Primjena radio-telefonske komunikacije u školovanju kontrolora zračnog prometa

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PRIMJENA RTF U ŠKOLOVANJU KONTROLORA ZRAČNOG PROMETA

USAGE OF RTF IN THE TRAINING OF AIR TRAFFIC CONTROLLERS

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Sažetak

U završnom radu analizirana je frazeologija korištena prilikom školovanja studenata Fakulteta prometnih znanosti, smjer Aeronautika, modul Kontrola leta na kolegijima Aerodromski simulator i Prilazni simulator. Analiza je provedena transkribiranjem svih transmisija, a zatim uspoređivanjem izgovorenog sa standardnom frazeologijom propisanom u ICAO dokumentu *Language Requirements*, odnosno u AIC-u A04/2015 kao Postupci za obavljanje govorne komunikacije. Navedeni su i propisi na kojima je temeljena korištena frazeologija koju su studenti savladali kroz kolegije Radio-telefonska komunikacija 1, Radio-telefonska komunikacija 2 i Radio-telefonska komunikacija 3.

Ključne riječi: Radio-telefonska frazeologija; Školovanje kontrolora leta; Analiza frazeologije.

Summary

In the final paper, the phraseology used during the training of air traffic controllers at subjects Tower control simulator and Approach control simulator has been analysed, recorded at the Department of Aeronautics (Air Traffc Control Module) of the Faculty of Transport and Traffic Sciences,. The analysis has been conducted by transcribing the transmissions, then comparing the said with the standard phraseology provided in the ICAO Language Requirements and AIC A04/2015 Voice communication procedures. The regulations that are the basis for phraseology used by the students are also listed. The students have trained the used phraseology through subjects Radio-telephony phraseology 1, Radio-telephony phraseology 2 and Radio telephony phraseology 3.

Keywords: Radio-telephone phraseology; Air Traffic Control Training; Phraseology analisys.

Sadržaj

1. Uvod

Komunikacija je svuda oko nas. To je vještina koju nesvjesno savladavamo kroz cijeli život. Trebamo ju i moramo sustavno učiti, da bi ono što izgovorimo bilo što jasnije našem sugovorniku, da bi okolini prenijeli željenu poruku na ispravan način i kako bi ostali razumjeli kontekst i bit naše poruke. Dakako, cilj nam je poruku prenijeti sa što manje riječi, pa koristimo i neverbalnu komunikaciju. Ali, što kada nam neverbalna komunikacija u datom trenutku nije od pomoći, kada sugovornika ne vidimo i ono što želimo reći, moramo prenijeti govorom? U toj situaciji povjerenje je ključno. Zbog nedostatka vizualnog, vrlo je važno steći povjerenje u točnost informacije.

Zato zrakoplovstvo koristi jedan jezik i sustav pravila kako bi se poruka standardizirala, tako da jedna poruka ne bude dvosmislena i označava točno zadan pojam i naredbu. Temeljem članka 104. Zakona o zračnom prometu („NN“ br.69/09, 84/11, 54/13, 127/13 i 92/14) Hrvatska kontrola zračne plovidbe d.o.o. predlaže, a Hrvatska agencija za civilno zrakoplovstvo utvrđuje Postupke za obavljanje govorne komunikacije (Radio-komunikacije u pokretnoj zrakoplovnoj vezi. Svrha ICAO frazeologije je pružanje učinkovite, jasne, sažete i jednoznačne komunikacije, ali i osiguravanje ujednačenosti radio-telefonske komunikacije.

U ovom radu analizirana je frazeologija koju studenti Fakulteta prometnih znanosti, smier Aeronautika, modul kontrola leta, koriste na školovanju, odnosno na simulatorima, točnije aerodromskom i prilaznom simulator, a zatim je ista uspoređena sa propisanim postupcima.

Završni rad podijeljen je u 6 cjelina i to:

1. Uvod
2. Važeći hrvatski propisi o korištenju radio-telefonske komunikacije
3. Važnost primjene RTF u školovanju kontrolora na BEST simulatoru
4. Snimanje korištene frazeologije na BEST simulatoru
5. Analiza vrsti pogrešaka
6. Zaključak

U drugom poglavlju navedeni su važeći hrvatski propisi objavljeni u AIC dokumentu. Dani su primjeri uporabe standardne frazeologije objavljene u navedenom dokumentu.

U trećem poglavlju objašnjena je važnost primjene standardne frazeologije, odnosno zašto je važno da studenti usvoje važeća pravila. Navedeni su i pobliže pojašnjeni predmeti na kojima studenti uče o frazeologiji i radio-telefonskoj komunikaciji.

U četvrtom poglavlju navedeno je kako se odvijalo snimanje materijala korištenih u ovom završnom radu i u kojem periodu, kao i koga se snimalo.

U petom je poglavlju detaljno analizirana frazeologija dobivena iz audio materijala, te je uspoređena sa standardnom frazeologijom i propisanim pravilima. Navedene su greške koje su studenti radili te u postotcima dani rezultati usporedbi.

2. Važeći hrvatski propisi o korištenju radio-telefonske komunikacije.

Zračni promet u Republici Hrvatskoj uređen je Zakonom o zračnom prometu («Narodne novine» broj 69/09., 84/11., 54/13., 127/13. i 92/14), Zakonom o obveznim i stvarnopravnim odnosima u zračnom prometu («Narodne novine» broj 132/98, 63/08, 134/09 i 94/13), Zakonom o zračnim lukama («Narodne novine» broj 19/98., 14/11. i 78/15.), Zakonom o osnutku Hrvatske kontrole zračne plovidbe («Narodne novine» broj 19/98., 20/00. i 51/13.) i podzakonskim propisima te međunarodnim ugovorima kojih je Republike Hrvatska potpisnica.

Zakon o zračnom prometu, kao temeljni zakon koji uređuje pitanja zračnog prometa sadrži odredbe o uređenju zračnog prometa u zračnom prostoru Republike Hrvatske i nadležnostima u tom prostoru, uvjetima za sigurno odvijanje zračnog prometa, zračnom prijevozu i drugim djelatnostima u zračnom prometu, upisu u Hrvatski registar civilnih zrakoplova, državnoj pripadnosti i registracijskim oznakama zrakoplova, uvjetima za sigurnu uporabu zrakoplova i zrakoplovnih uređaja, aerodroma, uvjetima kojima mora udovoljavati zrakoplovno kao i drugo stručno osoblje, pružanju usluga u zračnoj plovidbi, istraživanju ugrožavanja sigurnosti zrakoplova i nesreća zrakoplova, potrazi i spašavanju zrakoplova, zaštiti zračnog prometa, mjerama zaštite okoliša i zaštite stanovništva od buke zrakoplova, inspekcijskom nadzoru, nadležnostima Ministarstva i drugih tijela, ministara i njihovim ovlastima, te o prekršajima u zračnom prometu.

Republika Hrvatska je od 9. svibnja 1992., na temelju pristupa (akcesije), stranka Konvencije o međunarodnom civilnom zrakoplovstvu, odnosno članica Organizacije međunarodnog civilnog zrakoplovstva (ICAO) koja je osnovana istom Konvencijom u svrhu razvijanja načela, tehnologije te poticanja i razvoja međunarodnoga zračnog prometa.

Republika Hrvatska je i članica Europske konferencije civilnog zrakoplovstva (European Civil Aviation Conference – ECAC) od 02.07.1992.godine i Europske

organizacije za sigurnost zračne plovidbe (European Organization for the Safety of Air Navigation – EUROCONTROL) od 01.04.1997.godine.[1]

Hrvatska kontrola zračne plovidbe d.o.o. suklano članku 104. Zakona o zračnom prometu predložila je objavu Postupaka za obavljanje govorne komunikacije, a Uprava zračnog prometa Ministarstva mora, prometa i infrastrukture je odobrila i utvrdila objavu Postupaka za obavljanje govorne komunikacije (Radio-komunikacija u pokretnoj zrakoplovnoj vezi) u AIC-u A04/2015. Dokument se koristi kao referentni materijal za stjecanje Dozvole za obavljanje radio-telefonske komunikacije. Glavni izvori od kojih je dokument sastavljen su ICAO dokumenti, priručnici i aneksi. Dokument 4444 - PANS - ATM, Aneks 10 - Knjiga 2, Zrakoplovne telekomunikacije i Dokument 9432 - Priručnik radio-telefonije su ICAO dokumenti korišteni kao izvori u kreiranju frazeologije u pokretnoj zrakoplovnoj vezi. Razlike u odnosu na ICAO standarde i preporuke su nastale korištenjem dodatnih priručnika i propisa o radio-telefoniji. [2]

2.1. Postupci za obavljanje govorne komunikacije

Svrha ICAO frazeologije je pružanje učinkovite, jasne, sažete i jednoznačne komunikacije. Važnost pravilne uporabe standardne frazeologije ne može se dovoljno naglasiti.

Svrha frazeologije je osiguravanje ujednačenosti radio-telefonske komunikacije, međutim, nije moguće propisati frazeologiju za svaku sitauciju i zato primjeri frazeologije koji su propisani nisu konačni. Postupke na odgovarajući način koriste hrvatski i inozemni zrakoplovi koji se koriste kako u vojne tako i policijske i carinske svrhe kada izvode letačke operacije po postupcima i pravilima za opći zračni promet (GAT) unutar zračnog područja Republike Hrvatske i zračnog prostora koji je

[1] http://www.mvep.hr/CustomPages/Static/HRV/Files/clanstvo_reg_karakter.pdf (Kolovoz 2016.)
[2] Republika Hrvatska, Hrvatska kontrola zračne plovidbe d.o.o., Odjel zrakoplovnog informiranja - AIS, AIC A004/02015, Postupci za obavljanje govorne komunikacije, Zagreb, 2015., str.1-9.

međunarodnim ugovorom dodijeljen u nadležnost Republici Hrvatskoj (Područje letnih informacija Zagreb).[3]

Potrebna jezična znanja i vještine definirani su u ICAO Aneksu 10, drugi dio i u Aneksu 1 – Personnel Licensing. Tijekom letenja komunikacija se mora obavljati na engleskom jeziku, no u slučajevima kada se zrakoplov nalazi u nuždi komunikacija se može odvijati na engleskom ili hrvatskom jeziku pod uvjetom da svi sudionici komunikacijskog procesa imaju dovoljnu razinu jezične sposobnosti za komunikaciju na jednom od ovih jezika, a uporaba muškog roda odnosi se na muški i na ženski rod.

Standardna ICAO frazeologija mora se koristiti u svim situacijama za koje je definirana, a niže navedenim tehnikama osigurava se jasna predaja i prijem izgovorenog sadržaja:

- prije govorenja na frekvenciji potrebno je slušati frekvenciju i uvjeriti se da neće doći do interferencije s nekom drugom postajom,
- potrebno se informirati o tehnikama ispravnog govorenja na mikrofonu,
- koristiti normalan konverzacijski ton, govoriti jasno i razgovijetno,
- govoriti ravnomjernom brzinom govora ne izgovarajući više od 100 riječi u minuti. Kada se zna da primatelj mora zapisati dijelove poruke potrebno je govoriti polaganije,
- govoriti ujednačenom jačinom govora,
- prije ili nakon izgovora brojeva potrebno je kratko zastati – radi lakšeg razumijevanja,
- izbjegavati zastajkivanje u govoru kao npr. korištenje uzvika 'm-m-m',
- prestati govoriti ako se mora okrenuti glavu od mikrofona,
- tipku je potrebno pritisnuti do kraja prije nego što se počne govoriti i ne otpuštati ju sve dok se do kraja ne izgovori poruka. Na taj se način osigurava cjelovito prenošenje poruke,

[3] http://www.ccaa.hr/hrvatski/novosti_7/objavljen-aic-a-004-2015-postupci-za-obavljanje-govorne-komunikacije-radiokomunikacija-u-pokretnoj-zrakoplovnoj-vezi-_683/ (Rujan 2016.)

- prilikom prenošenja dugačkih poruka napraviti povremene stanke za vrijeme kojih pošiljatelj može potvrditi jasnoću frekvencije, a primatelj zatražiti ponavljanje dijelova poruke ako je to potrebno.

2.2. Vrste poruka

Vrste poruka koje se šalju putem pokretne veze i slijed prednosti pri uspostavi komunikacije i predaje poruka navedene su u Tablici broj 1.[4] Redoslijed navedenih poruka predstavlja ujedno i redoslijed njihovog prioriteta.

Tablica 1/Table 1: Vrste poruka/Categories of messages

Vrsta poruke i slijed prednosti signala u radiotelefonskoj komunikaciji *Message category and radiotelephony order of priority signal*	Radiotelefonski signal *Radiotelephony signal*
Poziv u nevolji, poruke nevolje i promet u nevolji *Distress calls, distress messages and distress traffic*	MAYDAY
Poruke hitnosti, uključujući poruke kojima prethodi signal medicinskog prijevoza *Urgency messages, including messages preceded by the medical transports signal*	PAN PAN or PAN PAN MEDICAL
Poruke o radiogoniometarskom smjeru *Communications relating to direction finding*	---
Poruke o sigurnosti leta *Flight safety messages*	---
Meteorološke poruke *Meteorological messages*	---
Letačko operativne poruke *Flight regularity messages*	---
Državni telegram *State telegrams*	---

Izvor: AIC A004/2015 Postupci za obavljanje govorne komunikacije - voice Communication Procedures, str. 11.

[4] Republika Hrvatska, Hrvatska kontrola zračne plovidbe d.o.o., Odjel zrakoplovnog informiranja - AIS, AIC A004/02015, Postupci za obavljanje govorne komunikacije, Zagreb, 2015., str.11.

Kako i sam naziv govori, pozivi i poruke nevolje odnose se na zrakoplov i putnike koji se nalaze u ozbiljnoj i neposrednoj opasnosti koja zahtjeva neodložno pružanje pomoći.

Poruke hitnosti odnose se na sigurnost zrakoplova, plovila ili bilo kojeg drugog vozila ili osobe.

Poruke o radiogoniometarskom smjeru odnose se na predaju goniometarskih vrijednosti.

Poruke o sigurnosti leta su:

- poruke vezane za distribuciju plana leta i poruke kontrole zračnog prometa,
- poruke koje šalje operator zrakoplova ili pilot koje su od neposrednog interesa za zrakoplov u letu,
- meteorološke poruke od neposrednog značaja za zrakoplov koji je već u letu ili se sprema uzletjeti (individualne poruke ili poruke koje se emitiraju neodređenom primatelju),
- ostale poruke koje se odnose na zrakoplov u letu ili koji se sprema uzletjeti.

Poruke koje se odnose na predaju vremenskih podataka su meteorološke poruke.

Letačko operativne poruke su:

- poruke koje se odnose na promjene u operativnom redu letenja,
- poruke koje se odnose na opsluživanje zrakoplova,
- poruke predstavnika operatora zrakoplova koje se odnose na promjene u zahtjevima za putnike i posadu, a koje nastaju kao posljedica neizbježnih odstupanja od uobičajenih operativnih redova letenja. Individualni zahtjevi putnika i posade nisu dopušteni.
- poruke koje se odnose na nestandardna slijetanja,
- poruke koje se odnose na žurno potreban materijal i dijelove zrakoplova,

- poruke koje se odnose na rad ili održavanje službi neophodnih za sigurnost ili letačku operativnost zrakoplova.

Letačko operativne poruke i državni telegrami se predaju na frekvencijama Službe letnih informacija (FIS) ili na drugim frekvencijama koje odredi nadležna kontrola zračnog prometa, a sve u cilju izbjegavanja ometanja rada kontrole zračnog prometa.[5]

[5] Republika Hrvatska, Hrvatska kontrola zračne plovidbe d.o.o., Odjel zrakoplovnog informiranja - AIS, AIC A004/02015, Postupci za obavljanje govorne komunikacije, Zagreb, 2015., str. 12.

2.3. Predaja i sricanje slova u radiofelefoniji

Normirane ICAO kratice koje su dio poruka upućenih radiopostajama u zrakoplovstvu, obično se koriste kao cjelovite rječi ili fraze koje te kratice predstavljaju u korištenom jeziku, osim kada se radi o kraticama koje su zbog frekvencije uporabe i uobičajene prakse poznate zrakoplovnom osoblju.

Procedure u radio-komunikacijama temelje se na procedurama NATO-a. Tablica broj 2. prikazuje izgovor ICAO abecede.

Tablica 2/Table 2: Tablica izgovora ICAO abecede/Radiotelephony spelling alphabet

Slovo *Letter*	Riječ *Word*	Izgovor *Pronunciation*	Hrvatski *Croatian*
A	Alpha	[ˈʌlfʌ]	AL FA
B	Bravo	[ˈbravou]	BRA VO
C	Charlie	[ˈʧa:li]	ČAR LI
D	Delta	[ˈdeltə]	DEL TA
E	Echo	[ˈekou]	EK O
F	Foxtrot	[ˈfɔkstrɔt]	FOKS TROT
G	Golf	[ˈgɔlf]	GOLF
H	Hotel	[hou'tel]	HO TEL
I	India	[ˈindiə]	IN DIJA
J	Juliett	[ˈdʒu:liət]	DŽU LI JET
K	Kilo	[ˈkilou]	KI LO
L	Lima	[ˈlimə]	LI MA
M	Mike	[ˈmaik]	MAJK N
N	November	[nou'vembə]	NO VEM BE
O	Oscar	[ˈɔskə]	OS KA
P	Papa	[pʌpa:]	PA PA
Q	Quebec	[kwi'bek]	KVI BEK
R	Romeo	[ˈroumiou]	RO MIO
S	Sierra	[ˈsi:erə]	SIJE RA
T	Tango	[ˈtæ ngou]	TEN GO
U	Uniform	[ˈju:nifɔ:m]	JUNI FOM
V	Victor	[ˈviktə]	VIK TOR
W	Whiskey	[ˈwiski]	VIS KI
X	X-ray	[ˈeksrei]	EKS REJ
Y	Yankee	[ˈj æ nki]	JEN KI
Z	Zulu	[ˈzulu]	ZULU

Izvor: AIC A004/2015 Postupci za obavljanje govorne komunikacije - Voice Communication Procedures, str. 13.

2.4. Predaja brojeva

Brojevi se uobičajeno šalju brojka po brojka, a prethodi im proceduralni izraz FIGURES (prelazim na brojeve).

Tablica 3/Table 3: Predaja brojeva/Transmission of numbers

Hrvatski/*Croatian*	Brojke ili znakovi/*Numeral or numeral element*	Engleski/*English*
NU LA	0	ZE RO
JE DAN	1	WUN
DVA	2	TOO
TRI 3	3	TREE
ČE TIRI	4	FOW-er
PET	5	FIFE
ŠEST	6	SIX
SE DAM	7	SEV-en
O SAM	8	AIT
DE VET 9	9	NIN-er
STO	100	HUN-DRED
TI SU ĆA	1000	TOU-SAND
TOČKA	-	POINT DAY-SEE-MAL

Izvor: AIC A004/2015 Postupci za obavljanje govorne komunikacije - voice Communication Procedures, str. 14.

PRIMJER / EXAMPLE:

Numeral element	*Transmitted as*
Ma 0.72	Mach point seven two
8.33	eight point tree tree
11.5NM	distance one one point five miles
135.050	one three five decimal zero five zero

Svi brojevi predaju se tako da se izgovara svaka znamenka posebno, a brojevi koji se odnose na apsolutnu visinu, bazu oblaka, vidljivost i vidljivost duž staze, koji sadrže cijele stotice i cijele tisućice izgovaraju se tako da se izgovara svaka znamenka u stotici ili tisućici te se iza broja izgovori riječ STO ili TISUĆA.

Tablica 4/Table 4: Primjeri predaje brojeva/Examples of transmission of numbers

aircraft call signs / pozivni znak zrakoplova	*transmitted as* / predaje se
CCA 238 OAL 242	Air China two three eight Olympic two four two
flight levels / razina leta	*transmitted as*
FL 180 FL 200	flight level one eight zero flight level two hundred
headings / smjer	*transmitted as*
100 degrees 080 degrees	heading one zero zero heading zero eight zero
wind direction and speed / smjer i brzina vjetra	*transmitted as*
200 degrees 70 knots 160 degrees 18 knots gusting 30 knots	wind two zero zero degrees seven zero knots wind one six zero degrees one eight knots gusting three zero knots
transponder codes / transponder	*transmitted as*
2000 4200	squawk two thousand squawk four two zero zero
runway / uzletno sletna staza	*transmitted as*
27 30	runway two seven runway three zero
altimeter setting / postavke visinomjera	*transmitted as*
1 000 1100	QNH one thousand QNH one one zero zero
altitude / visina leta	*transmitted as*
800 3 400 12 000	eight hundred three thousand four hundred one two thousand
cloud height / visina podnice oblaka	*transmitted as*
2 200 4 300	two thousand two hundred four thousand three hundred
visibility / vidljivost	*transmitted as*
1 000 700 750	visibility one thousand visibility seven hundred visibility seven five zero
runway visual range/ vidljivost uzduž staze	*transmitted as*
600 1 700	RVR six hundred RVR one thousand seven hundred

Izvor: AIC A004/2015 Postupci za obavljanje govorne komunikacije - voice Communication Procedures, str. 15-16.

Izuzeci od pravila prilikom predaje brojeva su:

a) pozicija zrakoplova – prema smjeru kazaljki na satu kod predaje informacija o poziciji prometa izgovara se kao „*zrakoplov na deset/ jedanaest/ dvanaest sati“,*

b) upute za zaokret od 360° izgovaraju se „*Napravite jedan tristošezdeset u desno/lijevo.“*

c) uputeza zaokret od 180° izgovaraju se „*Napravite lijevi/desni zaokret od stoosamdeset.“*

d) vidljivost 9999 prilikom predaje METAR informacija izgovara se *DESET.*[6]

Prilikom identificiranja frekvencije izgovara se svih šest znamenki bez obzira radi li se o 25 kHz ili 8.33 kHz. Prve četiri znamenke izgovaraju se jedino u slučaju kada su zadnje dvije znamenke nula. Samo se u frekvencijama 'TOČKA' izgovara 'DECIMAL'.

PRIMJER / EXAMPLE:

Frequency	*Transmitted as*
118.000	ONE ONE EIGHT DECIMAL ZERO
118.025	ONE ONE EIGHT DECIMAL ZERO TWO FIVE
118.005	ONE ONE EIGHT DECIMAL ZERO ZERO FIVE
118.010	ONE ONE EIGHT DECIMAL ZERO ONE ZERO

Prilikom predaje vremena (sati i minute) obično se izgovaraju samo minute. Svaka znamenka izgovara se odvojeno. Međutim, ako postoji mogućnost zabune treba izgovoriti i brojku koja se odnosi na sat. U zrakoplovnoj pokretnoj komunikaciji

[6] Republika Hrvatska, Hrvatska kontrola zračne plovidbe d.o.o., Odjel zrakoplovnog informiranja - AIS, AIC A004/02015, Postupci za obavljanje govorne komunikacije, Zagreb, 2015., str. 16.

koristi se koordinirano univerzalno vrijeme (UTC). Početak dana označava se kao 0000, a kraj kao 2359.

PRIMJER / EXAMPLE:

Time	*Transmitted as*
0920	TWO ZE-RO or ZE-RO NIN-er TOO ZERO
1643	FOW-er TREE or WUN SIX FOW-er TREE

Prilikom provjere vremena piloti mogu tražiti provjeru vremena od nadležne kontrole zračnog prometa. Provjera vremena izražava se na najbližu minutu.

PRIMJER / EXAMPLE:

A: (aircraft call sign) REQUEST TIME CHECK
G: (aircraft call sign) TIME 0611

Prilkom predaje razine, razine se izražavaju sukladno postavkama visinomjera. Kada se razina predaje u odnosu na QNH (apsolutna visina) ili QFE (visina) iza vrijednosti koristi se riječ STOPA. Kada se razina predaje u odnosu na specifičnu vrijednost tlaka od 1013,25 hPa, iza riječi RAZINA LETA dolazi broj.

PRIMJER / EXAMPLE:

FL 200 FLIGHT LEVEL TWO HUNDRED
FL 110 FLIGHT LEVEL ONE ONE ZERO
A 7000 FT [ALTITUDE] SEVEN THOUSAND FEET

2.5. Standardne riječi i fraze

Standardne riječi i fraze koje se koriste u radiotelefonskoj komunikaciji su:

Word/Phrase	*Meaning*

Riječ/Fraza	Značenje
ACKNOWLEDGE POTVRDITE	"Let me know that you have received and understood this message" "Potvrdite da ste primili i razumjeli poruku"
AFFIRM DA	"Yes" "Da"
APPROVED ODOBRENO	"Permission for proposed action granted." "Dozvola za traženi postupak odobrena."
BREAK PREKID	“I hereby indicate the separation between the portions of the message.” “Ovime označavam razdvajanje dijelova poruke.” *Note: To be used when there is no clear distinction between the text and other portions of the message.* *Napomena: Koristi se kada nema jasne razlike između teksta i ostalih dijelova poruke.*
BREAK BREAK PREKID PREKID	I hereby indicate the separation between messages transmitted to different aircraft in a very busy environment" "Ovim naglašavam odvajanje poruka proslijeđenih različitim zrakoplovima u vrlo gustom prometu"
CANCEL PONIŠTITE	"Annul the previously transmitted clearance." "Poništite prethodno dodijeljeno odobrenje."
CHECK PROVJERITE	"Examine a system or procedure." "Provjerite sustav ili postupak." *Note: - Not to be used in any other context. No answer is normally expected.* *Napomena: - Ne smije se koristiti u bilo kojem drugom kontekstu. Odgovor se uglavnom ne očekuje.*
CLEARED SLOBODNO/ODOBRENO/DOZVOLJENO	"Authorized to proceed under the conditions specified." "Odobreno nastaviti prema utvrđenim uvjetima."
CONFIRM POTVRDITE	"I request verification of: (clearance, instruction, action, information)" "Tražim verifikaciju: (odobrenja, upute, radnje, informacije)”
CONTACT POZOVITE	Establish communications with ..." "Uspostavite radiokomunikaciju s ..."
CORRECT TOČNO	“True” or “Accurate" "Točno"
CORRECTION ISPRAVAK	"An error has been made in this transmission (or message indicated). The correct version is ..." "Učinjena je pogreška u predaji, ispravna inačica je ..."
DISREGARD	“Ignore.”

ZANEMARITE	“Zanemarite.”
HOW DO YOU READ KAKO ČUJETE	"What is the readability of my transmission?" "Kakva je čujnost moje predaje/postaje?"
I SAY AGAIN PONAVLJAM	"I repeat for clarity or emphasis." "Ponavljam radi bolje razumljivosti ili naglašavanja"
MAINTAIN ZADRŽITE	"Continue in accordance with the condition(s) specified" or in its literal sense, e.g. “Maintain VFR.” "Nastavite u skladu s navedenim uvjetom (uvjetima)" ili u doslovnom smislu, npr. "Zadržite VFR.“
MONITOR SLUŠAJTE	“Listen out on (frequency)" "Slušajte/pratite na (frekvenciji)."
NEGATIVE NE/NEMATE DOPUŠTENJE/NIJE TOČNO/NIJE U STANJU	“No” or ”Permission not granted” or “That is not correct” or “Not capable”. "Ne“ ili “Nemate dopuštenje“ ili “To nije točno“ ili “Nisam u stanju."
OUT KRAJ/GOTOVO	“This exchange of transmission is ended and no response is expected” “Izmjena predaje je završena i ne očekujem odgovor.” *Note: - Not normally used in VHF communications.* *Napomena: - Obično se ne koristi u VHF komunikaciji*
OVER PRIJAM	“My transmission is ended and I expect a response from you” “Ova predaja je završena i očekujem odgovor.” *Note: - Not normally used in VHF communications.* *Napomena: - Obično se ne koristi u VHF komunikaciji.*
READ BACK PONOVITE DOSLOVCE	"Repeat all, or the specified part, of this message back to me exactly as received." "Doslovno ponovite cijelu, ili određeni dio, primljene poruke."
RECLEARED IZMIJENJENO ODOBRENJE	"A change has been made to your last clearance and this new clearance supersedes your previous clearance or part thereof." "Izmijenjeno je vaše posljednje odobrenje i ovo novo ukida prethodno ili jedan njegov dio."
REPORT JAVITE	"Pass me the following information…” "Javite traženu informaciju…”
REQUEST TRAŽIM	"I should like to know…” or “I wish to obtain…" “Tražim”… ili “Molim dopuštenje…”
ROGER PRIMIO	"I have received all of your last transmission" "Primio sam u potpunosti vašu posljednju predaju" *Note: - Under no circumstances to be used in reply to a question requiring READ-BACK or a direct answer in the affirmative (AFFIRM) or negative (NEGATIVE).*

	Napomena: Nikada se ne smije koristiti kao odgovor na pitanje koje zahtjeva ponavljanje (READ-BACK) ili kao direktan odgovor u potvrdnom (DA) ili niječnom obliku (NE).
SAY AGAIN PONOVITE	"Repeat all, or the following part, of your last transmission." "Ponovite cijelu ili sljedeći dio vaše posljednje predaje."
SPEAK SLOWER GOVORITE SPORIJE	"Reduce your rate of speech." "Smanjite brzinu govora."
STANDBY PRIČEKAJTE	"Wait, and I will call you." "Čekajte, pozvat ću vas." *Note: - The caller would normally re-establish contact if the delay is lengthy. STANDBY is not an approval or denial.* *Napomena: - Pozivatelj obično ponovno uspostavlja kontakt u slučaju dužeg čekanja STANDBY ne znači dopuštenje niti odbijanje dopuštenja.*
UNABLE NE MOGU	"I cannot comply with your request, instruction, or clearance." "Ne mogu postupiti prema traženom, uputi ili odobrenju." *Note: - UNABLE is normally followed by a reason.* *Napomena: Iza NE MOGU obično se navodi razlog.*
WILCO POSTUPIT ĆU	"I understand your message and will comply with it" (Abbreviation for "will comply") "Razumijem vašu poruku i postupit ću u skladu s njom"
WORDS TWICE RIJEČI DVAPUT	a) As a *request*: "Communication is difficult. Please send every word, or group of words, twice." b) As *information*: "Since communication is difficult, every word, or group of words, in this message will be sent twice." a) Kao *zahtjev:* "Komunikacija je otežana. Molim dvaput izrecite svaku riječ ili skupinu riječi". b) Kao *informacija*: "S obzirom da je komunikacija otežana svaka riječ ili skupina riječi bit će izrečena dvaput."

Fraza GO AHEAD se ne koristi, a umjesto nje, izgovaranje pozivnog znaka radiopostaje koju se zove smatra se pozivom za nastavak emitiranja od strane radiopostaje koja poziva.[7]

[7] Republika Hrvatska, Hrvatska kontrola zračne plovidbe d.o.o., Odjel zrakoplovnog informiranja - AIS, AIC A004/02015, Postupci za obavljanje govorne komunikacije, Zagreb, 2015., str. 18-21.

2.6. Pozivni znak

Zemaljska radiopostaja identificira se imenom lokacije iza koje slijedi ime jedinice ili službe kontrole zračnopm prometa. Kada je komunikacija uspješno uspostavljena i ako nema opasnosti od zabune, može se ispustiti ime lokacije ili ime jedinice ili službe kontrole zračnom prometa.

Tablica 5/Table 5: Radiopostaje/Radiostations

Jedinica ili služba	*Pozivni znak*	*Unit or service*	*Call sign suffix*
Centar oblasne kontrole	KONTROLA	Area control centre	CONTROL
Radar (općenito)	RADAR	Radar (in general)	RADAR
Prilazna KZP	PRILAZNA	Approach control	APPROACH
Aerodromska KZP	TORANJ	Aerodrome control	TOWER
Služba letnih informacija	INFORMACIJE	Flight information service	INFORMATION
Izdavanje odobrenja	DELIVERY	Clearance delivery	DELIVERY
Zemaljska KZP	GROUND	Surface movement control	GROUND
Kompanijska/aerodromska operativna služba	OPERATIONS	Company/Aerodrome Handling	OPERATIONS
Zrakoplovna/zemaljska radiopostaja	RADIO	Aeronautical station	RADIO

U radiotelefonskoj komunikaciji pozivni znak radiopostaje zrakoplova pripada jednom od slijedećih tipova:

a) Znakovi koji odgovaraju registracijskoj oznaci zrakoplova,
b) Radiotelefonska oznaka operatora zrakoplova zajedno s četiri posljednje oznake iz registracijske oznake zrakoplova,
c) Radiotelefonska oznaka operatora zrakoplova iza koje slijedi brojčana oznaka leta.

Pozivni znakovi mogu se i skraćivati, a pilot smije koristiti skraćeni pozivni znak svoje radiopostaje isključivo nakon što mu se na takav način obrati zemaljska radiopostaja.

Primjer 1. – prva oznaka registracije i najmanje dvije posljednje oznake pozivnog znaka

Full call sign/puni pozivni znak:	*N 57826 CESSNA FABCD*
Abbreviated call sign/u skraćenom obliku:	*N 26 CESSNA CD* or *N826 CESSNA BCD*

Primjer 2. – radiotelefonska oznaka dodijeljena operateru zrakoplova zajedno s najmanje dvije posljednje oznake pozivnog znaka:

Full call sign/puni pozivni znak:	*VARIG PVMA*
Abbreviated call sign/u skraćenom obliku:	*VARIG MA* or *VARIG VMA*

Primjer 3. – kada nema skraćenog:

Full call sign/puni pozivni znak:	*SCANDINAVIAN 937*
Abbreviated call sign/u skraćenom obliku:	*No abbreviated form/ nema skraćenog oblika*

Tijekom leta osim kada postoji mogućnost zabune uslijed postojanja sličnih pozivnih znakova tip radiotelefonskog pozivnog znaka ne smije se mijenjati. U takvim slučajevima nadležna kontrola zračnog prometa može izdati uputu kojom se privremeno mijenja tip pozivnog znaka.

PRIMJER / EXAMPLE:

G: CHANGE YOUR CALL SIGN TO (new call sign) [(UNTIL FURTHER ADVISED)]

Prilikom promjene pozivnog znaka radiopostaja zrakoplova dobit će informaciju da se u trenutku predaje drugoj jedinici kontrole zračnog prometa vrati na pozivni znak naznačen u planu leta, osim u slučaju kada je promjena pozivnog znaka unaprijed koordinirana s nadležnom jedinicom.

PRIMJER / EXAMPLE:

G: REVERT TO FLIGHT PLAN CALL SIGN (call sign) AT (significant point)

Nakon uspostavljene komunikacije pozivni znak radiopostaje zrakoplova predaje se na početku poruke, osim u slučaju ponavljanja (READ-BACK), kada dolazi na kraju poruke.[8]

2.7. Radiotelefonska komunikacija

Uspostava radiotelefonske komunikacije obavlja se početnim pozivom na:

a) pozivni znak radiopostaje s kojom se uspostavlja komunikacija
b) pozivni znak radiopostaje koja poziva,

a odgovor na početni poziv obavlja se:

a) pozivni znak radiopostaje s kojom se uspostavlja komunikacija,
b) pozivni znak radiopostaje koja odgovara.[9]

PRIMJER / EXAMPLE:

[8] Republika Hrvatska, Hrvatska kontrola zračne plovidbe d.o.o., Odjel zrakoplovnog informiranja - AIS, AIC A004/02015, Postupci za obavljanje govorne komunikacije, Zagreb, 2015., str. 24.
[9] Republika Hrvatska, Hrvatska kontrola zračne plovidbe d.o.o., Odjel zrakoplovnog informiranja - AIS, AIC A004/02015, Postupci za obavljanje govorne komunikacije, Zagreb, 2015., str. 25.

A: ZAGREB TOWER, (aircraft call sign)

G: (aircraft call sign), ZAGREB TOWER

Kada se želi uspostaviti kontakt, radiotelefonska komunikacija započinje pozivom i odgovorom na poziv osim kada se sa sigurnošću može pretpostaviti da radiopostaja koju se poziva prima poziv, radiopostaja koja poziva može proslijediti poruku bez čekanja na odgovor radiopostaje koju se poziva. U zračnom prostoru u kojem se provodi radarska usluga prilikom svake promjene frekvencije pilot zrakoplova mora objaviti sljedeće:

1. pozivni znak jedinice kontrole zračnog prometa koju poziva,
2. pozivni znak zrakoplova i kategoriju vrtložne turbulencije (heavy/super)
3. trenutnu razinu i odobrenu razinu kada je zrakoplov u penjanju ili snižavanju
4. brzinu, smjer leta ako ju je dodijelila prethodna kontrola zračnog prometa.

Prilikom prelaska s prilazne na aerodromsku kontrolu zračnog prometa, objavljuje se podatak o poziciji umjesto razini zrakoplova.[10]

PRIMJER / EXAMPLE:

A: ZAGREB RADAR (aircraft call sign) FL 310 MH.78

A: ZAGREB TOWER (aircraft call sign) OUTER MARKER

Također, radiopostaja u zrakoplovnoj pokretnoj komunikaciji može istodobno pozvati više radiopostaja. Pozvane radiopostaje moraju potvrditi prijam poruke istim redoslijedom kojim su pozivane, a radiopostaja u zrakoplovnoj pokretnoj komunikaciji može istodobno pozvati sve radiopostaje koje slušaju na istoj frekvenciji. Opći poziv počinje frazom 'ALL STATIONS' (SVIM POSTAJAMA) nakon čega slijedi pozivni znak radiopostaje koja emitira poziv. Nije potrebno potvrditi prijam općeg poziva.

[10] Ibid., str. 26.

Zemaljska radiopostaja potvrđuje prijam poruke radiopostaje zrakoplova predajom pozivnog znaka radiopostaje zrakoplova i fraze ROGER (PRIMIO). Radiopostaja zrakoplova mora potvrditi prijam poruke predajom vlastitog pozivnog znaka i fraze ROGER (PRIMIO). Ako potvrda prijama poruke izostane, potvrda se mora dobiti, u protivnom smatrat će se da poruka nije predana.

Kontrolori zračnog prometa trebaju izdavati odobrenja polako i jasno jer ih pilot mora zapisati, a na takav način se izbjegavaju nepotrebna ponavljanja. Kad god je to moguće rutna odobrenja treba proslijediti prije pokretanja motora zrakoplova. U svakom slučaju kontrolori zračnog prometa izbjegavat će izdavanje odobrenja pilotu u trenutku kada je on zauzet složenim manevrima voženja, a nikako ne smije emitirati odobrenja/ poruke pilotu zrakoplova tijekom uzlijetanja, posljednjeg dijela završnog prilaženja i zaustavljanja nakon slijetanja.

Rutno odobrenje ne predstavlja odobrenje za polijetanje sa ili ulazak na aktivnu uzletno-sletnu stazu. Riječi 'TAKE OFF' koriste se jedino kada zrakoplov ima odobrenje za uzlijetanje ili kada se prethodno izdano odobrenje za uzlijetanje poništava. U svim drugim slučajevima koriste se riječi 'DEPARTURE' ili 'AIRBORNE'.

Strogost obaveze ponavljanja proizlazi iz mogućnosti nastanka ozbiljnih posljedica uslijed nesporazuma u predaji i prijemu odobrenja i uputa kontrole zračnog prometa. Strogo pridržavanje procedure ponavljanja jamči ne samo da je primatelj pravilno primio odobrenje nego i da je odobrenje predano na željeni način. Također služi kao provjera da će baš taj zrakoplov, a ne neki drugi, postupiti sukladno izdanom odobrenju.

Posada zrakoplova ponovit će odobrenja i upute koje se predaju govorom, a odnose se na sigurnost. Dijelovi koji se uvijek moraju ponoviti su:

- rutna odobrenja koja izdaje kontrola zračnog prometa
- odobrenja i upute za ulazak, slijetanje, uzlijetanje, čekanje uz, prelazak, vožnju i povratnu vožnju po uzletno-sletnoj stazi, uključujući i uvjet iz uvjetnog odobrenja,
- stazu u uporabi, postavke visinomjera, kodove sekundarnog radara, frekvenciju u slučaju dodjeljivanja nove frekvencije, smjer i brzinu leta, oznaku ATIS-a, SLOT te
- prijelaznu razinu bez obzira je li podatak proslijedio kontrolor ili je emitiran kao dio ATIS-a.

Kontrolor zračnog prometa mora slušati ponovljenu poruku kako bi utvrdio da je posada zrakoplova točno primila odobrenje ili uputu, te će odmah ispraviti svako odstupanje u ponovljenoj poruci. Ispravno ponavljanje uvjetnog i rutnog odobrenja potvrđuje se emitiranjem pozivnog znaka radiopostaje zrakoplova i fraze 'CORRECT'. Ako pilot zrakoplova netočno ponovi poruku, kontrolor zračnog prometa mora izreći frazu 'NEGATIVE' nakon čega izriče pozivni znak i točnu verziju. Točnost primljene poruke potvrđuje se emitiranjem pozivnog znaka i fraze 'CORRECT'.[11]

PRIMJER / EXAMPLE:

G: (aircraft call sign), DESCEND FL 130 CROSS ZAG AT FL 170 OR ABOVE
A: LEAVING FL 280 DESCENDING FL 130 TO CROSS ZAG AT FL 170 OR ABOVE, (aircraft call sign)
G: (aircraft call sign), CORRECT

G: (aircraft call sign), DESCEND FL 130
A: LEAVING FL 280 DESCENDING FL 120, (aircraft call sign)
G: NEGATIVE (aircraft call sign), DESCEND FL 130
A: DESCENDING FL 130, (aircraft call sign)
G: (aircraft call sign), CORRECT

2.7.1. Postupanje u skladu s odobrenjima i uputama KZP-a

Postaja zrakoplova mora potvrditi prijam drugih uputa korištenjem vlastitog pozivnog znaka i fraze 'WILCO'. Ako postoji sumnja da pilot zrakoplova može postupiti u skladu s izdanim odobrenjem ili uputom, kontrolor zračnog prometa može dodati frazu 'IF UNABLE' te ponuditi alternativno odobrenje ili uputu. Ako u bilo kojim trenutku pilot dobije odobrenje ili uputu u skladu s kojom ne može postupiti, on o tome treba obavijestiti kontrolora zračnog prometa koristeći frazu 'UNABLE' (te navesti razlog).

[11] Republika Hrvatska, Hrvatska kontrola zračne plovidbe d.o.o., Odjel zrakoplovnog informiranja - AIS, AIC A004/02015, Postupci za obavljanje govorne komunikacije, Zagreb, 2015., str. 29.

Kada nadležna KZP želi da se bez odgađanja postupi u skladu s odobrenjem ili uputom, kontrolor će u svojoj poruci izreći riječ ‘SAD’ ili ‘ODMAH’. Uporaba riječi ‘SAD’’ kazuje da se treba postupiti u skladu s redovnim operativnim procedurama zrakoplova, no bez hitnosti. Uporaba riječi ‘ODMAH’ ukazuje na najviši stupanj hitnosti. U tim uvjetima piloti trebaju postupiti u skladu s odobrenjem ili uputom što je prije moguće vodeći računa o sigurnosti zrakoplova.

Kada dođe do greške u predaji izriče se fraza 'CORRECTION', ponavlja se zadnja točna skupina informacija ili fraza, te se prosljeđuje točna verzija poruke.

Ako je ponavljanje cijele poruke najbolje rješenje, pošiljatelj će izreći frazu 'CORRECTION I SAY AGAIN' prije nego što ponovo preda poruku. Kada pošiljatelj poruke pretpostavlja da će prijam vjerojatno biti otežan, važne dijelove poruke treba izgovoriti dva puta korištenjem fraze 'WORDS TWICE'. Ako je potrebno ponoviti cijelu poruku, moraju se koristiti riječi 'SAY AGAIN' u cijelosti ili djelomično.[12]

Prilikom prijenosa radiotelefonske komunikacije s jedne jedinice kontrole zračnog prometa na drugu, poruka mora sadržavati pozivni znak i frekvenciju nadležne jedinice, a prijenos treba predati u odvojenoj poruci. Nakon potvrde prijama poruke ako pilot više ne emitira nikakve poruke, može se zaključiti da je prijenos radiotelefonske komunikacije uspješan.

Radiopostaja zrakoplova može primiti zahtjev da pričeka ('STAND BY') na frekvenciji u slučaju kada nadležna kontrola zračnog prometa namjerava inicirati radiotelefonsku komunikaciju u kratkom vremenu, kao i da sluša ('MONITOR') na frekvenciji na kojoj se emitiraju informacije. Kontrolor zračnog prometa, ukoliko se predaja mora poništiti, izreći će uputu pilotu da zanemari poruku ili njezin dio uporabom fraze 'DISREGARD'. Za poništenje odobrenja kontrole zračnog prometa koristi se fraza 'CANCEL'. Ista fraza koristi se kada se poništava let ili status leta. Mora se potvrditi prijem poruke kao i vrijeme poništenja.[13]

[12] Republika Hrvatska, Hrvatska kontrola zračne plovidbe d.o.o., Odjel zrakoplovnog informiranja - AIS, AIC A004/02015, Postupci za obavljanje govorne komunikacije, Zagreb, 2015., str. 29-30.

[13] Republika Hrvatska, Hrvatska kontrola zračne plovidbe d.o.o., Odjel zrakoplovnog informiranja - AIS, AIC A004/02015, Postupci za obavljanje govorne komunikacije, Zagreb, 2015., str. 32.

2.7.2. Provjera čujnosti radiopostaje

Provjera čujnosti emitiranih poruka odvija se na sljedeći način:

a) identifikacija zrakoplovne radiopostaje s kojom se uspostavlja komunikacija,
b) identifikacija radiopostaje koja poziva,
c) riječii “RADIO CHECK“ ,
d) frekvencija koja se koristi.

Odgovor na provjeru čujnosti radiopostaje odvija se na sljedeći način:

a) identifikacija radiopostaje koja traži provjeru čujnosti,
b) identifikacija radiopostaje koja odgovara
c) informacija o stupnju čujnosti radiopostaje koja traži provjeru čujnosti

Nakon izvođenja provjere čujnosti koristi se *ljestvica stupnjevanja čujnosti* radiopostaje:

- 1 nerazumljivo / ne čujemo se,
- 2 čujemo se za dva / povremeno,
- 3 čujemo se za tri / s poteškoćama,
- 4 čujemo se za četiri,
- 5 čujemo se za pet / savršeno.

3. Važnost primjene RTF u školovanju kontrolora na BEST simulatoru

Da bi uopće pristupili radu na simulatoru, svaki student prethodno treba odslušati predmet Radiotelefonska komunikacija, i to Radiotelefonska komunikacija 1 za aerodromski simulator, Radiotelefonska komunikacija 2 za oblasni simulator , te Radiotelefonska komunikacija 3 za prilazni simulator. Kroz te predmete studenti su pripremljeni i obučeni na koji način voditi dvosmjernu radio komunikaciju, kao i koje fraze koristiti.

Naravno, svaka situacija se ne može predvidjeti, zato je od neizmjerne važnosti znati i opći engleski jezik, jezik opće prihvaćen kao jezik zrakoplovstva. Svaki kontrolor letenja mora položiti test kojim se dokazuje da ima minimalno 4. razinu znanja poznavanja engleskog jezika za zrakoplovstvo (Level 4 ICAO Language Proficiency)

Tabela 1/Table 3: ICAO Language Proficiency Standards

Level 6	Expert
Level 5	Extended
Level 4	Operational
Level 3	Pre-operational
Level 2	Elementary
Level 1	Pre-elementary

Upravo zato, uz standardnu frazeologiju, kroz cijelo školovanje na Fakultetu, studenti polažu i Engleski zrakoplovni jezik. Studenti su tako obučeni kako i za predviđene, tako i za nepredviđene situacije.

Nakon što su položili i engleski zrakoplovni jezik i radiotelefonsku komunikaciju, studenti pristupaju simulatoru, gdje se i dalje kontrolira korištena frazeologija. Vrlo je bitno da se studenti koriste isključivo frazeologijom i frazama koje su usvojili kroz prethodno školovanje, kako bi ih prvenstveno naučili pravilno primjenjivati, ne samo što izgovoriti, već i kako izgovoriti, ton glasa, brzina odnosno tempo govorenja, glasnoća govora, naglasak i artikulacija. Upotrebom standardne

frazeologije na školovanju, spremniji su za onaj dan kada sjednu pred stvarni zračni promet i počnu koristiti istu frazeologiju za lakše sporazumljavanje na radio vezi.

Na predmetu Radiotelefonska komunikacija 1 usvajaju se opći postupci komunikacije korištene u aerodromskoj kontroli. Uvod u definicije i kratice te opće operativne postupke, uspostavljanje komunikacije, vrste poruka, opća frazeologija, postupci u aerodromskoj kontroli kao što su dozvole za polijetanje i slijetanje, kretanje po aerodromu, niski preleti i prilazi, kao i letenje u školskom krugu. Zatim prijenos komunikacije na druge frekvencije, informacije o bitnom aerodromskom prometu. informacije u letu i podaci o vremenu na aerodromu.[14]

Radiotelefonska komunikacija 2 daje opće znanje u proceduri za otkaz radio veze, u prostupcima u slučaju opasnosti, pružanje obavijesti o poziciju u letu kao i obavijesti o prometu u vizualnim uvjetima. Obrađuje i osnove prilaza u vizualnim uvjetima, prilaze iz pravca i iz prometnog kruga, zatim osnove odlaska prema instrumentalnim postupcima. Uz sve to bavi se i postupcima čekanja, gdje se studenti upoznaju sa cjelovitom procedurom čekanja, ali i proceduralnim prilazom, standardnim instrumentalnim odlascima, rutnim letenjem u terminalu i RNAV postupcima.[15]

Komunikaciju u prilaznoj proceduralnoj, prilaznoj radarskoj, oblasnoj proceduralnoj i oblasnoj radarskoj kontroli obrađuje kolegij Radiotelefosnka komunikacija 3. Osim toga bavi se i frazeologijom službe informacija o letu, općom radarskom frazeologijom, koordinacijom između jedinica kontrole zračne plovidbe i prekidom komunikacije. Studente se upoznaje i sa radarskim vektoriranjem za završni prilaz i nadzorni radarski prilaz koji su od izuzetne važnosti na prilaznom simulatoru. [16]

Jasno je da je upotreba standardne frazeologije najbitnija da bi samom studentu, prije svega, olakšala samu vježbu, a nadalje pripremila studenta za budući posao.

[14] http://www.fpz.unizg.hr/isvu/2012/pred95318.html (Kolovoz 2016.)
[15] http://www.fpz.unizg.hr/isvu/2015/pred36166.html (Kolovoz 2016.)
[16] http://www.fpz.unizg.hr/isvu/2015/pred36181.html (Kolovoz 2016.)

4. Snimanje korištene frazeologije na BEST simulatoru

Snimanje audio materijala korištenih u ovom završnom radu odvijalo se tijekom zimskog i ljetnog semestra akademske godine 2014./2015 i to tijekom siječnja, svibnja i lipnja 2015. godine. Studenti ni u kojem trenutku nisu bili ometani zbog potreba snimanja, a svi su prethodno dali svoj pristanak da budu snimani.

Snimanje se vršilo diktafonom, vježbu po vježbu, a za potrebe ovog završnog rada u obzir je uzeto po 5 vježbi sa predmeta Aerodromski simulator i Prilazni simulator.

Snimalo se samo studente modula kontrole leta i u završnom radu su obrađene isključivo transmisije kontrolora zračnog prometa, ne i pilota, odnosno pseudo-pilota. Studenti na aerodromskom simulatoru pohađali su 2. godinu preddiplomskog studija, a studenti na prilaznom 3.godinu preddiplomskog studija aeronautike.

5. Analiza vrsti pogrešaka

5.1. Analiza pogrešaka na aerodromskom simulatoru

Sa aerodromskog simulatora analizirano je ukupno 379 transmisija, od kojih je velika većina potpuno točno izgovorena. Jedna od najučestalijih grešaka je bila izostavljanje inicijalnog poziva, odnosno, izgovoren pozivni znak zrakoplova, a izostavljen pozivni znak jedinice kontrole leta. Od ukupno 29 transmisija u kojima je bilo potrebno uspostaviti inicijalni poziv, 7 je bilo krivo, odnosno izostavljeno, što čini 24,1%.

Dakako, izostavljale su se i druge fraze i to *roger* i *correct*. *Correct* u nešto manjoj mjeri, od ukupno 150 transmisija koje je zahtjevalo odgovor, *correct* nije dobilo 24, što čini 16 %, a od toga dvija puta je *correct* izrečen, ali nije bio potreban. Mora se napomenuti da je pri preslušavanju snimki uočeno da i u slučaju kada je „*Correct*“ zaboravljen, to je bilo iz razloga što je student od instruktora dobivao povratnu informaciju, ili postavljao pitanje. Dakako, to ne umanjuje činjenicu da je odgovor izostavljen, no to nije bio slučaj zbog nemara ili neznanja studenta. Roger se ukupno izostavio 22 puta od 124, odnosno 17,2%.

Nadalje, možda i najključnija od svega, greška nepotpunog pružanja informacija nakon inicijalnog poziva. Informacije o stazi koja je trenutno u uporabi i vjetru ukupno se izostavila 5, od 29 puta, odnosno 17,2%. Od toga se informacija o stazi u upotrebi sama za sebe izostavila 6 puta.

Dakako, ništa manje bitna informacija o visini zrakoplova u informaciji o ostalom prometu izostavljena je 2 puta, odnosno 6,7 % od ukupnih transmisija, a informacija o poziciji zrakoplova izostavljena je svega jednom, odnosno 3,3%.

Ostale, ništa manje bitne informacije koje su izostavljene su QNH (18,8%), squawk (6,3%), smijer školskog kruga (14,5%), nepotpun ATC clearance (16,6%), i fraza „report on ...“ (12,5%).

Tablica 6/Table 6: Izostavljene fraze i poruke na aerodromskom simulatoru/Unsaid phrasees and messages on aerodrome simulator

IZOSTAVLJENA FRAZA	UKUPNO	IZOSTAVLJENO	POSTOTAK %
Correct	150	24	16
Roger	124	22	17,2
QNH	64	12	18,8
Smijer školskog kruga	62	9	14,5
Initial call	29	7	24,5
Staza, vjetar, QNH	29	5	17,3
„Report on ...“	24	3	12,5
Squawk	32	2	6,3
ATC clearance	12	2	16,6
Visina	30	2	6,7
Pozicija	30	1	3,3
Correction	16	1	6,3

Izostavljanje informacija, odnosno nepotrpune transmisije nisu jedine greške koje su studenti radili. Osim što su izostavljane, neke transmisije su predane krivim redosljedom. Npr., „*OBUTI2C SID; Traffic just departed runway zero five, expect landing clearance shortly“*.

Potrebe za potpunim mijenjanjem transmisije gotovo da i nije bilo, a ako i je, bilo je to zbog duplo izgovorene informacije ili modifikacije standardne frazeologije („*join downwind left hand traffic circuit runway zero five, report on downwin*d„. Svi studenti su imali dobar izgovor i dikciju, a slova i brojeve izgovarali su točno, kako je i propisano.

Tablica 7/Table 7: Neispravne transmisije na aerodromskom simulatoru/Incorrect transmissions on aerodrome simulator

POGREŠNO	ISPRAVNO
Join downwind left hand traffic circuit runway 05	Join lef hand traffic circuit runway 05, report on downwind/Join left hand downwind runway 05
Traffic just departed runway 05, expect landing clearance shortly	Expect landing clearance shortly, traffic just departed runway 05

Na kraju, od ukupno 379 transmisija, 329 je u potpunosti točno izgovoreno, što čini postotak od 86,81%, odnosno 13,19 % je krivo izgovorenih transmisija.

5.2. Analiza pogrešaka na prilaznom simulatoru

Sa snimki prilaznog simulatora pregledano je ukupno 367 transmisija. Također, većina transmisija je izgovorena potpuno točno, baš onako kako je i propisano.

Kao odstupanje od standardne frazeologije na prilaznom simulatoru izdvaja se izostavljanje informacija kao najveća greška. Najviše se izostavljao odgovor „*Correct*“ i to ukupno 27 puta, od ukupno 146 puta kada je to trebalo izgovoriti, što u postotku iznosi 18,5%. Fraza „*Recleared, after passing 3000/4000 ft...“* izostavila se 5 puta od ukupno 9, što iznosi 55,5%. Osim uobičajenog nepotpunog inicijalnog poziva, u prvom javljanju izostavljala se i informacija o visini, odnosno razini leta, QNH i stazi u uporabi.

Kao najveće odstupanje od standardne frazeologije, svakako se mora izdvojiti to, da se u zadnjem javljanju, nakon što se zrakoplov prebacuje na frekvenciju druge službe kontrole zračne plovidbe, ne odgovara sa potrebnim „*correct*“, već pozdravom, „*bye*“ ili „*goodbye*“, a nerjetko se u istom slučaju izostavljao i pozivni znak zrakoplova. 21 put se odgovorilo sa pozdravom od 27 puta koliko je fraza korištena, dakle 77,7%, a od toga 4 puta nije izgovoren ni pozivni znak. Također, u komunikaciji sa ostalim službama nisu se na kraju svakog razgovora navodili inicijali.

U tablici su prikazane i sve ostale fraze ili dijelovi fraza koji su u potpunosti izostavljeni.

Tablica 8/Table 8: Izostavljene fraze i poruke na prilaznom simulatoru/Unsaid phrases and messages on approach simulator

IZOSTAVLJENA FRAZA	UKUPNO	IZOSTAVLJENO	POSTOTAK
Correct	146	27	18,5
Correction	21	8	38,1
QNH	24	6	25

Recleared	9	5	55,6
Altitude/Flight level	32	4	12,5
Vectoring for ILS approach runway	22	3	13,6
After passing...	10	2	20
Disregard	3	2	66,7
Initial call	38	1	2,6
Identified	38	1	2,6
Roger	15	1	6,7

Gramatičke greške nisu nađene. Sve fraze su ispravno izgovorene, sa ispravnim naglaskom i dikcijom. Ispitanici su također zvučali vrlo suvereno i sigurno u svoje znanje. Nisu imali problema sa prisjećanjem što treba reći u kojem trenutku, vješto su baratali pojmovima i u datom trenutku su upotrebljavali ispravne fraze, što znači da su vrlo dobro usvojili frazeologiju. Manja odstupanja od toga ne znače da studenti nisu znali što reći u određenom trenutku, već da je situacija ponekad bila takva da bi morali improvizirati. Baš kako je rečeno na početku rada, sve moguće situacije nisu pokrivene standardnom frazeologijom i ponekad se mora improvizirati i koristiti razgovorni engleski jezik. I brojevi i slova, odnosno pozivni znakovi su izgovorani ispravno.

Manjih grešaka ima još, poput krivog redosljeda prenošenja informacija. Najčešće su to bile informacije o smijeru leta i visini, gdje se prvo izgovorila visina ili razina leta, a onda smijer leta, dok je propisan obrnuti poredak. Također, neki studenti su nepotrebno fraze razdvajali, u smislu da bi, npr. prvo dali naredbu za spuštanje zrakoplova na određenu visinu leta, a u odgovoru, uz „*correct*“ dali informaciju QNH.

Još neke greške navedene su u idućoj tablici.

Tablica 9/Table 9: Neispravne transmisije na prilaznom simulatoru(Incorrect transmissions on approach simulator

POGREŠNO	ISPRAVNO
Release approved for RyanAir 484	RyanAir 484, release
Radar vectoring for ILS approach runway 05, descend to 9000 ft	Descend to 9000 ft, vectoring for ILS approach runway 05
Expect straight-in ILS approach, maintain flight level 150	Maintain flight level 150, expect straight in ILS approach runway 05
Descend to 3000 ft, turn left heading 080	Turn left heading 080, descend to 3000 ft
180 flight level	Flight level 180
4000 ft, correction	Correction, 4000 ft
Climb to flight level 200, follow NIVES3C	NIVES3C departure, climb to flight level 200

Završno, od ukupno 367 transmisija, 277 je potpuno ispravno i u skladu sa propisanom standardnom frazeologijom. S postotkom od 75,5% ispravnih transmisija može se zaključiti da su studenti na prilaznom simulatoru griješili više od studenata na aerodromskom.

6. Zaključak

U završnom radu analizirana je frazeologija koju su studenti koristili na aerodromskom i prilaznom simulatoru prilikom svog školovanja na Zavodu za aeronautiku. Već tijekom prikupljanja materijala za završni rad uočeno je da studenti izvrsno poznaju standardnu frazeologiju i njome se izvrsno služe, što je i dokazano u analizi. Svaki student griješio je minimalno, a nebrojeno puta se ispravio i sam. Rezultat od 86,8% ispravno prenesenih transmisija na aerodromskom simulatoru pokazuje kako cjeloviti sustav školovanja i priprema studenta za simulator funkcionira vrlo dobro, pa studentu nije problem prenijeti stečeno znanje iz frazeologije. Doduše, 75,5% ispravnih transmisija na prilaznom simulatoru ipak pokazuje kako studenti kroz studij postaju opušteniji i manje pažnje pridaju tome da fraza bude izrečena u potpunosti u skladu sa pravilnikom, što ne znači da cijela poruka nije točna ili da sve informacije nisu predane.

Dakako, cjelovita analiza se ne temelji na pretpostavci da su cijeli prijenosi informacija netočni, već njezini dijelovi, a događalo se i da su dijelovi informacija predani krivim redosljedom. To, naravno, ne umanjuje činjenicu da se odstupalo od standardne, propisane frazeologije.

Zaključno, utvrđeno je da je svakom studentu vježba na BEST simulatoru bila jednostavnija, sa manje kompliciranih situacija, ako je koristio standardnu frazeologiju, zbog jednog i jedinstvenog razloga – postupci su objavljeni upravo zato da bi kontroloru olakšala posao, odnosno da uz minimalno truda riješi konfliktne situacije i prenese brzu i jasnu poruku za siguran zračni promet.

7. Literatura

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Popis tablica

Prilog 1. Aerodromski slimulator – Vježba 1

00:03:57 9ABMF (Niner Alpha Bravo Mike Foxtrot) proceed to N3 (November Three) point. Maintain 1500 (one thousand five hundred) feet runway in use, wind, QNH.

00:04:12 9ABMF, correct

00:04:20 9ABMF, runway in use 05 (zero five), wind 060 (zero six zero) degrees, 4 (fower) knots. QNH 1017 (one zero one seven).

00:04:34 9ABMF, correct.

00:07:20 9ABMF, join left hand downwind runway zero five. After low approach, disregard.

00:07:30 9ABMF, join left hand downwind runway zero five, after low approach turn right, proceed to Echo two (E2) point, altitude one thousand five hundred feet, squawk.

00:07:58 9ABMF, correct

00:08:45 9ABMF, roger, continue approach, report on final runway zero five.

00:09:21 9ADBR, Zagreb Tower, taxi via taxiway Alpha to holding point runway zero five, wind zero six zero degrees, fower knots, QNH one zero one seven.

00:09:45 9ADBR, correct.

00:10:12 9AMLA, Zagreb Tower, proceed to November three point, maintain two thousand feet, runway in use, wind. QNH.

00:10:28 9AMLA, correct.

00:10:37 0ABMF, cleared low approach runway zero five, wind zero six zero degrees, fower knots, not below one thousand feet, QNH.

00:10:51 9ABMF, correct.

00:11:20 9ADBR, are you ready to copy ATC clearance?

00:11:37 9AD, correction, 9ABMF, roger, report passing two thousand feet.

00:11:59 9ADBR, cleared VFR flight to Sinj, when airborne turn right, proceed to Sierra two point, altitude two thousand five hundred feet, squawk zero zero one five.

00:12:26 9ADBR, correct.

00:13:03 9ABMF, climb to three thousand feet, squawk zero zero one six.

00:13:23 9ADBR, cleared for take-off runway zero five, wind zero six zero degrees, fower knots.

00:13:35 9ADBR, correct.

00:14:09 Station calling, Zagreb Tower, say again.

00:14:15 9ABMF, roger, contact Zagreb Radar on one two zero decimal seven.

00:14:39 9ADBR, traffic is Cessna 150 (one five zero), position, climbing to three thousand feet.

00:15:02 9ADBR, climb to two thousand feet, report passing two thousand feet.

00:15:16 9ADBR, negative, climb to two thousand feet.

00:15:34 9ADVJ, Zagreb Tower, proceed to November three point, maintain two thousand feet, runway in use, wind, QNH.

00:15:47 9ADVJ, correct.

00:16:02 9AMLA, ~~join downwind left hand traffic circuit runway zero five~~ join left hand downwind runway zero five/join left hand traffic circuit runway zero five, report downwind.

00:16:14 9AMLA, correct.

00:16:31 9AMLA, roger, report on final runway zero five.

00:16:48 9ABVN, Zagreb Tower, proceed to Sierra two, maintain two thousand five hundred feet, runway in use, wind, QNH.

00:17:07 ~~9ABVN, runway in use zero five, wind zero six zero degrees, fower knots, QNH one zero one seven.~~

00:17:20 9ABVN, correct.

00:17:31 9ADBR, roger, maintain two thousand feet.

00:18:06 9AMLA, cleared for take-off runway zero five, wind zero six zero degrees, fower knots.

00:18:17 9AMLA, correct.

00:18:40 9ABVN, traffic is Piper 18 (one eight), coming from Sierra Two, at two thousand five hundred feet.

00:19:06 9AMLA, vacate runway via taxiway Charlie, report runway vacated.

00:19:22 9ADBR, traffic is Piper 18 (one eight) coming from Sierra One point, at two thousand five hundred feet.

00:19:58 9AMLA, roger.

00:21:10 9ADBR, report position.

00:21:21 9ADBR, roger, contact Zagreb Radar on one two zero decimal seven.

00:21:31: 9ADBR, correct.

00:21:52 9AKHT, Zagreb Tower, taxi via taxiway Bravo to holding point runway zero five, wind zero six zero degrees, fower knots, QNH one zero one seven.

00:22:11 9AKHT, correct.

00:22:19 9AKHT, are you ready to copy ATC clearance?

00:22:47 9AKHT, are you ready to copy ATC clearance?

00:22:55 9AKHT, cleared VFR flight to Osijek, when airborne turn right, proceed to Sierra Two, altitude three thousand feet, squawk zero zero one zero.

00:23:14 9AKHT, correct.

00:23:27 9ABVN, ~~join downwind, right hand traffic circuit~~ join left hand downwind runway zero five/join left hand traffic circuit runway zero five, report downwind runway zero five.

00:24:53 9ABVN, continue approach, report final runway zero five.

00:26:05 9ADVJ, traffic is Piper 18 (one eight), on final runway zero five, report traffic in sight.

00:26:17 9ADVJ, roger, number two, follow Piper 18 (one eight), report on final runway zero five.

00:26:30 9ADVJ, correct.

00:26:41 9ABVN, cleared to land runway zero five, wind zero six zero degrees, fower knots.

00:26:53 9ABVN, correct.

00:27:01 9AKHT, hold short of runway zero five.

00:27:08 9AKHT, correct.

00:27:24 9ABVN, vacate runway via taxiway Charlie, report runway vacated.

00:27:36 9ABVN, correct.

00:28:02 9ABVN, roger.

00:28:43 9ADVJ, cleared to land runway zero five, wind zero six zero degrees, fower knots.

00:29:06 9AKHT, behind Cessna 172(one seven two), disregard.

00:29:16 9AKHT,traffic is Cessna 172 (one seven two), on final runway zero five, report traffic in sight.

00:29:28 9AKHT, roger, behind Cessna 172 (one seven two), line up behind.

00:29:39 9AH, correction, 9AKHT, correct.

00:29:53 9ADVJ, vacate runway via taxiway Charlie, report runway vacated.

00:30:05 9ADVJ, correct.

00:30:28 9ADVJ, roger.

Prilog 2. Aerodromski simulator – Vježba 2

00:59:12 9ADAP, Zagreb Tower, proceed to November Three point at one thousand five hundred feet, runway in use zero five, wind zero six zero degrees, fower knots, QNH one zero one seven.

00:59:38 9ADAP, correct.

01:01:16 9ADAP, join left hand downwind runway zero five.

01:01:26 9ADAP, correct.

01:02:15 9ADEG, Zagreb Tower, taxi via taxiway Alpha to holding point runway zero five, wind zero six zero degrees, fower knots, QNH one zero one seven.

01:02:34 9ADEG, correct.

01:02:42 9ADEG, are you ready to copy ATC clearance?

01:02:51 9ADEG, cleared VFR flight to Varaždin, when airborne turn left, proceed to November three point at three thousand feet, squawk zero zero one zero.

01:03:16 9ADEG, correct.

01:03:31 9ADAP, roger, report final runway.

01:03:55 9ADAP, after low approach turn right, proceed to Echo two point at three thousand feet, squawk zero zero zero one.

01:04:16 9ADAP, correct.

01:04:44 9ADAP, cleared low approach runway zero five, wind zero six zero degrees, fower knots, not below thousand feet, QNH one zero one seven.

01:05:05 9ADAP, correct.

01:05:35 9ADEG, stand by.

01:06:24 9ADAP, roger, report passing two thousand feets.

01:06:38 9ADEG, cleared for take-off runway zero five, wind zero six zero degrees, fower knots.

01:07:36 9ADEG, roger, report passing two thousand feet.

01:08:10 9ADAP, roger, contact Zagreb Radar on one two zero decimal seven.

01:08:22 9ADAP, correct.

01:09:11 9ADAB, Zagreb Tower, proceed to November three point at two thousand feet runway in use zero five, wind zero six zero degrees, fower knots, QNH one zero one seven.

01:09:34 9ADAB, correct.

01:09:52 9ADEG, roger, contact Zagreb Radar on one two zero decimal seven.

01:10:03 9ADEG, correct.

01:10:17 9ACDH, Zagreb Tower, proceed to November three point at two thousand feet, runway in use zero five, wind zero six zero degrees, fower knots, QNH one zero one seven.

01:10:41 9ACDH, correct.

01:11:08 9ACDH, traffic is Cessna 172 (one seven two) inbound November two point, climbing to three thousand feet.

01:12:36 9ACDH, roger.

01:13:43 9ACDH, traffic is Cessna 210 (two one zero) from Whiskey one to November three at two thousand feet.

01:14:01 9ADAB, traffic is Cessna 150 (one five zero) from November one to November three at two thousand feet.

01:14:22 9ADAB, roger, join left hand downwind runway zero five.

01:14:33 9ADAB, correct.

01:14:47 9ACDH, roger.

01:15:06 S8DET, Zagreb Tower, proceed to Sierra two point at two thousand five hundred feet, runway in use zero five, wind zero six zero degrees, fower knots, QNH one zero one seven.

01:15:29 S8DET, correct.

01:15:40 9ADAB, roger, report final runway.

01:16:35 9ADAB, cleared to land runway zero five, wind zero six zero degrees, fower knots.

01:16:47 9ADAB, correct.

01:17:02 9ADBR, Zagreb Tower, taxi via taxiway Alpha to holding point runway zero five, wind zero six zero degrees, fower knots, QNH one zero one seven.

01:17:22 9ADBR, correct.

01:17:38 9ADAB, roger, vacate the runway via taxiway Charlie, report runway vacated.

01:17:51 9ADAB, correct.

01:18:35 9ADAB, roger.

01:18:42 9ADBR, are you ready to copy ATC clearance?

01:18:51 9ADBR, cleared VFR flight to Sinj, when airborne turn right, proceed to Sierra two (S2) point at two thousand five hundred feet, squawk zero zero one five.

01:19:20 9ADBR, readback squawk.

01:19:32 9ADBR, corect.

01:20:46 9ADBR, cleared for take-off runway zero five, wind zero six zero degrees, fower knots.

01:21:44 9ADBR, roger, report passing two thousand feet.

01:21:59 S8DET, traffic is Piper one eight, just airborne runway zero five, proceeding to Sierra two point, climbing to two thousand five hundred feet.

01:22:14 S8DET, roger

01:22:17 9ADBR, traffic is Cessna one seven two from Sierra one point to Sierra two point at two thousand five hundred feet.

01:22:32 9ADBR, roger.

01:22:42 9ACDH, join left hand downwind runway zero five.

01:23:04 S8DET, join right hand downwind runway zero five.

01:24:52 S8DET, traffic is Cessna one five zero heading final runway zero, left, correction, traffic is cessna one five zero turning to final left hand traffic circuit runway zero five.

01:25:20 S8DET, roger, number two, follow Cessna one five zero, report final.

01:25:38 9ACDH, cleared to land runway zero five, wind zero six zero degrees, fower knots.

01:25:59 9ADBR, roger, contact Zagreb Radar on one two zero decimal seven.

01:26:10 9ADBR, correct.

01:26:58 9ACDH, roger, vacate the runway via taxiway Charlie, report runway vacated.

01:27:40 9ACDH, roger.

Prilog 3. Aerodromski simulator – Vježba 3

01:33:59 9ADAP, correct.

01:35:29 9ADAP, roger, ~~proceed to~~,correction, join left hand downwind runway zero five.

01:35:42 9ADAP, correct.

01:36:36 9ADEG, Zagreb Tower, taxi via taxiway Bravo to holding point runway zero five, wind zero six zero degrees, fower knots, QNH one zero one seven.

01:36:56 9ADEG, correct.

01:37:02 9ADEG, are you ready to copy ATC clearance?

01:37:10 9ADEG, cleared VFR flight to Varaždin, when airborne turn left, proceed to November three point, altitude three thousand feet, sqawk zero zero one zero.

01:37:37 9ADEG, correct.

01:37:43 9ADAP, after low approach turn right proceed to Echo two point, altitude three thousand feet, squawk zero zero zero one.

01:38:06 9ADAP, correct.

01:38:41 9ADAP, cleared low approach runway zero five, wind zero six zero degrees, fower knots, not below thousand feet, QNH one zero one seven.

01:39:02 9ADAP, correct.

01:39:57 9ADEG, roger.

01:40:37 9ADAP, roger, report passing two thousand feet.

01:40:47 ~~9A~~, 9ADEG, cleared for take-off runway zero five, wind zero six zero degrees, fower knots

01:41:04 9ADEG, correct.

01:41:44 9ADEG, roger, report passing two thousand feet.

01:42:23 9ADAP, roger, contact Zagreb Radar on one two zero decimal seven.

01:42:34 9ADAP, correct.

01:43:13 9ADAB, Zagreb Tower, ~~roger~~, proceed to November three point, maintain two thousand feet, runway in use, wind, QNH.

01:43:25 ~~9ADAB, runway in use zero five, wind zero six sero degrees, fower knots, QNH one zero one seven.~~

01:43:41 9ADAB, correct.

01:43:52 9ADEG, roger, contact Zagreb Radar on one two zero decimal seven.

01:44:04 9ADEG, correct.

01:44:20 9ACDH, Zagreb Tower, ~~roger, continue,~~ proceed to November three point, maintain two thousand feet, runway in use zero five, wind zero six zero degrees, fower knots, QNH one zero one seven.

01:44:43 9ACDH, correct.

01:45:55 9ACDH, traffic is Cessna one seven two from November three point to November one point at three thousand feet.

01:46:40 9ACDH, roger.

01:47:37 9ADAB, roger, join left hand downwind runway zero five.

01:47:48 9SDAB, correct.

01:47:53 9ACDH, traffic is Cessna two one zero from, joining left hand downwind runway zero five, at one thousand five hundred feet.

01:48:15 9ADAB, traffic is Cessna one five zero from November one to November three point at three thousand feet, report traffic in sight.

01:48:36 9ADAB, roger.

01:48:44 9ACDH, roger.

01:48:55 S8DET,Zagreb Tower, ~~roger,~~ proceed to Sierra two point, maintain two thousand five hundred feet, runway in use zero five, wind zero six zero degrees, fower knots, QNH one zero one seven.

01:49:20 S8DET,~~ roger~~, correct.

01:49:36 9ADAB, cleared to land runway zero five, wind zero six zero degrees, fower knots.

01:49:48 9ADAB, correct.

01:50:54 9ADBR, Zagreb Tower, taxi via taxiway Bravo to holding point runway zero five, wind zero six zero degrees, fower knots, QNH one zero one seven.

01:51:14 9ADBR, correct, are you ready to copy ATC clearance?

01:51:50 9ADAB, roger, vacate the runway via taxiway Charlie, report runway vacated.

9ADAB, correct.

01:52:16 9ADBR, cleared VFR flight to Sinj, when airborne turn right, proceed to Sierra two point, altitude two thousand five hundred feet, squawk zero zero one five.

01:52:40 9ADBR, correct.

01:52:49 9ADAB, roger.

01:53:23 9ADBR, cleared for take-off runway zero five, wind zero six zero degrees, fower knots.

01:53:35 9ADBR, correct.

01:54:16 9ADBR, roger, report passing two thousand feet.

01:54:40 S8DET, traffic is Piper one eight just departed runway zero five, proceeding to Sierra two point,climbing to, report traffic in sight.

S8DET, roger.

01:55:01 9ADBR, traffic is Cessna one seven two, from Sierra one point to Sierra two point at two thousand five hundred feet.

01:55:14 9ADBR, roger.

01:55:38 9ACDH, join left hand downwind runway zero five.

01:55:49 9ACDH, ~~roger~~ correct.

01:56:46 S8DET, join right hand downwind runway zero five.

01:56:57 S8DET, correct.

01:57:01 9ADBR, report level.

01:57:12 9ADBR, roger, contact Zagreb Radar on onw two zero decimal seven.

01:57:24 9ADBR, correct.

01:58:03 9ACDH, cleared to land runway zero five, wind zero six zero degrees, fower knots.

01:58:14 9ACDH, correct.

01:58:34 S8DET, traffic is Cessna one five zero, ~~heading to~~ turning final runway zero five, report traffic in sight.

01:58:48 S8DET, roger, number two, follow Cessna one five zero, report final.

01:59:03 ~~S8DET, report final.~~

02:00:44 ~~9A,~~ 9ACDH, roger, vacate the runway via taxiway Charlie, report runway vacated.

02:00:58 9ACDH, correct.

02:01:26 9ACDH, roger.

02:01:31 S8DET, cleared to land runway zero five, wind zero six zero degrees, fower knots.

Prilog 4. Aerodromski skimulator – Vježba 4

00:03:39 Croatia 416 (fower one six), Zagreb Tower, departure runway zero five, wind zero six zero degrees, fower knots, QNH 1017, temperature one two, dew point one zero.

00:03:56 Croatia 416, correct.

00:05:00 Croatia 416, start up approved.

00:05:11 Croatia 416, correct.

00:05:20 Croatia 416, are you ready to copy ATC clearance?

00:05:27 Croatia 416, cleared to Frankfurt via flight planned route, flight level one three zero, OBUTI2H SID, squawk six five five fower.

00:05:50 Croatia 416, correct.

00:06:03 9ADRA, Zagreb Tower, cleared, ~~correction~~, correction, taxi via taxiway Alpha to holiding point runway zero five, wind zero six zero degrees, fower knots, QNH one zero one seven

00:06:25 9ADRA, correct.

00:06:43 9ADRA, are you ready to copy ATC clearance?

00:07:04 9ADRA, cleared VFR training flight, when airborne turn left ~~join left,~~ join left hand downwind runway zero five, at one thousand five hundred feet, squawk zero zero one zero.

00:07:29 9ADRA, correct.

00:07:36 Croatia 416, taxi via taxiway Alpha to holding point runway zero five.

00:08:47 Croatia 416, correct.

00:08:53 Croatia 416, cleared for take-off runway zero five, wind zero six zero degrees, fower knots.

00:09:04 Croatia 416, correct.

00:09:51 Croatia 416, roger, contact Zagreb Radar on one two zero decimal seven.

00:10:01 Croatia 416, correct.

00:10:19 9ADRA, stand by.

00:10:37 9ADRA, line up and wait.

00:10:45 9ADRA, correct.

00:11:38 9ADRA, cleared for take-off runway zero five, wind zero six zero degrees, fower knots.

00:11:51 9ADRA, correct.

00:12:29 9ADRA, correct, report on left/right hand downwind runway.

00:13:10 9ADBR, Zagreb Tower, taxi via taxiway Alpha to holding point runway zero five, wind zero six zero degrees, fower knots, QNH one zero one seven.

00:13:28 9ADBR, correct.

00:13:36 9ADBR, are you ready to copy ATC clearance?

00:13:44 9ADBR, cleared VFR flight to Sinj, when airborne turn right, proceed to Sierra two point, altitude two thousand five hundred feet, squawk zero zero one five.

00:14:09 9ADBR, correct.

00:14:24 9ADRA, correct, after touch and go turn left, join left hand downwind runway zero five, ~~report on final runway zero five~~

00:14:43 9ADRA, correct.

00:15:27 9ACDH, Zagreb Tower, roger, proceed to November three point, altitude two thousand feet, runway in use zero five, wind zero six zero degrees, fower knots, QNH one zero one seven.

00:15:51 9ACDH, correct.

00:16:50 9ADRA, roger, cleared for touch and go runway zero five, wind zero six zero degrees, fower knots.

00:17:07 9ADRA, correct.

00:17:16 9ADBR, roger, hold short.

00:17:26 9ADBR, correct.

00:17:38 9ADBR, traffic is Cessna one seven two on short final runway zero five, report traffic in sight.

00:17:52 9ADBR, roger, behind Cessna one seven two, line up behind.

00:18:06 9ADBR, correct.

00:18:35 9ADRA, roger, report on left/right hand downwind runway.

00:18:49 9ADRA, report on left hand downwind runway zero five.

00:19:38 9ADBR, cleared for take-off runway zero five, wind zero six zero degrees, fower knots.

00:19:50 9ADBR, correct.

00:20:10 9ADRA,roger, after touch and go turn left, join left hand downwind runway zero five, ~~report on final runway zero five.~~

00:20:26 9ADRA, correct.

00:20:40 9ADBR, roger, report passing two thousand feet.

00:21:29 9ADAB, Zagreb Tower, roger, proceed to Sierra two point, maintain two thousand feet, runway in use zero five, wind zero six zero degrees, fower knots, QNH one zero one seven.

00:21:58 9ADAB, negative, QNH one zero one seven.

00:22:06 9ADAB, correct.

00:22:16 9ADAB, traffic is Piper one eight from Sierra two point to Sierra one point at two thousand five hundred feet.

9ADAB, roger.

00:22:46 9ADBR, traffic is Cessna two one eight, from Sierra one to Sierra two point at two thousand feet.

9ADBR, roger.

00:23:08 9ADRA, roger, cleared for touch and go runway zero five, wind zero six zero degrees, fower knots.

00:23:30 9ADBR, roger, contact Zagreb Radar on one two zero decimal seven.

00:23:41 9ADBR, correct.

00:24:31 9ADRA, roger, report on left hand downwind runway zero five.

00:24:46 9ACDH, traffic is Cessna one seven two performing touch and go, just turned on left hand base runway zero five, climbing to one thousand five hundred feet.

9ACDH, roger.

00:25:27 Croatia six three two (632), Zagren Tower, roger, continue approach, report ILS established.

00:26:06 9ACDH, orbit to the left/right at present position.

00:26:15 9ACDH, correct.

00:26:30 Croatia 632, roger, continue ~~ILS~~ approach, report passing outer marker.

00:26:50 9ADAB, roger, orbit to the left/right over Sierra two point.

00:27:29 9ADRA, report position.

00:27:46 9ADRA, roger, extend left/right hand downwind runway zero five, traffic is Dash 8 ~~on,~~ approaching outer marker, report traffic in sight.

00:28:12 9ADRA, roger, you are number two, follow Dash 8, report on final runway, caution wake turbulence.

00:28:32 9ADRA, correct.

00:29:09 Croatia 632, roger, cleared to land runway zero five, wind zero six zero degrees, fower knots.

00:29:22 Croatia 632, correct.

00:30:23 Croatia 632, roger, vacate the runway via taxiway Delta, report runway vacated.

00:30:37 Croatia 632, correct.

00:31:11 Croatia 632, roger, taxi via taxiway Foxtrot to the apron.

00:31:19 Croatia 632, correct.

00:31:27 9ADRA, roger, cleared for touch and go runway zero five, wind zero six zero degrees, fower knots.

00:31:47 9ACDH, stop orbiting, proceed to November three point.

00:32:02 9ACDH, correct.

00:32:55 9ADRA, roger.

00:33:27 9ACDH, roger, join left hand downwind runway zero five.

00:33:38 9ADRA, traffic is Cessna one five zero (150) on left hand downwind runway zero five, altitude, report traffic in sight.

00:33:56 9ADRA, roger, you are number two, follow Cessna 150, report on downwind.

00:35:27 9ACDH, roger, cleared to land runway zero five, wind zero six zero degrees, fower knots.

00:36:13 9ACDH, roger, vacate runway via taxiway Charlie.

00:36:23 9ACDH, correct, report runway vacated.

00:36:48 9ACDH, roger.

00:36:56 9ADAB, stop orbiting, join right hand downwind runway zero five.

00:37:10 9ADAB, correct.

00:37:20 9ADRA, roger, cleared for touch and go runway zero five, wind zero six zero degrees, fower knots.

00:37:32 9ADRA, correct, after touch and go turn left join left hand downwind runway zero five.

00:37:45 9ADRA, correct.

00:38:17 9ADAB, roger, report on final runway zero five, traffic is Cessna 172 departing runway zero five.

00:38:37 9ADAB, roger.

00:38:54 9ADAB, roger, cleared to land runway zero five, wind zero six zero degrees, fower knots.

Prilog 5. Aerodromski simulator – Vježba 5

00:51:21 Croatia six six two (662), Zagreb Tower, departure runway zero five, wind zero six zero degrees, fower knots, QNH one zero one seven, temperature two dew point one zero.

00:51:40 Croatia 662, correct.

00:52:34 Croatia 662, start up approved.

Croatia 662, correct.

00:52:41 Croatia 662, are you ready to copy ATC clearance?

00:52:47 Croatia 662, cleared to Dubrovnik via flight planned route, flight level one five zero, ~~follow~~ TEBLI Five Charlie departure, squawk seven zero six three.

00:53:09 Croatia 662, correct.

00:53:47 9ABVN, taxi via taxiway, correction, Zagreb Tower, taxi via taxiway Alpha to holding point runway zero five, wind zero six zero degrees, fower knots, QNH one zero one seven.

00:54:11 9ABVN, correct.

00:54:21 Croatia 662, taxi via taxiway Alpha to holding point runway zero five.

00:54:32 Croatia 662, correct.

00:54:36 9ABVN, are you ready to copy ATC clearance?

00:54:45 9ABVN, cleared VFR flight to Zadar, when airborne turn right, proceed to Sierra two point at two thousand feet, squawk zero zero one five.

00:55:10 9ABVN, correct

00:56:39 9ABVN, roger, cleared for take-off runway zero five, wind zero six zero degrees, fower knots.

00:56:51 9ABVN, correct.

00:57:14 9ADRE, Zagreb Tower, taxi via taxiway Alpha to holding point runway zero five, wind zero six zero degrees, fower knots, QNH one zero one seven.

00:57:31 9ADRE, correct.

00:57:42 9ABVN, roger, report passing two thousand feet.

00:57:57 Croatia 662, report position.

00:58:08 Croatia 662, roger.

00:58:11 9ADRE, are you ready to copy ATC clearance?

00:58:20 9ADRE, cleared VFR training flight, when airborne turn left, join left hand downwind runway zero five at one thousand five hundred feet, squawk zero zero one zero.

00:58:44 9ADRE, correct.

00:59:03 9ADVJ, Zagreb Tower, roger, continue, correction, proceed to Sierra two point, maintain two thousand five hundred feet, wind zero six zero degrees, fower knots, QNH one zero one seven.

00:59:29 9ADVJ, correct.

00:59:38 9ADVJ, traffic is Piper 18 just departed from runway zero five, from Sierra two point to Sierra one point at two thousand five hundred feet.

9ADVJ, roger.

00:59:58 9ABVN, traffic is Cessna one seven two, from Sierra one to Sierra two point at two thousand five hundred feet.

9ABVN, roger.

01:00:30 Croatia 662, report position.

01:00:40 Croatia 662, roger, cleared for take-off runway zero five, wind zero six zero degrees, fower knots.

01:00:51 Croatia 662, correct.

01:01:17 9ABVN, report level.

01:01:25 9ABVN, roger, contact Zagreb Radar on one two zero decimal seven.

01:01:35 9ABVN, correct.

01:01:45 Croatia 662, roger, contact Zagreb Radar on one two zero decimal seven.

01:01:56 Croatia 662, correct.

01:02:10 9ADRE, line up runway zero five.

01:02:19 9ADRE, correct.

01:03:26 9ADRE, cleared for take-off runway zero five, wind zero six zero degrees, fower knots.

01:03:37 9ADRE, correct.

01:04:17 9ADRE, roger, report left/right hand downwind runway.

01:04:28 9ADRE, report left hand downwind runway zero five.

01:05:34 9ADRE, roger, report final runway zero five.

01:05:41 9ADRE, after touch and go turn left, join left hand downwind runway zero five.

01:05:54 9ADRE, correct.

01:06:13 9ADV, correction 9ADVJ, join right hand downwind runway zero five.

01:06:27 9ADVJ, correct.

01:06:41 9ASLR, Zagreb Tower, ~~roger,~~ proceed to November three point, maintain two thousand feet, runway in use zero five, wind zero six zero degrees, fower knots, QNH one zero one seven.

01:07:04 9ASLR, correct.

01:08:09 9ADRE, roger, cleared for touch and go runway zero five, wind zero six zero degrees, fower knots.

01:08:20 9ADRE, correct.

01:08:25 9ADVJ, traffic is Cessna 172 on final runway zero five, performing touch and go, report traffic in sight.

01:08:38 9ADVJ, roger, number two, follow Cessna 172, report final runway zero five.

01:08:52 9ADVJ, correct.

01:09:53 9ADRE, roger, report left hand downwind runway zero five.

01:10:09 9ADVJ, roger, continue approach ~~runway,~~ correction, traffic just departed runway zero five, expect landing clearance shortly.

01:10:43 9ADVJ, cleared to land runway zero five, wind zero six zero degrees, fower knots.

01:10:55 9ADVJ, correct.

01:11:11 9ASLR, traffic is Cessna 172 just departed runway zero five, turning left hand downwind runway zero five.

9ASLR, roger.

01:11:29 9ADRE, traffic is Cessna 219 from (?), correction Whiskey one point to November three point at two thousand feet.

9ADRE, roger.

01:12:00 9ADVJ, roger, vacate the runway via taxiway Charlie, taxi via taxiway Foxtrot to the apron, report runway vacated.

01:12:14 9ADVJ, correct.

01:12:30 9ASLR, join left hand downwind runway zero five, number two, follow Cessna 172, report downwind.

01:12:56 9ASLR, correct.

01:13:13 9ADVJ, roger.

01:13:28 9ADRE, cleared for touch and go runway zero five, wind zero six zero degrees, fower knots.

01:13:40 9ADRE, correct, after touch and go turn left, join left hand downwind runway zero five.

01:13:55 9ADRE, correct.

01:15:35 9ADRE, roger, report left hand downwind runway zero five.

01:15:53 Qatari two zero niner (209), Zagreb Tower, roger, continue approach, report passing outer marker.

01:16:06 Qatari 209, correct.

01:16:14 9ASLR, roger, continue approach, expect landing clearance shortly, traffic just departed runway zero five.

01:16:30 9ASLR, cleared to land runway zero five, wind zero six zero degrees, fower knots.

01:16:41 9ASLR, correct.

01:16:55 9ASLR, roger, vacate the runway via taxiway Charlie, via taxiway Foxtrot to the apron, report runway vacated.

01:17:10 9ASLR, correct.

01:17:29 9ASLR, roger.

01:17:33 9ADRE, traffic is Airbus three two zero, passing outer marker runway zero five, report traffic in sight.

01:17:48 9ADRE, roger, extend left hand downwind runway zero five, follow Airbus three two zero, correction, number two, follow A320,report final runway zero five, caution wake turbulence.

01:18:11 9ADRE, correct.

01:18:20 Qatari 209, roger, cleared to land runway zero five, wind zero six zero degrees, fower knots.

01:18:31 Qatari 209, correct.

01:18:43 9ADRE, report final runway zero five.

01:18:56 Qatari 209, roger, vacate the runway via taxiway Delta, taxi via taxiway Foxtrot to the apron, report runway vacated.

01:19:13 Qatari 209, negative, vacate the runway via taxiway Delta, taxi via taxiway F to the apron, report ruway vacated.

01:19:28 Qatari 209, correct.

01:19:50 Qatari 209, roger.

01:20:01 9ADRE, roger, cleared for touch and go runway zero five, wind zero six zero degrees, fower knots.

01:20:13 9ADRE, correct, after touch and go turn left, join left hand downwind runway zero five.

01:20:24 9ADRE, correct.

Prilog 6. Prilazni simulator – Vježba 1

00:00:39 Zagreb Approach

00:00:43 Croatia 410, released

00:00:49 F J (Foxtrot Juliet) ~~bye.~~

00:01:29 Zagreb Approach

00:01:33 Croatia 652, released

00:01:42 Croatia 652, released in one minute.

00:01:47 F J (Foxtrot Juliet) ~~bye.~~

00:02:24 Croatia 410, Zagreb Radar, identified, recleared, after passing fower thousand feet, turn left, cleared direct to PODET, climb to flight level 180.

00:02:43 Croatia 410, correct.

00:05:00 Croatia 652, Zagreb Radar, identified, recleared, after passing three thousand feet, turn right, cleared direct to NIVES, climb to flight level two zero zero.

00:05:22 Croatia 652, correct.

00:06:23 Croatia 410, contact Ljubljana Radar on one three five decimal two seven five.

00:06:35 Croatia 410, ~~goodbye~~ correct.

00:06:42 Zagreb Approach.

00:06:49 Croatia 650, released.

00:07:58 9ADWA, Zagreb Radar, identified, recleared, after passing 3000/4000 ft, turn left/right, cleared direct to PETOV, altitude/flight level.

00:08:08 9ADWA, correct.

00:08:21 Adria 360, Zagreb Radar, identified, leave PETOV on heading one niner zero, maintain flight level one five zero, vectoring for ILS approach runway zero five.

00:08:44 Adria 360, correct.

00:08:58 Croatia 650, Zagreb Radar, identified, recleared, after passing fower thousand feet, correction three thousand feet, turn right, cleared direct to KOTOR, climb to flight level one five zero.

00:09:31 Croatia 650, correct.

00:09:39 9ADWA, descent to flight level one six zero.

00:09:51 9ADWA, correct.

00:09:56 Adria 360, descent to six thousand feet, QNH.

00:10:03 ~~Adria 360, QNH one zero two zero.~~

00:10:10 Adria 360, correct.

00:10:43 Adria 360, descent to seven thousand feet.

Adria 360, correct.

00:14:10 9ADWA, stand by.

00:14:31 WizzAir 441 (fower fower one), Zagreb Radar, identified, fly heading one five zero, ~~maintain flight level,~~ maintain niner thousand feet, QNH one zero two zero, vectoring for ILS approach runway zero five.

00:14:58 WizzAir 441, correct.

00:15:05 Croatia 652, contact Zagreb Radar on one three five decimal eight.

00:15:16 Correct, ~~goodbye~~ correct.

00:15:34 RyanAir ADWA (Alpha Delta Whiskey Alpha), descent to flight level one two zero.

00:15:45 9ADWA, correct.

00:17:55 WizzAir 441, turn left heading one two zero, descent to three thousand, correction, descent to six thousand feet.

00:18:08 WizzAir 441, correct.

00:18:11 Adria 360, stop descent flight level, correction, seven thousand feet.

00:18:21 Adria 360, correct.

00:19:35 Croatia 650, climb to flight level two zero zero.

00:19:45 Croatia 650, correct.

00:19:57 Croatia 620, Zagreb Radar, identified, cleared direct to PIS (Papa India Sierra),altitude, QNH, expect straight-in ILS approach runway, maintain flight level one fower zero.

00:20:16 Croatia 620, correct.

00:20:25 Croatia 620, report speed.

00:20:34 Croatia 620, roger, maintain two one zero knots.

00:20:43 620, correct.

00:20:47 WizzAir 441 (four four one), descent to three thousand feet.

00:20:57 WizzAir 441 (four four one), correct.

00:21:09 Croatia 661, Zagreb Radar, identified, fly heading three one zero, maintain flight level one five zero, vectoring for ILS approach runway zero five.

00:21:27 661, correct.

00:21:38 WizzAir 441 (four four one), turn left heading zero eight zero, cleared for ILS approach runway zero five, report ILS established.

00:21:53 WizzAir 441 (four four one), correct.

00:21:57 Adria 360, descent five thousand feet.

00:22:05 Adria 360, correct.

00:22:35 Adria 360, report speed.

00:22:42 Adria 360, reduce speed to two three zero knots.

00:22:51 Adria 360, correct.

00:22:57 Adria 360, reduce speed to two one zero knots.

00:23:04 Adria 360, correct.

00:23:07 Adria 360, turn left heading one three zero.

00:23:15 Croatia 620, reduce speed to one niner zero knots.

00:23:25 Croatia 620, correct.

00:23:31 WizzAir 441 (fower fower one), contact Zagreb Tower on one one eight decimal three.

WizzAir 441, correct.

00:23:38 Adria 360, descend to three thousand feet, turn left heading zero eight zero, cleared for ILS approach runway zero five, report ILS established.

00:23:57 Adria 360, correct.

00:24:04 Croatia 620, descend to six thousand feet, QNH.

00:24:22 Croatia 620, descend to six thousand feet, QNH one zero two zero.

00:24:31 Croatia 620, correct.

00:24:55 Croatia 650, contact Zagreb Radar on one one eight decimal three.

00:25:12 Contact, correction, contact Zagreb Radar on one three five decimal eight.

00:25:22 Croatia 650, correct.

00:25:29 Adria 360, contact Zagreb Tower on one one eight decimal three.

00:25:38 Adria 360, correct.

00:25:41 9ADWA, contact Ljubljana Radar on one three five decimal two seven five.

00:25:54 9ADWA, ~~goodbye~~ correct.

00:25:59 Croatia 620, descent to three thousand feet, report (?) descent.

00:26:11 Croatia 620, descent to reach PIS at time/point.

00:26:25 Croatia 620, correct.

00:26:44 Croatia 661, turn right heading three five zero, descent to six thousand feet, QNH one zero two zero.

00:26:59 Croatia 661, correct.

00:27:07 Croatia 620, cleared for ILS approach runway zero five, report ILS established.

00:27:16 Croatia 620, correct.

Prilog 7. Prilazni simulator – Vježba 2

00:01:46 Croatia 580, Zagreb Radar, identified, fly heading one two five, descent to niner thousand feet, QNH one zero two zero, vectoring for ILS approach runway, check information Alpha.

00:02:05 Croatia 580, correct.

00:02:13 WizzAir 176, Zagreb Radar, identified, leave PETOV heading one niner five, maintain flight level one five zero, vectoring for ILS approach runway zero five, information Alpha.

00:02:40 WizzAir 176, correct.

00:02:46 Croatia 580, turn left heading one two zero.

00:03:03 Croatia 580, negative, turn left heading one two zero.

00:03:12 Croatiaa 580, correct, descent to six thousand feet.

Croatia 580, correct.

00:03:27 WizzAir 176, descent to seven thousand feet, QNH one zero two zero.

00:03:41 Zagreb Approach

00:03:46 ~~Release approved for~~ RyanAir 484 (fower eight fower) release.

00:04:16 RyanAir 484, Zagreb Radar, identified, recleared, after passing three thousand feet turn right, direct to NIVES, climb to altitude.

00:04:38 RyanAir 484, Zagreb Radar, identified, recleared, after passing three thousand feet turn right, direct to NIVES, climb to flight level two zero zero.

00:04:57 RyanAir 484, correct.

00:05:09 AirBerlin 828, Zagreb Radar, identified, turn left heading two five five, maintain flight level one fower zero, vectoring for ILS approach runway zero five, information Alpha.

00:05:31 AirBerlin 28, correction 828, correct.

00:05:39 Croatia 580, descent to fower thousand feet.

00:05:55 Croatia 674 (six seven fower), Zagreb Radar, identified, turn left heading three two zero, maintain flight level one one zero, vectoring for ILS approach runway zero five, check information Alpha.

00:06:20 Croatia 674, correct.

00:06:23 WizzAir 176, descent to five thousand feet.

00:06:31 WizzAir 176, disregard, descent to six thousand feet.

00:06:41 Croatia 580, descent to three thousand feet, turn left heading zero eight zero, cleared for ILS approach runway zero five, report established.

00:06:59 Croatia 580, correct.

00:07:18 Croatia 674, descent to seven thousand feet, QNH one zero two zero.

00:08:22 WizzAir 176, turn right heading two one five.

00:08:44 WizzAir 176, descent to five thousand feet.

00:08:56 Croatia 580, roger, contact Zagreb Tower on one one eight decimal three.

00:09:04 Croatia 580, correct, ~~goodbye.~~

00:09:22 Croatia 674, descent to six thousand feet.

Croatia 674, correct.

00:09:48 AirBerlin 828, report speed.

00:10:01 AirBerlin 828, reduce speed to two zero zero knots.

AirBerlin 828, correct.

00:13:04WizzAir 176, turn left heading one one five.

WizzAir 176, correct.

00:13:14 Croatia 674, turn right heading three fower zero.

00:13:22 Croatia 674, correct.

00:13:40 AirBerlin 828, descent to seven thousand feet, QNH one zero two zero.

AirBerlin 828, correct.

00:13:50 WizzAir 176, turn left heading zero eight zero, descent to three thousand feet, cleared for ILS approach runway zero five, report established.

00:14:07 WizzAir 176, correct.

00:14:09 RyanAir 484, contact Zagreb Radar on one three five decimal eight.

00:14:19 RyanAir 484, correct, ~~bye bye.~~

00:14:28 Croatia 674, descend to fower thousand feet.

00:14:40 Zagreb Approach.

00:14:46 ~~Release approved for~~ Austrian 212 released.

00:14:53 ~~Bye.~~ Initials

00:15:07 AirBerlin 828, descent to five thousand feet.

00:15:56 Austrian 212, Zagreb Radar, identified, recleared, after passing fower thousand feet cleared direct to OBUTI, climb to flight level two zero zero.

00:16:16 Austrian 212, correct.

00:16:21 WizzAir 176, roger, contact Zagreb Tower on one one eight decimal three.

00:16:29 WizzAir 176, correct, ~~bye bye.~~

00:16:39 AirFrance 3107, Zagreb Radar, identified, turn right heading one five zero, descend to niner thousand feet, QNH one zero two zero, vectoring for ILS approach runway, check information Alpha.

00:17:04 AirFrance3107, correct.

00:17:09 Croatia 674, turn right heading zero two zero, descent to three thousand feet, cleared for ILS approach runway zero five, report ILS established.

00:17:25 Croatia 674, correct.

00:18:30 AirBerlin 828, descent to fower thousand feet.

AirBerlin 828, correct.

00:18:56 AirBerlin 828, turn right heading three one zero.

AirBerlin 828, correct.

00:19:14 AirFrance 3107, descent to five thousand feet.

AirFrance 3107, correct.

00:20:01 Croatia 674, roger, contact Zagreb Radar on one one eight decimal three.

00:20:09 Croatia 674 correct.

00:22:54 AirFrance 3107, turn left heading zero (?) zero, intercept localiser, reduce speed to two zero zero knots.

00:23:25 AirBerlin 828, turn right heading zero two zero, descent to three thousand feet, cleared for ILS approach runway zero five, repor ILS established.

00:23:45 AirBerlin 828, negative, turn right heading zero two zero, descent to three thousand feet, ~~still~~ cleared for ILS approach runway, report ILS established.

00:24:29 AirBerlin 828, roger, contact Zagreb Tower on one one eight decimal three.

00:24:40 AirFrance 3107, descent to three thousand feet, correction, (?).

Prilog 8. Prilazni simulator – Vježba 3

00:47:35 Croatia 651, Zagreb Radar, identified, leave RUDIK heading three two zero, maintain flight level one one zero, vectoring for ILS approach runway zero five.

00:48:04 Croatia 651, correct.

00:49:37 Croatia 373, Zagreb Radar, identified, ~~leave ARGOM heading,~~ fly heading one one five, descent to niner thousand feet, QNH one zero two zero, vectoring for ILS approach runway zero five.

00:50:02 Croatia 373, correct.

00:50:13 Qatari eight fower eight, Zagreb Radar, identified, leave KOPRI on heading two two five, maintain flight level one two zero, vectoring for ILS approach runway zero five, check information Alpha.

00:50:38 Qatari 848, correct.

00:50:43 Zagreb Approach

00:50:49 Croatia 650, released.

00:50:52 F J (Foxtrot Juliet)

00:50:55 Croatia 373, descent to six thousand feet.

00:51:04 Croatia 373, correct.

00:51:11 Croatia 651, descent to seven thousand feet, QNH one zero two zero.

00:51:21 Croatia 651, correct.

00:51:30 Tyrolean one three zero fower (1304), Zagreb Radar, identified, leave PETOV heading one niner five, maintain flight level one five zero, vectoring for ILS approach runway zero five, check information Alpha.

00:51:55 Tyroleon 1304, correct.

00:52:15 Croatia 373, descent to fower thousand five hundred feet.

00:52:28 Croatia 373, correct.

00:52:55 Zagreb Approach

00:53:02 9AJSB, released.

00:53:07 F J

00:53:12 Tyrolean 1304, descent to eight thousand feet, QNH one zero two zero.

00:53:24 Tyroleon 1304, correct.

00:53:37 Croatia 630, Zagreb Radar, identified, recleared, after passing 3000/4000 ft, cleared direct to KOTOR, climb to flight lever two zero zero.

00:54:13 Croatia 370, descent to three thousand feet.

Croatia 370, correct.

00:54:44 Croatia 651, descent to fower thousand feet.

00:54:52 Croatia 651, correct.

00:54:58 Croatia 370, turn left heading zero eight zero, cleared for ILS approach runway zero five, report ILS established.

00:55:10 Croatia 370, correct.

00:55:21 BlachSea 1606, Zagreb Radar, identified, leave KOPRI on heading two two five, maintain flight level one two zero, vectoring for ILS approach runway zero five, check information Alpha.

00:56:10 9AJSB, Zagreb Radar, identified, relceared, after passing fower thousand feet, turn left, cleared direct to PETOV, correction PODET, climb to one eight zero flight level.

00:56:47 Qatari 848, descent to niner thousand feet, QNH one zero two zero, one, correction, one zero two zero.

00:56:59 Qatari 848, correct.

00:57:10 Tyrolien 1304, descent to six thousand feet.

00:57:19 Tyroleon 1304, correct.

00:57:39 ~~Croatia 651~~

00:57:44 Croatia 373, roger, contact Zagreb Tower on one one eight decimal three.

00:57:55 ~~Goodbye.~~ Croatia 373, correct.

00:58:00 Croatia 651, turn right heading ~~zero two,~~ zero two zero, descent to three thousand feet, cleared for ILS approach runway zero five, report ILS established.

00:58:21 Croatia 651, correct.

00:58:41 Croatia 650, contact Zagreb Radar on one three five fecimal eight.

00:58:52 Croatia 650, ~~goodbye.~~ Correct.

00:59:03 Tyroleon 1304, descent to five thousand feet.

00:59:12 Tyroleon 1304, correct.

00:59:21 Qatari 848, descent to six thousand feet.

00:59:29 Qatari 848, correct.

00:59:52 BlackSea 1606, descent to seven thousand feet, QNH.

01:00:03 BlackSea 1606, QNH one zero two zero.

01:00:12 BlackSea 1606, correct.

01:00:42 9AJSB, contact Ljubljana Radar on one three five decimal two seven five.

01:00:57 9AJSB, correct.

01:01:34 Tyroleon 1304, descent to three thousand feet.

01:01:55 Tyroleon 1304, stop descent at five thousand feet, ~~fower thousand~~, fower thousand feet, correction.

01:02:10 Tyroleon 1304, correct.

01:02:15 Croatia 651, roger, contact Zagreb Tower on one one eight decimal three.

01:02:25 Croatia 651, ~~goodbye~~. Correct.

01:02:36 Tyroleon 1304, turn left heading zero eight zero, descent to three thousand feet, cleared for ILS approach runway zero five, report ILS established.

01:02:54 Tyroleon 1304, correct.

01:03:02 Qatari 848, descent to fower thousand feet.

01:03:10 Qatari 848, correct.

01:03:14 BlackSea 1606, descent to five thousand feet.

01:03:23 BlackSea 1606, correct.

01:05:39 Qatari 848, turn right heading three six zero.

01:05:50 Qatari 848, correct.

01:06:00 Tyroleon 1304, roger, contact Zagreb Tower on one one eight decimal three.

01:06:10 Tyroleon 1304, ~~goodbye~~. Correct.

01:06:21 Qatari 848, descent to three thousand feet.

01:06:28 Qatari 848, correct.

01:06:36 Qatari 848, turn right heading zero two zero, cleared for ILS approach runway zero five, report ILS established.

01:06:51 Qatari 848, correct.

01:07:11 BlackSea 1606, descent to fower thousand feet.

01:07:19 BlackSea 1606, correct.

01:08:41 Qatari 848, roger, contact Zagreb Tower on one one eight decimal three.

01:08:51 Qatari 848, ~~goodbye~~. Correct.

01:08:55 BlackSea 1606, ~~turn~~, turn right heading three five zero, descent to three thousand feet.

01:09:16 BlackSea 1606, correct.

01:09:47 BlackSea 1606, turn right heading zero two five, cleared for ILS appraoch runway zero five, report ILS established.

BlackSea 1606, correct.

Prilog 9. Prilazni simulator – Vježba 4

01:33:57 Croatia 587, correction 580, Zagreb Radar, identified, fly heading three zero zero, radar vectoring for ILS approach runway zero five, maintain, correction, descent to niner thousand feet.

01:34:17 Croatia 580, correction, fly heading one two zero, radar vectoring for ILS approach runway zero five, descent to niner thousand feet.

01:34:35 Croatia 580, correct.

01:34:47 WizzAir 176, Zagreb Radar, identified, leave PETOV heading one niner zero, radar vectoring for ILS approach runway zero five, maintain flight level one five zero.

01:35:09 WizzAir 176, correct.

01:35:15 Zagreb Radar

01:35:21 RyanAir fower eight fower (484), released.

01:35:25 M O (Mike Oscar)

01:35:42 WizzAir 176, descent to flight level one zero zero.

01:35:52 WizzAir 176, correct.

01:36:50 Croatia 587, descent to six thousand feet, QNH one zero two zero.

01:37:01 Croatia 587, correct.

01:37:03 RyanAir eight fower eight (848), Zagreb Radar, identified, climb to flight level two zero zero, follow NIVES three Charlie departure.

01:37:20 RyanAir 848, corect.

01:37:32 AirBerlin 828, Zagreb Radar, identified, fly heading two six zero, maintain flight level one fower zero, radar vectoring for ILS approach runway zero five.

01:37:53 AirBerlin 828, correct.

01:38:07 Croatia six seven fower (674), Zagreb Radar, identified, turn left heading three three five, maintain flight level one one zero, radar vectoring for ILS approach runway zero five.

01:38:28 Croatia 674, correct.

01:38:32 Croatia 580, descent to five thousand feet.

01:38:40 Croatia 580, correct.

01:38:48 Croatia 584, correction 580, descent to three thousand feet.

01:38:57 Croatia 580, correct.

01:39:02 WizzAir 176, descent to fower thousand feet, correction six thousand feet, QNH one zero two zero.

01:39:14 WizzAir 176, correct.

01:39:26 Croatia 674, descent to seven thousand feet, QNH one zero two zero.

01:39:38 Croatia 674, correct.

01:39:53 Croatia 580, turn left heading zero eight zero, cleared for ILS approach runway zero five, report ILS established.

01:40:06 Croatia 580, correct.

01:40:44 AirBerlin 828, descent to eight thousand feet, QNH one zero two zero.

01:40:54 AirBerlin 828, correct.

01:41:04 WizzAir 176, repor heading.

01:41:16 WizzAir 176, roger.

01:41:25 Croatia 674, report heading.

Croatia 674, roger.

01:41:44 WizzAir 176, descent to five thousand feet.

01:41:52 WizzAir 176, correct.

01:42:03 Croatia 580, roger, contact Zagreb Tower on one one eight descimal three.

01:42:12 Croatia 580, correct, ~~goodbye.~~

01:42:24 Croatia 674, descent to six thousand feet.

Croatia 674, correct.

01:42:52 RyanAir 848, contact Zagreb Radar on one one, correction, one three five decimal eight.

01:43:02 RyanAir 848, correct, ~~goodbye.~~

01:43:17 WizzAir 176, turn right heading one three zero, descent to three thousand feet.

01:43:35 ~~WizzAir 176, correction, turn left heading zero eight.~~

01:45:29 WizzAir 176, correction, turn left heading one six zero and descent to three thousand feet.

01:45:40 WizzAir 176, correct.

01:45:53 Zagreb Radar

01:45:57 Austrian 212, released.

Initials

01:46:02 Croatia 674, descent to fower thousand feet.

01:46:11 Croatia 674, correct.

01:46:22 AirBerlin 828, descent to five thousand feet.

01:46:29 AirBerlin 828, correct.

01:47:34 WizzAir 176, turn left heading zero eight zero, cleared for ILS approach runway zero five, report ILS established.

01:46:47 WizzAir 176, correct.

01:48:10 Austrian 212, Zagreb Radar, identified, recleared, after passing fower thousand feet turn left, cleared direct to OBUTI, climb to flight level one eisht zero.

01:48:31 Austrian 212, correct.

01:48:46 AirFrance 3107, Zagreb Radar, identified, turn right heading one fower five, desent to niner thousand feet, QNH one zeero two zero, radar vectoring for ILS approach runway zero five.

01:49:07 AirFrance 3103, correct.

01:49:26 WizzAir 176, roger, contact Zagreb Tower on one one eight decimal three.

01:49:35 WizzAir 176, correct.

01:49:42 Croatia 674, descent to three thousand feet, turn right heading zero two zero, cleared for ILS approach runway zero five, report ILS established.

01:50:00 Call sign, Correct.

01:50:05 AirFrance 3107, descent to six thousand feet, QNH, ~~correction~~ disregard, descent to six thousand feet.

01:50:15 AirFrance 3107, correct.

01:51:29 AirBerlin 828, descent to five thousand feet.

01:51:37 AirBerlin 828, correct.

01:51:43 Croatia 674, roger, coontact Zagreb Tower on one one eight decimal three

01:51:50 Croatia 674, correct, ~~goodbye.~~

01:51:54 AirBerlin 828, turn right heading thee two zero, descent to three thousand feet.

01:52:05 AirBerlin 828, correct.

01:52:11 AirFrance 3107, descent to fower thousand feet.

01:52:19 AirFrance 3107, correct.

01:52:29 AirBerlin 828, turn right heading zero two zero, cleared for ILS approach runway zero five, report ILS established.

01:52:45 AirBerlin 818, correct.

01:53:31 AirFrance 3107, turn left heading zero eight zero and intercept localiser.

01:53:43 AirFrance 3107, correct.

01:53:54 Austrian 212, contact Zagreb Radar on one three five decimal eight.

01:54:02 Austrian 212, correct, goodbye.

01:54:41 AirBerlin 828, roger, maintain one eight zero knots until passing outer marker, contact Zagreb Tower on one one eight decimal three.

AirBerlin 828, correct.

01:55:08 AirFrance 3107, descent to three thousand feet, cleared for ILS approach runway zero five, report ILS established.

01:55:20 AirFrance 3107, correct.

Prilog 10. Prilazni simulator – Vježba 5

00:49:15 Croatia fower six zero (460), Zagreb Radar, identified, fly heading one three five degrees, descend to niner thousand feet, QNH one zero two zero, vectoring for ILS approach runway.

00:49:34 Croatia 460, correct.

00:50:22 Croatia 460, descend to six thousand feet

00:50:29 Croatia 460, correct.

00:51:21 Zagreb Approach

00:51:27 Release AirFrance 543

Initials

00:51:59 Croatia 460, descend to five thousand feet.

00:52:06 Croatia 460, correct.

00:52:51 Croatia 460, descend to three thousand feet.

00:52:59 Croatia 460, correct.

00:53:10 AirFrance fower, correction, five fower three (543), Zagreb Radar, identified, follow PODET fower Charlie departure, climb to flight level one eight zero.

00:53:27 AirFrance 543, correct.

00:53:43 Croatia 460, turn left heading zero eight zero, cleared ILS approach runway zero five, report ILS established.

00:53:57 Croatia 460, correct.

00:54:21 Zagreb Approach

00:54:27 ~~Release Lufthansa,~~ Lufthansa zero three one (031) release

00:54:38 F J (Foxtrot Juliet)

00:54:51 AirFrance 543, cleared direct to PODET.

00:55:00 Call sign, Correct.

00:56:19 Lufthansa 031, Zagreb Radar, identified, follow PODET fower Charlie departure, climb to flight level one eight zero.

00:56:34 Lufthansa 031, correct.

00:56:45 Croatia 460, contact Zagreb Tower on one one eight decimal three.

00:56:54 Goodbye, correct.

00:57:30 Zagreb Approach

00:57:34 Croatia six three two (632) release.

00:57:41 F J (Foxtrot Juliet)

00:58:23 Croatia six two one (621), Zagreb Radar, identified, cleared direct to Papa India Sierra (PIS), descend to six thousand feet, cleared for ILS, disregard.

01:00:04 Croatia 621, Zagreb Radar, identified, cleared to Papa India Sierra (PIS), ~~expect,~~ descend to six thousand feet QNH expect straight-in ILS approach runway zero five, descend to six thousand feet.

01:00:30 Croatia 621, QNH one zero two zero.

01:00:39 Croatia 621, correct.

01:00:57 Croatia six three two (632), Zagreb Radar, identified, follow KOTOR three Romeo departure, climb to flight level two zero zero.

01:01:11 Croatia 632, correct.

01:01:15 Croatia 621, increase speed to three zero zero knots.

Croatia 621, correct.

01:04:08 AirFrance five fower three (543), contact Ljubljana Radar on one three five decimal two seven five.

01:04:21 Call sign, correct. ~~Goodbye~~

01:04:32 Croatia six seven one (671), Zagreb Radar, identified, fly heading zero six zero, descend to seven thousand feet, vectoring for ILS approach runway zero five, QNH one zero two zero.

01:05:06 Croatia 671, correct.

01:05:33 Lufthansa zero three one (031), contact Zagreb Radar on one three five decimal two seven five

01:05:46 Lufthansa 031, correct.

01:06:06 Austrian three one seven (317), Zagreb Radar, identified, ~~cleared to~~ leave PETOV heading one niner zero, maintain flight level one five zero, vectoring for ILS approach runway zero five.

01:06:26 Austrian 317, correct.

01:06:58 Croatia 621, descend to, turn (?), disregard.

01:07:19 Croatia 621, descend to three thousand feet, cleared ~~for~~ straingt-in ILS approach runway zero five, report ILS established.

Croatia 621, correct.

01:08:15 Croatia 671, turn left heading two three five.

Croatia 671, correct.

01:08:27 Croatia 671, descend to fower thousand feet.

01:08:37 Croatia 671, correct.

01:08:47 Austrian 317, descend to six thousand feet, QNH one zero two zero.

01:08:59 Austrian 317, correct.

01:10:25 Croatia 632, contact Zagreb Radar on one one three five decimal eight

01:10:38 Croatia 632, ~~bye~~ correct.

METAPODACI

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Student: Dorothea Milinović
Mentor: Ivana Francetić, prof.

Naslov na drugom jeziku (engleski): Usage of RTF in the Training of Air Traffic Controllers

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(potpis)