Министерство транспорта Российской Федерации (Минтранс России)
Федеральное агентство воздушного транспорта (Росавиация)
ФГБОУ ВО «Санкт-Петербургский государственный
университет гражданской авиации»

АВИАЦИОННЫЙ ТЕХНИЧЕСКИЙ АНГЛИЙСКИЙ ЯЗЫК

Методические указания и контрольные задания
Для студентов ЗФ
Специальности «Эксплуатация воздушных судов и организация воздушного движения» специализации **ОЛР** и
студентов 2-го высшего образования направления подготовки
«Аэронавигация», профиль подготовки **ЛЭГВС**

Санкт-Петербург
2018

Одобрено и рекомендовано к изданию
Учебно-методическим советом Университета

Ш 87(03)

АВИАЦИОННЫЙ ТЕХНИЧЕСКИЙ АНГЛИЙСКИЙ ЯЗЫК:Методические указания и контрольные задания /Университет ГА. С-Петербург, 2018

Издаются в соответствии с программой дисциплины «Английский язык»

Предназначены для студентов ЗФ специальности «Эксплуатация воздушных судов и организация воздушного движения» специализации ОЛР и студентов 2-го высшего образования направления подготовки «Аэронавигация», профиль подготовки ЛЭГВС.

Составитель И.М.Степенко, ст.преподаватель кафедры № 7

РецензентК.М. Суворина, канд. филол. наук, проф.

МЕТОДИЧЕСКИЕ УКАЗАНИЯ

1. Данное контрольное задание имеет 5 вариантов. Студент должен выполнить один из этих вариантов в соответствии с последней цифрой своего шифра.

Последняя цифра шифра студента	Номер варианта задания
1 и 2	1
3 и 4	2
5 и 6	3
7 и 8	4
9 и 10	5

2. Контрольное задание должно быть написано четко, аккуратно. Необходимо оставлять поля для замечаний и рекомендаций рецензента.

3. К зачету и экзамену допускаются студенты, выполнившие контрольное задание в соответствии с учебным графиком.

4. Для сдачи зачета или экзамена студент должен:

а) перевести текст;

б) перевести аббревиатуру с английского языка на русский язык;

в) перевести специальные термины с английского языка на русский язык.

ВАРИАНТ1

1. Translate the text into Russian

Autopilot Entry and level Off

Level Change (LVL CHG)

Because of airspeed and altitude protection and reduced crew workload, use of the autopilot with LVL CHG mode is the recommended technique for rapid descents. Use of the V/S mode is not recommended.

Initiate a turn, if required, using HDG SEL. Set a lower altitude in the altitude window. Select LVL CHG, close the thrust levers and smoothly extend the speedbrakes. Autothrottles should be left engaged. The airplane pitches down smoothly while the thrust levers retard to idle. Adjust the speed as needed and ensure the altitude window is correctly set for the level off. During descent, the IAS/MACH speed window changes from MACH to IAS at approximately 300 KIAS. Manually reset to VMO as needed.

When approaching the target altitude, ensure the altitude is set in the MCP altitude select window. Altitude capture engages automatically. Adjusting the command speed to approximately LRC or 300 knots before level-off aids in smoothly transitioning to level flight. The pitch mode then controls altitude and the thrust levers increase to hold speed. Smoothly return the speedbrake lever to the down detent during the level off maneuver.

When descending with the autopilot engaged and the speedbrakes extended at speeds near VMO/MMO, the airspeed may momentarily increase to above VMO/MMO if the speedbrakes are retracted quickly. To avoid this condition, smoothly and slowly retract the speedbrakes to allow the autopilot sufficient time to adjust the pitch attitude to maintain the airspeed within limits.

When the speedbrakes are retracted during altitude capture near VMO/MMO, a momentary overspeed condition may also occur. This is because the autopilot captures the selected altitude smoothly by maintaining a fixed path while the thrust is

at or near idle. To avoid this condition, it may be necessary to reduce the selected speed and/or descent rate before altitude capture or reduce the selected speed and delay speedbrake retraction until after level off is complete.

2. Decode the abbreviations and translate them into Russian

LVL CHG, IAS, VMO, MMO, KIAS

3. Translate the following phrases into Russian:

- hot air pressure regulating valve
- air conditioning system controllers
- water separation system
- cockpit’s air conditioning panel

ВАРИАНТ 2

1. Translate the text into Russian

Automatic Flight

Autoflight systems can enhance operational capability, improve safety, and reduce workload. Automatic approach and landing, Category III operations, and fuel-efficient flight profile are examples of some of the enhanced operational capabilitiesprovided by autoflight systems. Maximum and minimum speed protection are among the features that can improve safety while LNAV, VNAV, and instrument approaches using VNAV are some of the reduced workload features. Varied levels of automation are available. The pilot decides what level of automation to use to achieve these goals by selecting the level that provides the best increase in safety and reduced workload.

Note: When the autopilot is in use, the PF makes AFDS mode selections. The PM may select new altitudes, but must ensure the PF is aware of any changes. Both pilots must monitor AFDS mode annunciations and the current FMC flight plan.

Automatic systems give excellent results in the vast majority of situations. Deviations from expected performance are normally due to an incomplete understanding of their operations by the flight crew. When the automatic systems do not perform as expected, the pilot should reduce the level of automation until proper control of path and performance is achieved. For example, if the pilot failed to select the exit holding feature when cleared for approach, the airplane will turn outbound in the holding pattern instead of initiating the approach. At this point, the pilot may select HEADING SELECT and continue the approach while using other automated features. A second example, if the airplane levels off unexpectedly during climb or descent with VNAV engaged, LVL CHG may be selected to continue the climb or descent until the FMC can be programmed.

Early intervention prevents unsatisfactory airplane performance or a degraded flight path. Reducing the level of automation as far as manual flight may be necessary to ensure proper control of the airplane is maintained. The pilot should attempt to restore higher levels of automation only after airplane control is assured. For example, if an immediate level-off in climb or descent is required, it may not be possible to comply quickly enough using the AFDS. The PF should disengage the autopilot and level off the airplane manually at the desired altitude. After level off, set the desired altitude in the MCP, select an appropriate pitch mode and re-engage the autopilot.

2. Decode the abbreviations and translate them into Russian

VNAV, LNAV, FMC, AFDS, MCP

3. Translate the following phrases into Russian:

- pack flow selector
- heat exchanger cooling mode
- pack flow control valve position
- landing gear control interface unit

ВАРИАНТ3

1. Translate the text into Russian

GPS Use in Non-WGS-84 Reference Datum Airspace

In non-WGS-84 airspace, the local datum (position basis) used to survey the navigation database position information may result in significant position errors from a survey done using the WGS-84 datum. To the pilot, this means that the position of runways, airports, waypoints, navaids, etc., may not be as accurate as depicted on the map display and may not agree with the GPS position. Operators should consult appropriate sources to determine the current status of airspace in which they operate.

A worldwide survey has been conducted which determined that using the FMC while receiving GPS position updating during SIDS, STARS and enroute navigation meets the required navigation accuracy in non-WGS-84 airspace. This navigation position accuracy may not be adequate for approaches, therefore the AFM requires the crew to inhibit GPS position updating while flying approaches in non-WGS-84 airspace “unless other appropriate procedures are used’.

Boeing’s recommendations for operators are as follows:

- provided operational approval has been received and measures to ensure their accuracy have been taken, RNAV approaches may be flown with GPS updating enabled. Options available to operators may include surveys of the published approaches to determine if significant differences or position errors exist, developing special RNAV procedures complying with WGS-84 or equivalent, or inhibiting GPS updating
- for approaches based ground-based navigation aids such as ILS, VOR, LOC, NDB, etc., the GPS updating need not be inhibited provided that appropriate raw data is used throughout the approach and missed approach as the primary navigation reference. LNAV and VNAV may be used. As always, when a significant difference exists between the airplane position, raw data course, DME and/or bearing

information, discontinue use of LNAV and VNAV. Provided the FMC is not used as the primary means of navigation for approaches, this method can be used as the "other appropriate procedure" in lieu of inhibiting GPS updating.

Operators are encouraged to survey their navigation databases and have all non-WGS-84 procedures eliminated or modified to WGS-84 standards.

2. Decode the abbreviations and translate them into Russian

WGS GPS ILS DME VOR

3. Translate the following phrases into Russian:

- cross-channel link
- independent pneumatic safety valves
- backup pressure sensor
- emergency ram air inlet

ВАРИАНТ4

1. Translate the text into Russian

Optimum Altitude

Optimum altitude is the cruise altitude for minimum cost when operating in the ECON mode, and for minimum fuel burn when in the LRC or pilot-selected speed modes. In ECON mode, optimum altitude increases as either airplane weight or cost index decreases. In LRC or selected speed modes, optimum altitude increases as either airplane weight or speed decreases. On each flight, optimum altitude continues to increase as weight decreases during the flight.

For shorter trips, optimum altitude as defined above may not be achievable since the top of descent (T/D) point occurs prior to completing the climb to optimum altitude.

Trip altitude, as defined on the FMC PERF INIT page, further constrains optimum altitude by reducing the altitude for short trips until minimum cruise segment time is satisfied. This cruise time is typically one minute, but is operator selectable in the FMC by maintenance action. For short trips, operation at the trip altitude results in the minimum fuel/cost while also satisfying the minimum cruise time requirement.

The selected cruise altitude should normally be as close to optimum as possible. Optimum altitude is the altitude that gives the minimum trip cost for a given trip length, cost index, and gross weight. It provides approximately a 1.5 load factor (approximately 48° bank to buffet onset) or better buffet margin. As deviation from optimum cruise altitude increases, performance economy deteriorates.

Some loss of thrust limited maneuver margin can be expected above optimum altitude. Levels 2000 feet above optimum altitude normally allows approximately 45° bank prior to buffet onset. The higher the airplane flies above optimum altitude, the more the thrust margin is reduced. Before accepting an altitude above optimum,

determine that it will continue to be acceptable as the flight progress under projected conditions of the temperature and turbulence.

On airplanes with higher thrust engines, the altitude selection is most likely limited by maneuver margin to initial buffet. Projected temperature turbulence conditions along the route of flight should be reviewed when requesting/accepting initial cruise altitude as well as subsequent step climbs.

2. Decode the abbreviations and translate them into Russian

LRC FMC ECON FMC PERF INIT

3. Translate the following phrases into Russian:

- open circuit configuration
- computer-derived flight plan
- probable takeoff runway approach
- managed speed profile

ВАРИАНТ5

1. Translate the text into Russian

Instrument Approaches

All safe instrument approaches have certain basic factors in common. These include good descent planning, careful review of the approach procedure, accurate flying, and good crew coordination. Through planning is the key to a safe, unhurried, professional approach.

Ensure the waypoint sequence on the LEGS page, altitude restrictions, and the map display reflect the air traffic clearance. Last minute air traffic changes or constraints may be managed be appropriate use of the MCP heading and altitude selectors. Updating the waypoint sequence on the LEGS page should be accomplished only as time permits.

Complete the approach preparations before arrival in the terminal area. Set decision altitude or height DA(H), or minimum descent altitude or height MDA(H). crosscheck radio and pressure altimeters whenever practical. Do not completely abandon enroute navigation procedures even though air traffic is providing radar vectors to the initial or final approach fix. Check ADF/VOR selector set to the proper position. Verify ILS, VOR and ADF are tuned and identified for the approach.

Check that the maker beacon is selected on the audio panel. The course and glide slope signals are reliable only when their warning flags are not displayed, localizer and glide slope pointers are in view, and the ILS identifier is received. Confirm the published approach inbound course is set or displayed.

Do not use radio navigation aid facilities that are out of service even though flight deck indications appear normal. Radio navigation aids that are out of service may have erroneous transmissions that are not detected by airplane receivers and no flight deck warning is provided to the crew.

2. Decode the abbreviations and translate them into Russian

MDA MCP ADF LEGS ILS

3. Translate the following phrases into Russian

- reference stall profile
- low-speed protection feature
- speed target change
- triple-click aural warning

Печатается в авторской редакции

Подписано к печати 26. 03. 2018. Формат бумаги 60х90 1/16.
Тираж 250. Уч.-изд.л.0,75. Усл.печ.л.0,75. Заказ 369. С 11
Тип. СПбГУ ГА. 196210. С.-Петербург, ул. Пилотов, дом 38.