Radar ATC Guide



# Radar Air Traffic

# Controller's Guide

01 AUG 2018

# **Changes list**

03 May 2018 - initial revision

06 June 2018 – changed radar minimums section, adjusted several formatting issues

01 August 2018 – changed transition levels



# Introduction

This vACC Moldova Radar Air Traffic Controller Guide (there and later named - Guide) is created to be used in

VATSIM Moldova airspace for Radar (APP) Air Traffic Controllers (ATC) in all vACC-controlled airports. This Guide is a general document that must be used for providing air traffic control. Any additional required laws, rules and document's parts will be placed in text where it is applicable, and needed references will be added where is not applicable.

As a radar controller within VATSIM, you must be familiar with the Tower control, Ground control, Delivery control procedures to be able to provide ground traffic control if such Tower, Ground or Delivery ATC positions are offline.

This guide uses some notation rules that are described below.

For communication example:

- Pilot's calls example: Chisinau TOWER, ON FINAL RUNWAY 26
- ATC's instruction example: MLD051, CLEARED TO LAND

Russian language communication example will be also provided.

Words in [parentheses] are not mandatory to be used in the phraseology.

This guide uses these words (but not limited to only these words) and font styles to define the degree of adherence to the rules:

- must/must not/is prohibited you must follow that rules always without deviations;
- have to/have not to/can/cannot you have to follow that rules it in most cases, excluding some special cases, where you can't follow them;
  ATC must have enough reasons to deviate from that rules.
- it's recommended/can/cannot you can do this according to rules and laws, but you are not forced to do it in any case. It is a recommendation.

Any other markups and text styles will be used freely to point your attention for some situations or special cases.

All rules in Guide that are used to provide air traffic service (ATS) have number indexes for convenience.

If you have any questions or propositions, feel free to contact Instructors group using **@vACC ATC Instructor** mention in Discord or use director@moldovacc.org mail.

# Preparing to service and general rules

## 1. In any case ATC must make decisions according to common sense.

- 2. During preparing to provide a service as the Radar controller you **must** be familiar with:
  - a. Current weather situation on airfield (at least METAR-based: wind direction and speed, horizontal visibility, visibility on runway, cloud layers heights, QNH);

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- b. Runways in use;
- c. SIDs and STARs that are in used;
- d. Neighbor ATCs frequencies and their controlled areas;
- e. Current traffic situation in the air and on the ground;
- f. Airport ground charts;
- g. VFR procedures (TMA in/out fixes, pattern turns direction, altitudes);
- h. Go around procedure;
- i. Visual and circling approach procedures;
- j. Controlled zone lateral and vertical limits;
- k. Any special flights and situations.
- 3. If any neighbor ATC positions are on duty, you must coordinate <u>2.a-2.k Rules</u> with these positions if it is applicable (for example, you must coordinate SID using instruction from Center ATC and must inform Tower ATC about runways in use). If needed these rules must be coordinated when you are on duty.
- 4. If there are no ATC positions capable to coordinate <u>**2.a-2.k Rules**</u>, you **must** determine these rules by yourself using charts, usual local procedures, your opinion and common sense.
- 5. ATC **must** have ability to communicate with any neighbor ATC using text or voice in Euroscope private channels, Discord voice or text coordination channels. Voice intercommunication is preferred.
- 6. Radar ATC provides these air traffic services:
  - a. Radar service (separation and sequencing);
  - b. Flight information service;
  - c. Emergency service.
- 7. As is stated in AIP MOLDOVA charts and documents, controlled zone of Radar controller is TMA zone.

# Airspace classification and usage

- 1. In airspace class C ATC must separate:
  - a. IFR traffic from IFR traffic;
  - b. IFR traffic from VFR traffic;
  - c. VFR traffic from IFR traffic.
- 2. In airspace class C ATC must inform:
  - a. VFR traffic about VFR traffic. Traffic avoidance advices have to be given on request only.

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- 3. In airspace class D ATC **must** separate:
  - a. IFR traffic from IFR traffic;
- 4. In airspace class D ATC must inform:
  - a. IFR traffic about VFR traffic;
  - b. VFR traffic about IFR traffic;
  - c. VFR traffic about VFR traffic.

In <u>a-c</u> cases, traffic avoidance advices have to be given on request only.

- 5. In airspace class G separation is not used.
- 6. In airspace class G flight information service is provided for all traffic. IFR and VFR traffic are informed about IFR and VFR Traffic. Traffic avoidance advices cannot be given.
- 7. Complete information about airspace classes, limitations and using are provided in ENR 1.2 ENR 1.4.
- 8. In case of aircraft crew wants to change flight rules from VFR to IFR, ATC has to:
  - a. Give proper IFR squawk (e.g. not 7000);
  - b. Give instruction to climb/descend to specific altitude or flight level, coordinated with Radar ATC. Note, that this altitude must be above MSA/MRVA;
  - c. Give instruction to change frequency from Tower to Radar, if applicable.
- 9. In case aircraft crew wants to change flight rules from IFR to VFR, ATC has to:
  - a. Give VFR squawk (7000);
  - b. Give instructions about maneuvering in the CTR or TMA.
- 10. Transition Altitude in MOLDOVA is 5000 feet;

11. Transition Level in MOLDOVA equals:

- a. 942-958 hPa FL 130;
- b. 959-976 hPa FL 125;
- c. 977-994 hPa FL 120;
- d. 995-1012 hPa FL 115;
- e. 1013-1030 hPa FL 110;
- f. 1031-1050 hPa FL 105.



# Separation

- 1. For all aircrafts under control that need to be separated from each other, radar separation minimums are applied.
- 2. Vertical separation minimums are:
  - a. From GND to FL 290 300 m (1000 feet);
  - b. From FL 290 to FL 410 300 m (1000 feet);
  - c. From FL 410 to FL 660 600 m (2000 feet).
- 3. Horizontal separation minimums are:
  - a. In CTA/UTA within Chisinau FIR from FL 155 to FL 660 9.3 km (5 NM);
  - In CTA/UTA within the Chisinau FIR from 1500 feet to FL 660 inside circle with radius 100
    NM from LUKK 9.3 km (5 NM);
  - c. In other CTA/UTA 18.5 km (10 NM);
    - d. In TMA BALTI, MARCULESTI, CAHUL 20 km;
  - e. In TMA Chisinau BV 3, TMA Chisinau BV 4, TMA Chisinau BV 5 5.6 km (3 NM);
  - f. In any other cases 9.3 km (5 NM).
- 4. For all aircrafts in the approach and departure phases of flight separation connected with wake turbulence **must be** applied. These rules stated in Rules 6-10.
- 5. ATC may not use separation minimums connected with wake turbulence in for:
  - a. VFR traffic that follows HEAVY or MEDIUM aircraft arriving to the same runway;
  - b. *IFR* traffic that performs visual approach following other *IFR* traffic arriving, if traffic <u>confirmed visual contact</u> with followed aircraft and obtained ATC instruction to <u>maintain</u> <u>own separation</u>.
- 6. If it is needed ATC can inform aircraft about wake turbulence.

## MLD051, CAUTION WAKE TURBULENCE FROM DEPARTING BOEING 747

## MLD051, ОСТОРОЖНО, ТУРБУЛЕНТНОСТЬ В СПУТНОЙ СТРУЕ ОТ ВЫЛЕТАЮЩЕГО БОИНГ 747

7. If aircrafts use <u>same runway</u>, or <u>parallel ones</u>, that are located <u>within 760 m (2500 feet) or less</u> from each other, or if an aircraft is flying directly or crossing behind other aircraft at <u>same altitude or less than 300 m (1000 feet) below</u>, in the approach and departure phases of flight these horizontal separation minimums **must be** used:

- a. HEAVY follows HEAVY 7.4 km (4 NM);
- b. MEDIUM follows HEAVY 9.3 km (5 NM);
- c. LIGHT follows HEAVY 11 km (6 NM);
- d. LIGHT follows MEDIUM 9.3 km (5 NM);

<u>In any other weight-categories cases</u> (e.g. *LIGHT* flying behind *LIGHT*, *MEDIUM* behind *MEDIUM* etc.) the horizontal separation minimum is equal to horizontal separation minimum in corresponding TMA/CTA/UTA (stated in the Rule 3).

- In the approach and departure phases of flight these horizontal separation minimums must be used for traffic that follows A380, if aircraft flying directly behind or crossing behind A380, at the same altitude or less than 300 m (1000 feet) below:
  - a. HEAVY (excluding A380) follows A380 11.1 km (6 NM);
  - b. *MEDIUM* follows *A380* **13 km (7 NM)**;
  - c. *LIGHT* follows *A380* **14.8 km (8 NM)**;
- 9. In all cases of using separation connected to wake turbulence which are not fit in Rule 7 and Rule 8, minimum separation distance is not specified.
- 10. In <u>all cases</u> of using separation connected to wake turbulence minimum distance between aircrafts arriving on the same runway **must be** not less than corresponding Radar minimum (see Rule 3).

# Air traffic service for departing traffic

- In providing approach control service for aircraft departing one or more of the following procedures have to be applied and ensured:
  - a. Flight of an aircraft via standard instrumental departure route (SID);
  - b. Flight on a shortened flight path (shortcut);
  - c. Radar vectors using surveillance systems.
- In cases when standard clearances are issued to flying aircrafts, pre-agreed between ATSs (for example, on duty briefing), Tower ATC issues such clearances for departure without ongoing coordination with Radar ATC.
- 3. When aircraft departs from airport, ATC must:
  - a. Obtain needed information about aircrafts departing using Euroscope or voice channel from Tower ATC;
  - b. Analyze data obtained;
  - c. Issue reasonable limitations to departure clearances or other requests, taking into account the conditions of each individual situation, if there are operational reasons (such as separation, complex air situation etc.);
  - d. Coordinate with Tower changes to the standard clearances (change of SID or other instructions).
- When inbound traffic crosses boundaries of controlled zoned/points of transfer between zones, ATC must:
  - a. Receive a report from the traffic about entering the area of responsibility;
  - b. Identify the traffic on the air situation display;
  - c. Provide the information about traffic's position, if needed;
  - d. Issue needed clearance or instruction (see Rule 1);
  - e. Receive clearance/instruction read back from traffic;
  - f. Inform a traffic about air situation, if needed;
  - g. Continuously monitor traffic trajectory.

## MLD051, RADAR CONTACT

*мLD051*, наблюдаю по локатору

## **MLD051**, NEGATIVE RADAR CONTACT, SET SQUAWK CHARLIE

#### MLD051, НЕ НАБЛЮДАЮ ПО ЛОКАТОРУ, УСТАНОВИТЕ ОТВЕТЧИК В РЕЖИМ ЧАРЛИ

5. If it is desirable to speed up traffic sequence ATC, to solve potential conflict situation or on aircraft crew request ATC can give instruction to shorten flight path (shortcut). Shortcuts to points that are outside of the ATC's controlled zone must be coordinated with corresponding ATCs.

In order to avoid misunderstandings and increase the load of the aircraft crew, ATC should give shortcuts only radio navigation stations and fixes which are part of the SID routes (that is cleared for this aircraft) or part of the flight route of this airplane.

## MLD051, PROCEED DIRECT KONIP

## MLD051, СЛЕДУЙТЕ ПРЯМО НА КОНИП

- 6. In case it's necessary to direct the aircraft along a trajectory that cannot be determined by the direction to radio navigation station or fix, radar vectors have to be used.
- ATC must take into account that when traffic receives departure clearance with SID route, aircraft crew activates a given route in the flight management system (FMS) and subsequent flight is performed in automatic mode.

If during a flight in an automatic mode ATC gives instructions that cancel the conditions of the SID route (for example, turn to the some heading for separation), the further flight will be performed manually and the crew will expect ATC instructions to resume own navigation (shortcut to fix or radio navigation station) or radar vectors.

8. When shortened flight path will be used, ATC **must** firstly clear traffic to fly via SID route for the purpose of climbing altitude above MSA/MRVA. After that shortcut **can be** cleared.

# Air traffic service for arriving traffic

## Section 5a – General rules

- In providing approach control service for aircraft arriving one or more of the following procedures have to be applied and ensured:
  - a. Flight of an aircraft via standard terminal arrival route (STAR) and instrumental approach procedures;
  - b. Radar vectors to the final approach segment system, data from which can be interpreted by the crew;
  - c. Visual approach;
  - d. Radar vectors when visual approach is in progress or will be performed.
- 2. When inbound traffic crosses boundaries of controlled zoned/points of transfer between zones, ATC **must** identify this aircraft.



MLD051, NEGATIVE RADAR CONTACT, SET SQUAWK CHARLIE

MLD051, НЕ НАБЛЮДАЮ ПО ЛОКАТОРУ, УСТАНОВИТЕ ОТВЕТЧИК В РЕЖИМ ЧАРЛИ

# Section 5b – Flight of an aircraft via STAR and instrumental

## approach procedures

- Taking into account the time required by the aircraft crews to activate the given STAR in the on-board FMS, information of the runway-in-use and assigned STAR must be provided as early as possible (as a rule, this can be done by Center ATC when traffic enters the FIR).
- 2. Flight via STAR clearance (STAR clearance) is given by Center or Radar ATC.
- 3. If radar vectors will be used right after STAR point passing, ATC has to inform aircraft crew to expect radar vectors after corresponding point.
- 4. STAR clearances or other instructions (such a radar vectors after some point), that are given by the Center ATC, **must be** coordinated between Center and Radar ATCs.
- 5. STAR clearance **must be** given in advance, but in all cases **not later** than STAR first point passing. Assigned STAR index is provided in non-coded format (e.g. for BO coded is Bravo Oscar, non-coded is Bohdanivka);

## MLD051, CLEARED VIA SVITA ONE CHARLIE ARRIVAL

## MLD051, РАЗРЕШАЮ ЧЕРЕЗ СВИТА ОДИН ЧАРЛИ ПРИБЫТИЕ

- 6. ATC **must** inform arriving traffic about runway-in-use and instrumental approach system that will be used, excluding cases, when this information is provided in ATIS and aircraft crew confirmed ATIS read back).
- 7. Instrumental approach procedure is assigned on ATC's own initiative.
- 8. Aircraft crew can request different alternative instrumental approach procedure and, if airspace situation is OK, ATC has to clear using this procedure.
- 9. Taking into account the time required by the crews if the aircraft to activate the given instrumental approach procedure in the on-board FMS, such information **must be** provided as early as possible.

mLD051, EXPECT ILS APPROACH RUNWAY 26

## MLD051, ОЖИДАЙТЕ ЗАХОД ИЛС ПОЛОСА 26

- 10. As a rule, ATC has to assign precision instrumental approach procedure (ILS) or procedure with the most minimal OCA/OCH.
- 11. ATC must give instrumental approach clearance and runway-in-use when aircraft is inbound Initial Approach Fix (IAF), but in all cases not later than IAF passing

## MLD051, CLEARED ILS APPROACH RUNWAY 13

## MLD051, РАЗРЕШАЮ ЗАХОД ИЛС ПОЛОСА 13

12. ATC can demand fix passing reports, radio navigation stations passing reports, report about start of execution Racetrack or Base Turn procedures, other information that is needed to speed up traffic.

MLD051, REPORT COMMENCING PROCEDURE TURN MLD051, DOJOWITE HAVAJO CTAHDAPTHOFO PA3BOPOTA MLD051, REPORT PASSING DIVAK MLD051, DOJOWITE IPOJET DUBAK MLD051, REPORT 15 KILOMETRES FROM KVR DME MLD051, DOJOWITE 15 KUJOMETPOB OT KVR DME

13. If it is desirable to speed up traffic sequence ATC, to solve potential conflict situation or on aircraft crew request ATC can give instruction to shorten flight path (shortcut). In order to avoid misunderstandings and increase the load of the aircraft crew, ATC should give shortcuts only radio navigation stations and fixes which are part of the STARs or instrumental approach procedures routes (that are cleared for this aircraft).

MLD051, PROCEED DIRECT VERHNIE

MLD051, СЛЕДУЙТЕ ПРЯМО НА ВЕРХНИЕ

MLD051, PROCEED DIRECT KOKUP

MLD051, СЛЕДУЙТЕ ПРЯМО НА КОКИР

MLD051, PROCEED DIRECT BB010

## *MLD051*, СЛЕДУЙТЕ ПРЯМО НА ВВ010

- 14. In case it's necessary to direct the aircraft along a trajectory that cannot be determined by the direction to radio navigation station or fix, radar vectors have to be used.
- 15. ATC is responsible to give safe flight levels (altitudes) to IFR traffic in airspaces class C and D.
- 16. When ATC assigns safe flight levels (altitudes) ATC **must** take into account MRVA, or MSA, or MORA depends on which minimum altitude is used in such conditions.
- 17. ATC **must** take into account that when traffic receives STAR clearance and instrumental approach procedure clearance, aircraft crew activates a given route in the flight management system (FMS) and subsequent flight is performed in automatic mode.

If during a flight in an automatic mode ATC gives instructions that cancel the conditions of the STAR instrumental approach procedure (for example, turn to the some heading for separation), the further flight will be performed manually and the crew will expect ATC instructions to resume own navigation (shortcut to fix or radio navigation station) or radar vectors.

- 18. In case the aircraft crew requests shortcuts to points that are not in the STAR or instrumental approach procedure ("request direct to base"), or the aircraft crew requests to fly via non-authorized procedure ("request approach on own navigation"), and it becomes apparent that the crew is not aware of the procedures used, ATC should begin radar vectors procedure, or give instruction to continue flight via cleared procedures.
- 19. STARs and instrumental approach procedures are designed to allow aircraft crew to perform own navigation during these flight segments. Often, as a result, STARs and instrumental approach procedures do not provide the shortest flight route. If STARs and instrumental approach procedures do not provide the shortest flight route, ATC has to use radar vectors to the final approach segment system, data from which can be interpreted by the crew instead.
- 20. Radar vectors using surveillance systems **can be** started anytime during flight via STAR or instrumental approach procedure. Radar vectors can be used before STAR, if **it is coordinated** with corresponding Center ATC.
- 21. If needed, ATC can inform the aircraft crew about distance to touchdown taking into account expected flight path:

MLD051, DISTANCE (or POSITION) 25 TRACK MILES FROM TOUCHDOWN

MLD051, УДАЛЕНИЕ 25 ТРЕК МИЛЬ ОТ ТОЧКИ ПРИЗЕМЛЕНИЯ

## Section 5c – Transition to Final Approach RNAV/RNP 1

## procedures

- 1. As an addition to STARs, RNAV/RNP 1 "Transition to Final Approach" procedures can be used.
- 2. These procedures complement radar vectors technique, so they have to be considered as radar vectors variant and not as STAR.
- 3. "Transition to Final Approach" procedures **begin** at the transition point between cruise flights to terminal flight parts, and **end** in the Finish Approach Fix (FAF)/Finish Approach Point (FAP) where final instrumental approach is started.
- 4. ATC has to give approach clearance before the aircraft crew reports about the aircraft is on final, excluding situations, when air situation is not OK to give such clearance.
- 5. Instead of radar vectors, additional fixes are added. These fixes are entered into FMS.
- 6. Turn to final (from "downwind" and other parts of transition), as a rule, **is given** using radar vectors to speed up traffic sequence.
- 7. As an addition to default phraseology, for "Transition to Final Approach" procedures these clearances are used:
  - a. Clearance to follow horizontal part of the route, maintaining speeds as published, altitudes are given by the ATC <u>separately</u>:

MLD051, CLEARED KONIP THREE WHISKEY TRANSITION

MLD051, РАЗРЕШАЮ КОНИП ТРИ ВИСКИ ТРАНЗИШЕН

b. Clearance to follow horizontal and vertical paths, maintaining speeds and altitudes as published:

MLD051, PA3PEWAW KONIP THREE WHISKEY TRANSITION AND PROFILE

### MLD051, РАЗРЕШАЮ КОНИП ТРИ ВИСКИ ТРАНЗИШЕН И ВЕРТИКАЛЬНЫЙ ПРОФИЛЬ

c. Clearance to fly direct to fix or sequence of fixes from present position followed with horizontal flight via transition procedure after last cleared fix, altitudes are given by the ATC <u>separately</u>:

mLD051, CLEARED DIRECT WAYPOINT BB612

MLD051, РАЗРЕШАЮ СЛЕДОВАТЬ ПРЯМО НА ТОЧКУ ВВ612

MLD051, CLEARED VIA WAYPOINTS BB612 AND BB603 AND BB602

## *мLD051*, разрешаю следовать через точки вв612 затем вв603 и вв602

8. Transition to Final Approach RNAV/RNP 1 procedures **must be** used only for aircrafts that have proper equipment to flights using RNAV/RNP 1.



# Section 5d – Radar vectors to the final approach segment system, data from which can be interpreted by the crew

- 1. ATC has to give approach clearance before the aircraft crew reports about the aircraft is on final, excluding situations, when air situation is not OK to give such clearance.
- 2. When radar vectors to the final approach segment system is being used, ATC gives instruction to the aircraft crew to report on final.

mLD051, TURN LEFT HEADING 330, [REPORT ESTABLISHED ON THE LOCALIZER]

MLD051, [ОТВЕРНИТЕ] ВЛЕВО КУРС 330, [ДОЛОЖИТЕ ЗАХВАТ КУРСОВОГО]

- 3. Radar vectors **are terminated** when aircraft leaves last given heading to enter the final approach trajectory.
- 4. ATC must provide separation between aircrafts on final approach segment, excluding Tower ATC area of responsibility.
- 5. Tower ATC must have information about traffic sequence, any limitations and restrictions, that are given to arriving traffic for maintain separation. This information can be provided using Euroscope or voice channel.
- 6. The aircraft crew **must be** informed before or at the beginning of the radar vectors about approach type and runway-in-use.
- 7. ATC informs radar vectored aircraft crew about aircraft's position <u>at least one time</u> before aircraft is on final. ATC **must** use airfield or radio navigation station, from which distance is measured.

MLD051, DISTANCE (or POSITION) 20 TRACK MILES FROM TOUCHDOWN

#### MLD051, УДАЛЕНИЕ 20 ТРЕК МИЛЬ ОТ ТОЧКИ ПРИЗЕМЛЕНИЯ

- 8. ATC has to give heading or heading change sequence that is calculated to bring the aircraft to final segment of ILS, LOC, NDB, VOR approach. Last given heading has to allow the aircraft crew to enter the final segment with an angle not greater than 45 degrees.
- 9. To reduce load on the aircraft crew, ATC has to give headings that bring aircraft not closer than 4 km (2 nm) from final beginning with an angle not greater than 30 degrees.
- 10. When ILS CAT II and CAT III are used, ATC has to give headings that bring aircraft not closer than 6 km (3 nm) from final beginning with an angle not greater than 20 degrees.
- 11. This instructions are used when radar vectors are used:
  - a. Maintain present heading:

#### MLD051, CONTINUE PRESENT HEADING

## MLD051, ПРОДОЛЖАЙТЕ С ТЕКУЩИМ КУРСОМ

b. To fly heading less than 10 degrees from present heading:

MLD051, FLY HEADING 170

#### MLD051, KYPC 170

c. To turn left/right to specific heading:

AUI123, TURN LEFT HEADING 330

MLD051, [ОТВЕРНИТЕ] ВЛЕВО КУРС 330

d. To turn left/right by specific number of degrees:

**MLD051**, TURN LEFT 30 DEGREES

MLD051, [ОТВЕРНИТЕ] ВЛЕВО 30 ГРАДУСОВ

12. If ATC gives heading with crossing the final approach segment, ATC **must** inform about this the aircraft crew and specify the radar vectors reason.

MLD051, TURN LEFT HEADING 330, TAKING YOU THROUGH LOCALIZER RUNWAY 26

MLD051, [ОТВЕРНИТЕ] ВЛЕВО КУРС 330, НАПРАВЛЯЮ ВАС ДЛЯ ПЕРЕСЕЧЕНИЯ КУРСОВОГО МАЯКА ПОЛОСА 26

13. Traffic handoff to Tower ATC has to be done at such time that the aircraft can get landing clearance or other instruction on time. When aircraft is on final approach segment (even under Tower ATC's service), Radar ATC continues to monitor flight trajectory using surveillance systems.

#### vACC MOLDOVA

## Section 5e – Visual approach

- 1. Visual approach **is** performed regardless of the time of day.
- 2. Visual approach clearance can be issued, if the following conditions are true:
  - a. Aircraft crew reports that the runway, or runway lights, or airfield;
  - b. Cloud base is greater or equal initial approach altitude, MSA if applicable, or MRVA when radars vectors are used, or at the any part of instrumental approach the aircraft crew reports that meteorological conditions are suitable for visual approach and landing.

MLD051, CLEARED VISUAL APPROACH RUNWAY 26

#### MLD051, РАЗРЕШАЮ ВИЗУАЛЬНЫЙ ЗАХОД НА ПОЛОСУ 26

- 3. Radar ATC can refuse the aircraft crew's visual approach request due to air situation, separation needed or other sequencing purposes.
- 4. Visual approach clearance is issued on the aircraft crew's request or on ATC's initiative.
- 5. If visual approach procedure was proposed by the ATC, ATC **must** get the aircraft crew's confirmation that crew is ready to perform the visual approach. Then the visual approach clearance can be issued.
- Radar vectors can be used to get aircraft to position, where the aircraft crew reports that runway is in sight, or other traffic that is performing approach is in sight. After such report, radar vectors service is terminated.
- 7. Before issuing the visual approach clearance, such procedure **must** be coordinated with the Tower ATC.
- 8. Radar ATC **must** ensure separation between aircraft that is performing visual approach and other aircrafts according to separation minimums used.
- 9. When aircraft (REAR) that is performing visual approach is following other traffic (FORWARD), separation is used until REAR aircraft reports visual contact with FORWARD aircraft. Then ATC has to give instruction to follow FORWARD traffic and maintain own separation. In case both aircrafts are *HEAVY*, or REAR aircraft is "lighter" than FORWARD aircraft (using wake-turbulence categories); and distance between these aircrafts is less then corresponding separation minimum, ATC has to inform REAR aircraft about wake turbulence.

# mLD051 , number two, follow embraer 145 on final, maintain own separation

## MLD051, НОМЕР ДВА, СЛЕДУЙТЕ ЗА ЭМБРАЕР 145 НА ПРЯМОЙ, ВЫДЕРЖИВАЙТЕ ИНТЕРВАЛ САМОСТОЯТЕЛЬНО

 Traffic handoff to Tower ATC has to be done at such time that the aircraft can get traffic information, landing clearance or other instruction on time.

# Additional procedures

## Section 6a – Vertical speed control

- In order to improve safety and improve sequencing vertical speed adjustments instructions can be used. Common case is to use specific vertical speeds for two climbing/descending aircrafts or to maintain separation between aircrafts.
- Correction of the vertical speed has to be limited to the values necessary to establish and/or maintain the desired separation minimum. ATC should avoid issuing instructions that involve multiple changes in the rate of climb or descend.
- 3. The aircraft crew can report that they are unable to maintain issued vertical speed. In such case ATC **must** use other separation method (radar vectors, for example) <u>immediately</u>.
- 4. Instruction to increase, reduce, maintain specific vertical speed, increase/reduce vertical speed related to the current vertical speed can be issued:



MLD051, decrease rate of descend to one thousand feet per minute

MLD051, УМЕНЬШИТЕ СКОРОСТЬ СНИЖЕНИЯ ДО ОДНОЙ ТЫСЯЧИ ФУТОВ В МИНУТУ

## AUI123, MAINTAIN PRESENT RATE OF CLIMB

## AUI123, ВЫДЕРЖИВАЙТЕ ТЕКУЩУЮ СКОРОСТЬ НАБОРА

5. The aircraft crew **must be** informed when vertical speed is not needed to be restricted.

**MLD051**, NO VERTICAL SPEED RESTRICTIONS

MLD051, ОГРАНИЧЕНИЙ ПО ВЕРТИКАЛЬНОЙ СКОРОСТИ НЕТ

## Section 6b – Horizontal speed control

- In order to improve safety and improve sequencing horizontal speed adjustments instructions can be used. Crew should be informed about the planned speed control (speed control application over a long period of time can adversely affect the fuel flow).
- 2. Horizontal speed restrictions **must not** be used for aircrafts holding or enters holding zones.
- 3. Correction of the horizontal speed has to be limited to the values necessary to establish and/or maintain the desired separation minimum. ATC has to avoid issuing instructions that involve multiple speed changes, including alternating increase or decrease of speed instructions.
- 4. The aircraft crew can report that they are unable to maintain issued horizontal speed. In such case ATC **must** use other separation method (radar vectors, for example) immediately.
- 5. <u>At or over the FL 250</u> speed values has to be multiples of 0.01 Mach number. At levels less than FL 250 speed values has to be multiples of 10 Knots.
- 6. To establish needed interval when aircraft (REAR) follows other aircraft (FORWARD), ATC firstly has to reduce speed of the REAR aircraft, or increase speed of the FORWARD aircraft and then correct other aircrafts' speeds.
- 7. To establish intervals for separation specific value of speed have to be used.



MLD051, MAINTAIN 250 KNOTS

MLD051, ВЫДЕРЖИВАЙТЕ 250 УЗЛОВ

8. For arriving aircrafts instructions to maintain maximum speed, maintain minimum clean speed, maintain minimum speed can be used.

MLD051, MAINTAIN MAXIMUM APPROACH SPEED

MLD051, ВЫДЕРЖИВАЙТЕ МАКСИМАЛЬНУЮ СКОРОСТЬ ЗАХОДА

MLD051, REDUCE TO MINIMUM CLEAN SPEED

MLD051, УМЕНЬШИТЕ СКОРОСТЬ ДО МИНИМАЛЬНОЙ С ЧИСТЫМ КРЫЛОМ

## MLD051, REDUCE TO MINIMUM APPROACH SPEED

## MLD051, УМЕНЬШИТЕ ДО МИНИМАЛЬНОЙ СКОРОСТИ ЗАХОДА

- 9. Reducing speed <u>below 250 knots</u> for <u>jet-powered</u> aircrafts that are on top of **must** be agreed with the aircraft crew.
- 10. ATC has to avoid simultaneously issue instruction to maintain high vertical speed and reduced horizontal speed because of inconsistence if such limits.
- 11. Arriving aircraft usually does not extend flaps and gears as long as it possible while aircraft is in descend or in the initial approach phase, because extended flaps and/or gears consume more fuel, than under clean profile conditions. While jet-powered aircraft is on arrival or cruise below <u>FL 150</u> speed should not be reduced <u>below 220 knots</u>. This speed is approximate minimum clean speed for jet aircrafts. ATC has to take into account, that speed reduction below 220 knots causes the aircraft crew to extend flaps.
- 12. For arriving aircrafts in the approach phases ATC has to use speed corrections not greater/not less 20 knots.
- 13. It's **not recommended** to use speed restrictions for aircrafts performing ILS CAT II or ILS CAT III approaches that are within <u>20 miles</u> from touchdown.
- 14. The aircraft crew **must be** informed when horizontal speed is not needed to be restricted.

MLD051, NO SPEED RESTRICTIONS

MLD051, ОГРАНИЧЕНИЙ ПО СКОРОСТИ НЕТ

#### vACC MOLDOVA

## Section 6c – Special cases

- 1. If aircraft went around (due to missed approach), ATC has to:
  - a. Identify this aircraft using surveillance radar;
  - b. Give instruction to climb altitude/level not below MSA/MRVA (depends on which option is applicable);
  - c. Confirm missed approach procedure or start vectoring aircraft to approach.
- 2. While aircraft is on the cruise level, and some delay for arriving aircraft is needed (for sequencing, for example) ATC can give instruction to reduce speed.
- 3. While aircraft is in the arrival or the approach phases, ATC **can** give instruction to proceed to Holding as published. If other than published holding procedure is needed, ATC **can** give instruction to hold at specific point. In such case ATC **must** specify:
  - a. Holding point (radio navigation station, fix) or radial and distance from VOR/DME;
  - b. Altitude or flight level;
  - c. Inbound track;
  - d. Direction of turns (left- or right-hand);
  - e. Leg time or distance, if needed.

In both cases ATC must specify time when then next clearance will be given.

PROCEED TO CY DESCEND FL120 HOLD AS PUBLISHED EXPECT APPROACH CLEARANCE AT 1055

СЛЕДУЙТЕ НА ЧЕРВОНЫЙ СНИЖАЙТЕСЬ ЭШЕЛОН 120 ЖДИТЕ КАК ОПУБЛИКОВАНО ОЖИДАЙТЕ РАЗРЕШЕНИЯ НА ЗАХОД В 1055

PROCEED TO CY DESCEND FL120 HOLD INBOUND TRACK 170 DEGREES LEFT HAND PATTERN OUTBOUND TIME 3 MINUTES EXPECT FURTHER CLEARANCE AT 1052

СЛЕДУЙТЕ НА ЧЕРВОНЫЙ СНИЖАЙТЕСЬ ЭШЕЛОН 120 ЖДИТЕ ТРЭК ПРИБЛИЖЕНИЯ 170 ГРАДУСОВ СХЕМА ЛЕВАЯ ВРЕМЯ ПО ТРЕКУ УДАЛЕНИЯ 3 МИНУТЫ ОЖИДАЙТЕ ДАЛЬНЕЙШИЕ РАЗРЕШЕНИЯ В 1052

- 4. The arriving aircraft crew can request circling approach. In this case:
  - a. If aircraft crew requested to perform circling approach, Radar ATC **must** coordinate such action with the Tower ATC;
  - b. Landing clearance has to be given after completing instrumental approach procedure

c. When circling approach is being cleared, proper phraseology has to be used:

MLD051, CLEARED ILS APPROACH RUNWAY 26 FOLLOWED BY CIRCLING TO RUNWAY 08

MLD051, РАЗРЕШАЮ ЗАХОД ILS ВПП 26 ЗАТЕМ ЗАХОД С КРУГА НА ВПП 08

5. ATC can specify point at which aircraft will establish some flight level:

MLD051, DESCEND TO ALTITUDE 4000 FEET TO BE LEVELED ON BB654 AUI123, CH

MLD051, СНИЖАЙТЕСЬ ВЫСОТА 4000 ФУТОВ ДЛЯ ЗАНЯТИЯ НА ВВ654

6. When ATC gives instruction to descend below Transition Level, QNH and TL must be specified:

MLD051, DESCEND TO ALTITUDE 4000 FEET, TRANSITION LEVEL 120, QNH 1001

MLD051, СНИЖАЙТЕСЬ ВЫСОТА 4000 ФУТОВ, ЭШЕЛОН ПЕРЕХОДА 120, QNH 1001

9. In any case radar vectors are used, ATC **must** specify the purpose of such vectoring:

MLD051, VECTORING FOR ILS APPROACH

ИЛС

MLD051, ВЕКТОРЕНИЕ ДЛЯ ЗАХОДА

MLD051, TURN RIGHT HEADING 350 FOR SEPARATION

MLD051, [ОТВЕРНИТЕ] ВПРАВО КУРС 350 ДЛЯ СОЗДАНИЯ ИНТЕРВАЛА

## Section 6d – CHISINAU (LUKK) Specific cases

- 1. To improve sequencing between arriving traffic, specific speed restrictions can be used.
  - a. On the downwind leg 220 knots;
  - b. On the base leg 200 knots;
  - c. On the final 160-180 knots.
- 2. To speed up and improve sequencing on final, these instructions can be used:

MLD051, CLEARED ILS APPROACH, MAINTAIN SPEED 160 KNOTS 4 MILES FINAL

MLD052, РАЗРЕШАЮ ЗАХОД ПО ИЛС, ВЫДЕРЖИВАЙТЕ СКОРОСТЬ 160 УЗЛОВ ДО ЧЕТВЕРТОЙ МИЛИ

MLD052, CLEARED ILS APPROACH, MAINTAIN SPEED 180 KNOTS 6 MILES FINAL

MLD051, РАЗРЕШАЮ ЗАХОД ПО ИЛС, ВЫДЕРЖИВАЙТЕ СКОРОСТЬ 180 УЗЛОВ ДО ШЕСТОЙ МИЛИ

- 3. Simultaneous independent parallel ILS approaches can be used for 2 IFR aircrafts expecting ILS approaches. Correct flow is:
  - a. Both aircrafts must be vectored into "far" gates (13 miles final instead of 10 miles);
  - Separation is achieved using altitudes: first aircraft is cleared to fly at altitude 3000 feet, second aircraft – 4000 feet;
  - c. Aircraft that is on altitude 3000 feet is cleared to ILS approach;
  - d. Aircraft that is on altitude 4000 feet is cleared only to intercept LOC and maintain altitude 4000 feet until advised;
  - e. Separation is provided until both traffic reports LOC is established;
  - f. Then, aircraft, that is at altitude 4000 feet is cleared to ILS approach;
  - g. Both aircrafts are hand-offed to Tower ATC;
  - h. In case of any fail of separation minimums, one aircraft is instructed to go around, the other one instructed to continue approach.