



Croatian Civil Aviation Agency

Naredba o zrakoplovnoj sigurnosti

Air Safety Order

Dodatno osposobljavanje osoblja subjekata obuhvaćenih Uredbom Komisije (EU) br. 73/2010. o utvrđivanju zahtjeva o kvaliteti zrakoplovnih podataka i zrakoplovnih informacija za jedinstveno europsko nebo

Naredba o zrakoplovnoj sigurnosti: ASO-2014-002

Broj revizije: 1 / 07.12.2020.

Inicirana od: Hrvatske agencije za civilno zrakoplovstvo (u daljem tekstu: Agencija)

1. Referentni propisi:

- a) Uredba Komisije (EU) br. 73/2010 od 26. siječnja 2010. o utvrđivanju zahtjeva o kvaliteti zrakoplovnih podataka i zrakoplovnih informacija za jedinstveno europsko nebo, kako je zadnje izmijenjena i dopunjena;
- b) ICAO Aneks 15;
- c) Zakon o zračnom prometu (Narodne novine br. 69/09, 84/11, 54/13, 127/13, 92/14);
- d) Pravilnik o aerodromima (Narodne novine br. 100/19);
- e) Zakon o obavljanju geodetske djelatnosti (Narodne novine br. 25/18).

2. Referentne smjernice:

- a) ICAO Doc 8126 Aeronautical Information Services Manual;
- b) EUROCONTROL Specification for the Electronic Aeronautical Information Publication (eAIP);
- c) EUROCONTROL Specification for Data Assurance Levels (DAL);
- d) EUROCONTROL Specification for Data Quality Requirements (DQR);
- e) EUROCONTROL Specification for the Origination of Aeronautical Data (DO);
- f) EUROCONTROL Specification for Aeronautical Information Exchange (AIX);
- g) EUROCONTROL Guidelines - Use of AIXM 5.1 in relation to the AIX Specification;
- h) EUROCONTROL ADQ Guide;
- i) EUROCONTROL Terrain and Obstacle Data Manual.

Additional training of personnel of the entities covered by Commission Regulation (EU) no. 73/2010 laying down requirements on the quality of aeronautical data and aeronautical information for the single European sky

Air Safety Order: ASO-2014-002

Revision No.: 1 / 07.12.2020.

Initiated by: Croatian Civil Aviation Agency (hereinafter: the Agency)

1. Regulation Reference:

- a) Commission Regulation (EU) No 73/2010 of 26 January 2010 laying down requirements on the quality of aeronautical data and aeronautical information for the single European sky, as last amended;
- b) ICAO Annex 15;
- c) Air Traffic Act (Official Gazette No. 69/09, 84/11, 54/13, 127/13, 92/14);
- d) Ordinance on Aerodromes (Official Gazette No. 100/19);
- e) Geodetic Activities Act (Official Gazette No. 25/18).

2. Guidance Material Reference:

- a) ICAO Doc 8126 Aeronautical Information Services Manual;
- b) EUROCONTROL Specification for the Electronic Aeronautical Information Publication (eAIP);
- c) EUROCONTROL Specification for Data Assurance Levels (DAL);
- d) EUROCONTROL Specification for Data Quality Requirements (DQR);
- e) EUROCONTROL Specification for the Origination of Aeronautical Data (DO);
- f) EUROCONTROL Specification for Aeronautical Information Exchange (AIX);
- g) EUROCONTROL Guidelines - Use of AIXM 5.1 in relation to the AIX Specification;
- h) EUROCONTROL ADQ Guide;
- i) EUROCONTROL Terrain and Obstacle Data Manual.



3. Područje primjene

Ova Naredba o zrakoplovnoj sigurnosti primjenjuje se na subjekte iz članka 2 stavak 2. c) Uredbe Komisije (EU) 73/2010.

Polaznici osposobljavanja su ovlaštene inženjeri geodezije (članovi Hrvatske komore ovlaštenih inženjera geodezije) koji stručne geodetske poslove obavljaju samostalno u uredu ovlaštenog inženjera geodezije, u zajedničkom geodetskom uredu ili kao zaposlenici u pravnoj osobi registriranoj za obavljanje stručnih geodetskih poslova (sukladno Zakonu o obavljanju geodetske djelatnosti, Narodne novine br. 25/18). Osobe koje će proći osposobljavanje sukladno nastavnom planu trebati će dokazati razumijevanje te usvajanje znanja iz prezentiranog nastavnog materijala putem pismenog ispita nakon kojeg će u slučaju pozitivnog ishoda biti izdana Svjedodžba (Certificate of Achievement). Rezultati testova polaznika bit će pohranjeni u arhivi Hrvatske agencije za civilno zrakoplovstvo, a evidenciju o ovlaštenim inženjerima geodezije kojima je izdana Svjedodžba (Certificate of Achievement) vodit će Hrvatska komora ovlaštenih inženjera geodezije u suradnji s Hrvatskom agencijom za civilno zrakoplovstvo.

Navedena Svjedodžba bit će jedan od uvjeta za javljanje na buduće natječaje na kojima će se birati ponude za izmjere zrakoplovnih podataka u zrakoplovstvu.

4. Cilj osposobljavanja

4.1 Uvod u osnovni regulatorni okvir civilnog zrakoplovstva (međunarodno, EU i nacionalno zakonodavstvo)

Upoznavanje s važećim propisima i standardima u području pružanja usluga zrakoplovnog informiranja (ICAO Aneks 15, propisi EU i nacionalno zakonodavstvo).

Razumijevanje Uredbe br. 73/2010, s dodatnim pregledom Direktive 2007/2/EC Europskog Parlamenta i Vijeća od 14. ožujka 2007. o uspostavljanju infrastrukture za prostorne informacije u Europskoj zajednici (INSPIRE), kako je zadnje izmijenjena i dopunjena.

4.2 Aerodromi

Upoznavanje s namjenom i fizičkim obilježjima osnovnih infrastrukturnih objekata aerodroma, sustavima instrumentalnog i vizualnog navođenja zrakoplova, oznakama, znakovima i sustavima rasvjete u prilazu aerodroma i na operativnoj površini, te zrakoplovnim podacima u svezi s njima.

Upoznavanje s površinama ograničenja aerodromskih prepreka i drugim ograničenjima i propisima koji se odnose na aerodromske prepreke.

Stvaranje svjesnosti o općem značaju zaštite civilnog zračnog prometa, upoznavanje s općim pravilima i mjerama zaštite civilnog zračnog prometa te poznavanje

3. Scope

This Aviation Safety Order applies to the entities referred to in Article 2, paragraph 2. (c) of Commission Regulation (EU) 73/2010. The participants of the training are chartered geodetic engineer (members of the Croatian Chamber of Chartered Geodetic Engineers), which may independently perform professional geodetic activities acting as a person in charge in the office of a chartered geodetic engineer, joint geodetic office and as an employee in a company registered for performing professional geodetic activities (according to Geodetic Activities Act, OG no. 25/18). Persons who shall undertake training in accordance with the syllabus will need to demonstrate an understanding and acquisition of knowledge from the presented teaching materials through a written exam after which in the case of a positive outcome will be issued a Certificate of Achievement. Results of tests of participants will be stored in the archives of the Croatian Civil Aviation Agency. The records of chartered geodetic engineer who has been issued a Certificate of Achievement will lead the Croatian Chamber of Chartered Geodetic Engineers in cooperation with the Croatian Civil Aviation Agency. Certificate of Achievement will be one of the conditions for application to future tenders for the selection of the data survey offers in aviation.

4. Training course aim

4.1 Introduction to the basic regulatory framework for civil aviation (international, EU and national legislation)

Familiarization with applicable regulations and standards in the field of Aeronautical Information Services (ICAO Annex 15, EU and national legislation).

Understanding Regulation. 73/2010, with an additional review of the Directive 2007/2/EC of the European Parliament and of the Council of 14 March 2007 establishing an Infrastructure for Spatial Information in the European Community (INSPIRE), as last amended.

4.2 Aerodromes

Understanding the purpose and physical characteristics of basic infrastructure facilities at the aerodrome, instrument and visual docking guidance systems, markings, signs and lighting systems in the approach to the aerodrome and on the operational area, and aeronautical information related to them.

Understanding a obstacle limitation surfaces and other restrictions and regulations relating to the aerodrome obstacles.

Creating awareness about the general importance of the civil aviation security, getting to know the general rules and measures of civil aviation security and knowledge of the



pravila i zahtjeva koje moraju poštovati tijekom ulaska, kretanja i rada u pojedinim područjima zračne luke.

4.3 Geodetski podaci u civilnom zrakoplovstvu

Upoznavanje s dokumentima koji sadrže kriterije kvalitete geodetskih podataka posebnih namjena u zrakoplovstvu, a odnose se na rezoluciju, točnost i cjelovitost deklariranih, izmjerenih i/ili izračunanih podataka, na sadržaj geodetskog elaborata, specifikacije izmjera, potrebne certifikate ili izvještaje o ispravnosti za programe i uređaje za izmjeru, način zapisa i izlazni format podataka, standarde kvalitete te izradu metapodataka.

Upoznavanje s vrstama geodetskih podataka posebnih namjena u zrakoplovstvu, s matematičkom i fizičkom ovisnosti mjerenja, s izjednačenjem mjerenja, analizom kvalitete a priori i a posteriori, s položajnim i visinskim koordinatnim sustavima i transformacijama.

Upoznavanje s vrstama zrakoplovnih karata, osnovnim elementima zrakoplovnih karata, vrstama kartografskih projekcija, kontrolom transfera podataka i formatima podataka te normama i preporukama Aneksa 4 ICAO za zrakoplovnu kartografiju.

5. Metode osposobljavanja

Predavanje u učionici korištenjem računala i prezentacija izrađenih u programu MS Office PowerPoint ili putem webinar.

6. Nastavni plan

Broj	SADRŽAJ NASTAVNE CJELINE	Trajanje
1.	<p>Uvod u osnovni regulatorni okvir civilnog zrakoplovstva (međunarodno, EU i nacionalno zakonodavstvo)</p> <p>ORGANIZACIJA MEĐUNARODNOG CIVILNOG ZRAKOPLOVSTVA - ICAO</p> <ul style="list-style-type: none"> • Čikaška Konvencija • ICAO Aneksi • UVOD U PRAVO EU • Zakonodavstvo EU-a - PREGLED • SES Regulatorni okvir • Uredba Komisije (EU) br. 73/2010 <p>NACIONALNO ZAKONODAVSTVO</p> <ul style="list-style-type: none"> • Zakon o zračnom prometu • Air Safety Order (ASO-2020-001) • Zbornik zrakoplovnih informacija - AIP <p>VAŽEĆI ZAKONSKI PROPISI EU - RAZUMIJEVANJE</p> <ul style="list-style-type: none"> • Uredba Komisije (EU) br. 73/2010 • Direktiva 2007/2/EC <p>SAŽETAK</p> <ul style="list-style-type: none"> • Regulatorni okvir • Pitanja i odgovori 	70 min

rules and requirements that must be adhered to during the entry, movement and work in certain aerodrome aeras.

4.3 Geodetic data in civil aviation

Introduction to documents that contain geodetic data quality criteria for special purposes in aviation, in relation to the resolution, accuracy and integrity of declared, measured and/or calculated data, the content of a survey report, survey specifications, the required certificates or statements about the validity of measuring applications and devices, recording method and data output format, quality standards and the creation of metadata.

Understanding the types of geodetic data for special purposes in aviation, with mathematical and physical dependence of measurement, with adjustment of measurements, analysis of the quality a priori and a posteriori, the horizontal and vertical reference system and transformations. Introduction to types of aeronautical charts, the basic elements of aeronautical charts, types of map projections, data transfer control, data formats and Standards and Recommended Practices of the Annex 4 ICAO, Aeronautical Charts.

5. Training methods

Computer-equipped classroom' lectures and presentations produced in MS Office PowerPoint or through a webinar.

6. Training Course Syllabus

No.	TEACHING UNITS CONTENTS	Duration
1.	<p>Introduction to basic regulatory framework of civil aviation (international, EU and national organizations and legislation)</p> <p>INTERNATIONAL CIVIL AVIATION ORGANIZATION - ICAO</p> <ul style="list-style-type: none"> • Chicago Convention • ICAO Annexes • INTRODUCTION TO EU LAW • EU Legislation - Overview • SES Regulatory Framework • Commission Regulation (EU) No.73/2010 <p>NATIONAL LEGISLATION</p> <ul style="list-style-type: none"> • Air Traffic Act • Air Safety Order (ASO-2020-001) • Aeronautical Information Publication - AIP <p>APPLICABLE EU LEGISLATION - COMPREHENSION</p> <ul style="list-style-type: none"> • Commission Regulation (EU) 73/2010 • Directive 2007/2/EC <p>SUMMARY</p> <ul style="list-style-type: none"> • Regulatory Framework • Q&A 	70 min



Broj	SADRŽAJ NASTAVNE CJELINE	Trajanje
2.	Izvođenje letačkih operacija sustavima bespilotnih zrakoplova – regulatorni okvir UVOD: <ul style="list-style-type: none">• Nacionalni propisi vezani uz izvođenje letačkih operacija sustavima bespilotnih zrakoplova (NN 49/17, 77/15, 104/2018) EUROPSKI PROPISI• Delegirana Uredba 2019/945 o sustavima bespilotnih zrakoplova i o operatorima sustava bespilotnih zrakoplova iz trećih zemalja• Provedbena uredba 2019/947 o pravilima i postupcima za rad bespilotnih zrakoplova<ul style="list-style-type: none">- Otvorena kategorija- Posebna kategorija- Certificirana kategorija	45 min
3.	Aerodromi UVOD - POVIJESNI RAZVOJ AERODROMA <ul style="list-style-type: none">• Aerodromi u počecima zrakoplovstva• Sustav zračnog prometa u svjetskoj ekonomiji danas• Temeljna načela u projektiranju aerodroma i najvažniji priručnici za planiranje i izgradnju aerodroma PRAVNI PROPISI RH I EU U SVEZI AERODROMA <ul style="list-style-type: none">• Zakon o zračnom prometu• Pravilnik o aerodromima i Pravilnik o helidromima• Pravilnik o uvjetima kojima mora udovoljavati operator aerodroma za izdavanje i način izdavanja svjedodžbe aerodroma i odobrenja za uporabu aerodroma• Uredba Vijeća (EEZ) br. 3922/91 od 16. prosinca 1991. o usklađivanju tehničkih zahtjeva i upravnih postupaka u području civilnog zrakoplovstva• Uredba (EU) br. 139/2014 i pripadajući EASA dokumenti (Certification Specifications - CS, Acceptable Means of Compliance – AMC, Guidance Material – GM)	90 min

No.	TEACHING UNITS CONTENTS	Duration
2.	Conducting flight operations with unmanned aircraft - regulatory framework INTRODUCTION <ul style="list-style-type: none">• National regulation framework regarding unmanned aircraft flight operations (OG 49/17, 77/15, 104/2018) EUROPEAN REGULATORY FRAMEWORK <ul style="list-style-type: none">• Commission delegated Regulation (EU) 2019/945 on unmanned aircraft systems and on third-country operators of unmanned aircraft systems• Commission implementing Regulation (EU) 2019/947 on the rules and procedures for the operation of unmanned aircraft<ul style="list-style-type: none">- Open category- Specific category- Certified category	45 min
3.	Aerodromes INTRODUCTION - HISTORICAL DEVELOPMENT OF AERODROMES <ul style="list-style-type: none">• Aerodromes in the early development of aviation• The air transport system in the world economy today• The basic principle in designing aerodromes and the most important guides for planning and construction of the aerodromes LEGAL REGULATIONS OF THE REPUBLIC OF CROATIA AND EU REGARDING THE AERODROMES <ul style="list-style-type: none">• Air Traffic Act• Ordinance on aerodromes and Ordinance on helidroms• Ordinance on the conditions to be met by the aerodrome operator for the issue and manner of issuance of the certificate of approval for the aerodrome and the use of aerodrome• Council Regulation (EEC) No 3922/91 of 16 December 1991 on the harmonization of technical requirements and administrative procedures in the field of civil aviation• Regulation (EU) No. 139/2014 and related EASA documents (Certification Specifications - CS, Acceptable Means of Compliance - AMC, Guidance Material - GM)	90 min



Broj	SADRŽAJ NASTAVNE CJELINE	Trajanje
	<p>Aerodromi - nastavak NAJVAŽNIJI INFRASTRUKTURNI OBJEKTI AERODROMA I NJIHOVA FIZIČKA OBILJEŽJA</p> <ul style="list-style-type: none"> • Uzletno-sletna staza, Osnovna staza uzletno-sletne staze, Sigurnosna površina kraja uzletno-sletne staze (RESA) i Čistina • Staza za vožnju i osnovna staza staze za vožnju • Stajanka za zrakoplove i pozicije za parkiranje zrakoplova • Propisi i površine ograničenja aerodromskih prepreka <p>SUSTAVI NAVOĐENJA, OBILJEŽAVANJE OBJEKATA OPERATIVNE POVRŠINE I SUSTAVI RASVJETE</p> <ul style="list-style-type: none"> • Sustav instrumentalnog preciznog prilaza (ILS) • Oznake • Znakovi • Sustavi rasvjete operativne površine i sustavi prilaznih svjetala 	
4.	<p>Zaštita civilnog zračnog prometa na aerodromu</p> <p>PRAVNI PROPISI RH I EU U SVEZI ZAŠTITE CIVILNOG ZRAČNOG PROMETA</p> <ul style="list-style-type: none"> • Zakon o zračnom prometu • UREDBA (EZ) BR. 300/2008 Europskog parlamenta i Vijeća od 11. ožujka 2008. o zajedničkim pravilima u području zaštite civilnog zračnog prometa i stavljanju izvan snage Uredbe (EZ) br. 2320/2002 • PROVEDBENA UREDBA KOMISIJE (EU) 2015/1998 od 5. studenoga 2015. o utvrđivanju detaljnih mjera za provedbu zajedničkih osnovnih standarda iz područja zaštite zračnog prometa <p>UVOD U ZAŠTITU CIVILNOG ZRAČNOG PROMETA</p> <ul style="list-style-type: none"> • Povijesni razvoj zračnog prometa i nezakonitog ometanja • Djela nezakonitog ometanja • ICAO Aneks 17 <p>SUSTAV ZAŠTITE CIVILNOG ZRAKOPLOVSTVA</p> <ul style="list-style-type: none"> • EU i nacionalno zakonodavstvo u području zaštite • Nadležna tijela • Preventivne mjere zaštite civilnog zrakoplovstva 	45 min

No.	TEACHING UNITS CONTENTS	Duration
	<p>Aerodromes - continuation MAIN AERODROME INFRASTRUCTURE FACILITIES AND THEIR PHYSICAL CHARACTERISTICS</p> <ul style="list-style-type: none"> • Runway, Runway strip, Runway end safety area (RESA) and Clearway • Taxiway and Taxiway strip • Apron and aircraft parking positions • Regulations and aerodrome obstacle limitation surfaces <p>GUIDANCE SYSTEMS, MARKING THE FACILITIES OF OPERATING AREA AND LIGHTING SYSTEMS</p> <ul style="list-style-type: none"> • Instrument Landing System (ILS) • Markings • Signs • Operational areas lighting systems and approach lights systems 	
4.	<p>Civil aviation security at aerodromes</p> <p>LEGAL REGULATIONS OF THE REPUBLIC OF CROATIA AND EU REGARDING CIVIL AVIATION SECURITY</p> <ul style="list-style-type: none"> • Air Traffic Act • REGULATION (EC) No 300/2008 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 11 March 2008 on common rules in the field of civil aviation security and repealing Regulation (EC) No 2320/2002 • COMMISSION IMPLEMENTING REGULATION (EU) 2015/1998 of 5 November 2015 laying down detailed measures for the implementation of the common basic standards on aviation security <p>INTRODUCTION TO THE CIVIL AVIATION SECURITY</p> <ul style="list-style-type: none"> • The historical development of air transport and unlawful interference • Acts of unlawful interference • ICAO Annex 17 <p>SYSTEM OF CIVIL AVIATION SECURITY</p> <ul style="list-style-type: none"> • EU and national legislation in the field of civil aviation security • The competent authorities • Preventive measures of civil aviation security 	45 min



Broj	SADRŽAJ NASTAVNE CJELINE	Trajanje
	Zaštita civilnog zračnog prometa na aerodromu - nastavak ZAŠTITA ZRAČNE LUKE <ul style="list-style-type: none">• Granice i područja• SRA i CPSRA• Zaštita perimetra KONTROLA PRISTUPA – OSOBE KOJE NISU PUTNICI I VOZILA <ul style="list-style-type: none">• Cilj, primjena, opravdanost• Odobrenje za pristup• Identifikacijske iskaznice zračne luke• Provjera podobnosti osobe• Praćeni pristup ZAŠTITNI PREGLEDI OSOBA KOJE NISU PUTNICI, STVARI KOJE NOSE I VOZILA <ul style="list-style-type: none">• Metode pregleda• Zabranjeni predmeti• Odobrenje za nošenje zabranjenih predmeta• Izuzeća POSTUPCI U IZVANREDNIM DOGAĐAJIMA <ul style="list-style-type: none">• Planovi i postupci pripravnosti• Prijavlivanje i izvješćivanje	
5.	Izvođenje letačkih operacija sustavima bespilotnih zrakoplova na aerodromima i u njihovoj blizini	45 min
	<ul style="list-style-type: none">• Uvod• Propisi koji reguliraju izvođenje letačkih operacija sustavima bespilotnih zrakoplova• Fizičko područje primjene ograničenja u kontroliranom zračnom prostoru za izvođenje letačkih operacija sustavima bespilotnih zrakoplova• Sudionici u izvođenju geodetskih radova sustavima bespilotnih zrakoplova• Potrebna odobrenja za izvođenje radova sustavom bespilotnog zrakoplova• Procjene sigurnosti zračnog prometa za izvođenje geodetskih radova sustavom bespilotnog zrakoplova• Komunikacija između sudionika pri izvođenju radova sustavom bespilotnog zrakoplova u kontroliranom zračnom prostoru• Neposredno odobrenje nadležne kontrole zračne plovidbe za izvođenje letačkih operacija sustavom bespilotnog zrakoplova u kontroliranom zračnom prostoru• Obaveze pilota sustava bespilotnog zrakoplova u kontroliranom zračnom prostoru u incidentnoj ili prioritarnoj situaciji	

No.	TEACHING UNITS CONTENTS	Duration
	Civil aviation security at aerodromes - continuation AERODROME SECURITY <ul style="list-style-type: none">• Boundaries and areas• SRA & CPSRA• Perimeter protection ACCESS CONTROL - PERSONS OTHER THAN PASSENGERS AND VEHICLES <ul style="list-style-type: none">• The aim, application, justification• Approval for access• Aerodrome IDs• Person's background check• Accompanied access SCREENING OF PERSONS OTHER THAN PASSENGERS AND ITEMS CARRIED AND VEHICLES <ul style="list-style-type: none">• Methods of screening• Prohibited items• Approval for carrying of prohibited items• Exemptions PROCEDURES IN EXCEPTIONAL EVENTS <ul style="list-style-type: none">• Contingency plans and procedures• Reporting	
5.	Conducting flight operations with unmanned aircraft systems at airports and in their vicinity	45 min
	<ul style="list-style-type: none">• Introduction• Regulations governing the conduct of flight operations by unmanned aircraft systems• The area of controlled airspace with restrictions for the conduct of flight operations by unmanned aircraft systems• Participants in the performance of geodetic works by unmanned aircraft systems• Necessary approvals for the conduct of operations with unmanned aircraft systems• Air traffic safety risk assessments for the performance of geodetic works with unmanned aircraft systems• Communication between participants during the conduct of operations with unmanned aircraft systems in controlled airspace• Direct approval of the competent air traffic control for performing flight operations with unmanned aircraft systems in controlled airspace• Remote pilot obligations in controlled airspace in case of an incident or priority situation	



Broj	SADRŽAJ NASTAVNE CJELINE	Trajanje
6.	<p>Geodetski podaci u civilnom zrakoplovstvu PREGLED REFERENTNIH PROPISA i SMJERNICA</p> <ul style="list-style-type: none">• Uredbe (EU) br. 73/2010 i 1029/2014, 373/2017 i 469/2020• Zakon o zračnom prometu (NN br. 69/09, 84/11,54/13,127/13)• Pravilnik o aerodromima (NN br. 100/2019) i EU Uredbe139/2014+2018/401, 2020/469• ICAO Annex 4, 5, 14, 15, PANS AIM Doc 10066• Doc 8697-AN/889/2 ICAO - Aeronautical Chart Manual• Doc 9674-AN/946 ICAO-World Geodetic System -1984 Manual• Eurocontrol DAL Specifikacije za nastanak zrakoplovnih podataka• Eurocontrol Priručnik o terenu i preprekama• Harmonizirana lista (Eurocontrol i RH)• NIPP• ISO norme• Pravilnik o mjernim jedinicama koje se koriste u zrakoplovnim operacijama u zraku i na tlu <p>Vrste zrakoplovnih podataka iz izmjera</p> <p>POLOŽAJNI I VISINSKI SUSTAVI</p> <ul style="list-style-type: none">• Službeni položajni i visinski sustavi u RH – usporedba s traženim prema ICAO Aneksu 15• Transformacije• Točnost podataka• Jedinice mjerenja• Specifikacije mjerenja• Metode mjerenja• Atributi• Rezolucija i integritet podataka• Natječaj za izmjeru <p>SADRŽAJ GEODETSKOG ELABORATA</p> <ul style="list-style-type: none">• Osnovne postavke i podaci• Tehnički opis• Specifikacija i certifikati korištene opreme i uređaja• Izjednačenja• Zapisnici mjerenja i izvješća• Ocjena točnosti mjerenja• CRC• Formati i zaštita podataka• Kontrola kvalitete• Definitivno izvješće• Metapodaci• Zahtjevi za alate i softvere• Validacija i verifikacija	315 min

No.	TEACHING UNITS CONTENTS	Duration
6.	<p>Geodetic data in civil aviation REVIEW OF STANDARDS AND REGULATIONS</p> <ul style="list-style-type: none">• Commission Regulation (EU) 73/2010 and 1029/2014, 373/2017 and 469/2020• Air Transport Act (OG 69/09,84/11, 54/13, 127/13)• Ordinance on aerodromes (OG No. 100/2019) and EU Regulation 139/2014 + 2018/401, 2020/469• ICAO Annex 4, 5, 14, 15, PANS AIM Doc 10066• Doc 8697-AN / 889/2 ICAO - Aeronautical Chart Manual• Doc 9674-AN / 946 ICAO-World Geodetic System -1984 Manual• Eurocontrol Specification for Data Assurance Levels (DAL)• Eurocontrol Handbook on terrain and obstacles• Harmonised list (Eurocontrol & Croatian)• The National spatial data infrastructure act• ISO standards• Ordinance on units that are used in aviation operations in the air and on the ground operations• Types of aeronautical data from surveys <p>HORIZONTAL AND VERTICAL REFERENCE SYSTEMS</p> <ul style="list-style-type: none">• Official Horizontal and Vertical Reference Systems in Croatia - comparison with required by ICAO Annex 15• Transformations• Data accuracy• Units of measurement• Specifications of measuring• Methods of measurement• Attributes• Resolution and data integrity• Tender for survey <p>CONTENT OF THE SURVEY REPORT</p> <ul style="list-style-type: none">• Basic settings and data• Technical description• Specifications and Certificates of used equipment and devices• Adjustment computation• Records of measurements• Assessment of measurement accuracy• CRC• Data format and data protection• Quality control• Definitive report• Metadata• Tool and software requirements• Validation and verification	315 min



Broj	SADRŽAJ NASTAVNE CJELINE	Trajanje
	<p>Geodetski podaci u civilnom zrakoplovstvu - nastavak GEODETSKI PODACI I GEODETSKA MJERENJA POSEBNIH NAMJENA VRSTE GEODETSKIH MJERNIH VELIČINA I METODE MJERENJA</p> <ul style="list-style-type: none"> • (primjena u zrakoplovstvu) <p>KVALITETA GEODETSKIH MJERENJA Osnovni pojmovi i definicije za iskazivanje kvalitete geodetskih mjerenja – točnost, preciznost, pouzdanost, mjerna nesigurnost (izvor: Upute za iskazivanje mjerne nesigurnosti (1995), Međunarodni rječnik osnovnih i općih naziva u metrologiji (1996)</p> <p>OBRADA GEODETSKIH PODATAKA</p> <ul style="list-style-type: none"> • Analiza točnosti mjernih veličina <i>a priori</i> • Prethodna obrada podataka (prije izjednačenja) – korekcije i redukcije • Glavna obrada podataka – izjednačenje i ocjena kvalitete dobivenih rezultata (analiza točnosti <i>a posteriori</i> – nakon izjednačenja) • Naknadna analiza podataka (statističko testiranje rezultata izjednačenja) • Novi standardi za iskazivanje geoprostorne položajne točnosti (HRN EN ISO 19113:2005) propisani u Pravilniku o načinu izvođenja osnovnih geodetskih radova (DGU) <p>VRSTE ZRAKOPLOVNIH KARATA</p> <ul style="list-style-type: none"> • Aerodrome Chart, • Aerodrome Parking/Docking Chart • Aerodrome Obstacle Chart Type A-ICAO • Precision Approach Terrain Chart ICAO • Aerodrome • Aerodrome Terrain and Obstacle Chart – ICAO (Electronic) • Osnovni elementi zrakoplovnih karata (znakovi, boje, prikaz reljefa) <p>NAČINI PRIKUPLJANJA PODATAKA i OBVEZNI SADRŽAJ ZRAKOPLOVNIH KARATA</p> <ul style="list-style-type: none"> • Način prikupljanja i metode izmjere podataka za karte • Prikupljanje podataka i obvezni sadržaj za izradu Aerodrome Chart ICAO, Aircraft Parking /Docking Chart ICAO, Aerodrome obstacle Chart Type A i B • Prikupljanje podataka za izradu electronic Aerodrome Terrain and Obstacle Chart-ICAO <p>KARTOGRAFSKI ZNAKOVI I KRATICE NA ZRAKOPLOVNIM KARTAMA</p> <ul style="list-style-type: none"> • Obvezni kartografski znakovi • Kratice na zrakoplovnim kartama 	

No.	TEACHING UNITS CONTENTS	Duration
	<p>Geodetic data in civil aviation - continuation SURVEYING DATA AND MEASUREMENTS OF SPECIAL PURPOSE</p> <p>TYPES OF SURVEY MEASUREMENT SIZE AND METHODS OF MEASUREMENT</p> <ul style="list-style-type: none"> • (application in aviation) <p>QUALITY SURVEYING Basic concepts and definitions for indicating the quality of geodetic measurements - accuracy, precision, reliability, uncertainty (source: Guide to the expression of uncertainty in measurement (1995), International Vocabulary of Basic and General Terms in Metrology (1996)</p> <p>SURVEY DATA PROCESSING</p> <ul style="list-style-type: none"> • Analysis of the accuracy of measuring sizes <i>a priori</i> • Data pretreatment (prior to adjustment) - correction and reduction • The main data processing - equalization and assessment of the quality of the results (<i>a posteriori</i> analysis of accuracy - after adjustment) • Subsequent data analysis (statistical testing results of adjustment) • New standards for expressing geospatial positional accuracy (ISO 19113:2005) prescribed in the Regulations on Basic Geodetic Works (SGA) <p>TYPES OF AERONAUTICAL CHARTS</p> <ul style="list-style-type: none"> • Aerodrome Chart, • Aerodrome Parking/Docking Chart • Aerodrome Obstacle Chart Type A-ICAO • Precision Approach Terrain Chart ICAO • Aerodrome Terrain and Obstacle Chart – ICAO (Electronic) • The basic elements of aeronautical charts (chart symbols, colors, display of the terrain) <p>DATA COLLECTING METHODS AND THE MANDATORY CONTENT OF AERONAUTICAL CHARTS</p> <ul style="list-style-type: none"> • Method of data collection and measurement methods for maps • Data collection and mandatory content for creating Aerodrome Chart ICAO Aircraft Parking / Docking Chart ICAO Aerodrome obstacle Chart Type A and B • Data collecting for creating electronic Aerodrome Terrain and Obstacle Chart-ICAO <p>CARTOGRAPHIC SYMBOLS AND ABBREVIATIONS ON AERONAUTICAL CHARTS</p> <ul style="list-style-type: none"> • Mandatory chart symbols • Abbreviations on aeronautical charts 	



Croatian Civil Aviation Agency

Naredba o zrakoplovnoj sigurnosti

Air Safety Order

Broj	SADRŽAJ NASTAVNE CJELINE	Trajanje
	<p>Geodetski podaci u civilnom zrakoplovstvu - nastavak</p> <p>KARTOGRAFSKE PROJEKCIJE U ZRAKOPLOVNOJ KARTOGRAFIJI</p> <ul style="list-style-type: none">• Lambertova konformna konusna projekcija• Transverse Mercatorova projekcija <p>ZRAKOPLOVNE PREPREKE</p> <ul style="list-style-type: none">• O zrakoplovnim preprekama• Područja prikupljanja pod. o preprekama• Točnost podataka o terenu i preprekama• Atributi• Izmjera prepreka• Metode izmjere prepreka• Položajni visinski sustav• Kontrola kvalitete i metapodaci• GIS baze podataka o terenu i preprekama• Status implementacije eTOD• Referentni dokumenti	

No.	TEACHING UNITS CONTENTS	Duration
	<p>Geodetic data in civil aviation - continuation</p> <p>CARTOGRAPHIC PROJECTION IN THE AERONAUTICAL CARTOGRAPHY</p> <ul style="list-style-type: none">• Lambert Conformal Conic projection• Transverse Mercator projection <p>AERONAUTICAL OBSTACLES</p> <ul style="list-style-type: none">• About aeronautical obstacles• Areas of obstacles data collection• Accuracy of terrain and obstacle data• Attributes• Obstacle measurement• Obstacle measurement methods• Horizontal and vertical systems• Quality control and metadata• GIS database of terrain and obstacles• Status of eTOD implementation• Reference documents	

7. Organizacija osposobljavanja

Osposobljavanje će za sve polaznike biti besplatno, a održavat će se po potrebi.

Pojedinosti provođenja postupka osposobljavanja uredit će se između Hrvatske agencije za civilno zrakoplovstvo i Hrvatske komore ovlaštenih inženjera geodezije.

Termini i mjesto održavanja osposobljavanja bit će objavljeni na web stranici Hrvatske agencije za civilno zrakoplovstvo (www.ccaa.hr), kao i na web stranici Hrvatske komore ovlaštenih inženjera geodezije (www.hkoig.hr).

8. Stupanje na snagu

Ona Naredba o zrakoplovnoj sigurnosti stupa na snagu s danom objave na web stranici Hrvatske agencije za civilno zrakoplovstvo.

Za Hrvatsku agenciju za civilno zrakoplovstvo:

Marin Puh, dipl.ing.
Direktor

7. Organisation of training

Training for all attendants will be free of charge and will be held as needed.

Details of the procedure for training shall be determined between the Croatian Civil Aviation Agency and the Croatian Chamber of Chartered Geodetic Engineers.

Training dates and place will be published on the website of Croatian Civil Aviation Agency (www.ccaa.hr), as well as on the website of the Croatian Chamber of Chartered Geodetic Engineers (www.hkoig.hr).

8. Entry into force

This Air Safety Order shall become effective upon publication on the website of the Croatian Civil Aviation Agency.

For Croatian Civil Aviation Agency:

Marin Puh, dipl.ing.
Director