircraft may be the subject of unlawful interference.

Recommendation 6:

ATSUs should apply separation between identified aircraft and unauthorised UAS operations or an unknown or unidentified aircraft observed, and provide avoiding instructions. If the unauthorised or the unknown or unidentified aircraft operations cannot be observed by the ATSU, the ATSU must temporarily create a segregated airspace around the affected area(s) and provide the applicable separation minima to such airspace boundary.

In addition to completing a call-out list, the ATSU should analyse the threat to other aircraft operations using the information available at that point in time. The below list of actions may assist in resolving such situations:

- a) Stop departures;
- b) Airborne aircraft should avoid the affected area;
- c) Attempt to establish two-way radio communication with the unknown or unidentified aircraft, e.g. relevant frequencies and 121.5 MHz;



- d) Notify other ATSUs, police, military and other security authorities and request their assistance in establishing radio contact with the unknown or unidentified aircraft and determining the aircraft's position, altitude, description (type, colour, markings, etc.), route and intentions;
- e) Immediately inform affected ATSUs, police, military and other security authorities, Emirates ACC Supervisor, GCAA Duty Investigator and others as appropriate, if unable to establish radio contact with the unknown or unidentified aircraft and/or if radar identity cannot be established and/or the aircraft is suspected or known to be subject to unlawful interference;
- f) Military and other security authorities may determine that it is required to intercept or shadow unknown/unidentified aircraft (and possibly UAS operations), which would provide a high level of assurance on its position if this event continues for an extended period of time;
- g) Sterilise the airspace surrounding the unknown or unidentified aircraft, with the exception of a military aircraft which is intercepting or shadowing the unknown or unidentified aircraft. Consider the speed/altitude/routing when determining the size of the sterilisation area to be put in place. Increased separation from the sterilisation area should be established;
- h) Cease runway operations if unauthorised UAS operations or an unknown or unidentified aircraft affects the departure climb-out area, final approach for arrivals or other traffic in the vicinity of the aerodrome;
- i) Allow operation of active runways to continue:
 - i. with mitigation and caution after careful analysis of all available information even if the position of the unauthorised UAS operations or an unknown or unidentified aircraft may be deemed sufficiently far from the active runway. Note: ATC may consider changing runway direction; or
 - ii. if information received provides reasonable assurance that the unauthorised UAS operations or an unknown or unidentified aircraft is not a threat to other aircraft;
 - iii. continue monitoring of the situation until information has been received that it has been resolved.
- j) Advise aircraft in the vicinity of the unauthorised UAS operation or an unknown or unidentified aircraft by passing essential traffic information (as appropriate) and instruct aircraft to take avoiding action if necessary;
- k) Request any aircraft having visual contact with the unauthorised UAS operation (this can potentially identify the location of the UAS operator) or an unknown or unidentified aircraft to assist in providing further information to manage the situation;
- l) If deemed appropriate limit the number of aircraft within the area of responsibility, e.g. CTA/CTR. Coordinate alternative procedures as necessary;
- m) Alert aircraft operating in Class G airspace if appropriate.



Recommendation 7:

ATSUs should establish and implement processes and procedures to:

- ensure ATS personnel are trained in the promulgated federal rules prescribing UAS operations in the UAE; and
- instruct ATS personnel to:
 - direct requests for intended UAS operations affecting the ATCU's airspace to the GCAA;
 - deny approval, accept approval, or provide no objection for UAS operations without first obtaining relevant UAS Operational Approval from the GCAA;
 - deny access to ATCU's airspace to any UAS operation unless the individual or organisation operating the UAS holds an approval issued by the GCAA. Regulatory requirements and/or approvals established by other aviation authorities are insufficient; and
 - reference UAS flying zone maps published by GCAA only (refer www.gcaa.gov.ae). The use of any UAS flying zone maps or publications not published by the GCAA is illegal according to Civil Aviation Law Article 20 of the Federal Act 20 of 1991.

CONTACT:

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